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torreyana

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Judy P. Schulman, Editor

THE NEXT DOCENT MEETING will be February 17 at 9 a.m. in the Lodge. In addition to our annual election of officers, our program will include a tour of the Hartwell residence which is the old Fleming residence.

THE PRESIDENT'S HOPPER

I have recently completed a chart which shows docent activities during the year 1978. It shows each docent's activities on a month to month basis with an attempt to display in simplest terms whether docents have met their commitments. The data is taken from the duty schedule and the auxiliary sign-in sheet which is kept in the docent lounge. I know that it is not complete because of various reasons. I will bring it to the meeting--please look at it and let me know where the errors exist.

We have a new membership list which is posted in the lounge. We expect to publish the list in the "Torreyana" soon. We are probably the best well-rounded group of dedicated docents that our young society has known. We have a good balance of regular docents (36) and inspired associated (12). I have enjoyed spending the past year with you.

-Bob H.-

TALENT WITHIN

Often as docents, we look to outside authorities in various subjects to be our guest speakers. But the spectacular slide show program about back packing in the High Sierras given by Docent Tam Cherin and her husband Harold showed that we have just as much knowledge and expertise within our own group of docents. The photography was done by both Tam and Harold Cherin. He wrote the heart-felt and often times humorous commentary which was read by Tam.

REPORT FROM THE NOMINATING COMMITTEE

Grace Claire, Chairman
Ralph James
John Ferrer

The following members have consented to be candidates for Torrey Pines Docent Society officers, 1979:

Robert Hopper, President
Sunny Rankin, Vice President
Millicent Horger, Secretary
Murray Nelligan, Treasurer
Judy Schulman, Torreyana Editor
Julie Marine, Duty Coordinator

Robert Hopper was president during 1978 and was duty coordinator during 1976 and 1977. He is a retired electronics engineer, married, and lives in Del Mar Hills area on the edge of the Torrey Pines Reserve Extension. He joined the Docent Society in the Fall of 1975.

Sunny Rankin was publications chairman in 1976 and 1977. She is married, a registered nurse, and lives in Rancho Santa Fe. She established the "Torreyana" which was given its official name as a newsletter in December 1975. She is one of our organization's most knowledgeable members in the field of birding.

Millicent Horger was Docent of the Year for 1978. She is married, a homemaker, and lives in the Del Mar Hills area on the east side of the Torrey Pines State Reserve Extension. She has been a docent since December 1976.

Murray Nelligan was treasurer in 1978. He is married and lives in Encinitas. He is retired from a research and interpretation career in the National Park Service. He became a docent in March 1977.

Judy Schulman was publications chairman in 1978. She lives in University City and works for a local marketing research firm. She has been a docent since February 1977.

Julie Marine was duty coordinator in 1978. She is married, a homemaker and an apartment rental manager. She lives in the Del Mar Heights area north of the Extension. She is one of our most knowledgeable docents in the field of local flora. She became a docent in June 1975.

MILLICENT HORGER-1978 DOCENT OF THE YEAR

Millicent Horger, our 1978 Docent of the Year, joined our organization in the Fall of 1976. Her love of nature and her proximity to the park led her to take many walks through the reserve. On one guided walk that Piper Lindsay also happened to be on, Piper suggested that Millicent become a docent because she had seen her at the reserve many times. Millicent signed up, went through training and became one of our more active docents. In addition to her two duties per month, she is one of the most called upon docents on the emergency list. She is also responsible for the green docent vests. Amongst her favorite memories in the reserve are our last night walk, the hike through Canyon of the Swifts, and her daughter's marriage on the south overlook. About being Docent of the Year, Millicent says that just being in the park is a reward in itself!

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SURVIVAL MECHANISMS OF CHAPARRAL PLANTS-interesting information taken from "Chaparral Plants Under Water Stress" by Jochen Kummerow and James V. Alexander, Department of Botany, San Diego State University (Environment Southwest, Fall 1978-Number 483)

Southern California has cool, wet winters and long, dry summers. How does the chaparral community of plants survive this diversity of weather and manage to grow, reproduce, and in many cases remain evergreen. There seem to be four basic components to the chaparral's ability to endure: the root system, the leaf system, the stomate on the leaf, and the avoidance vs. tolerance of drought.

THE ROOT SYSTEM

The most important part of the root system in relationship to survival is its system of feeder roots. The soil that the chaparral grows on is shallow (2') with bedrock below. These feeder roots are no deeper than 1'. Many chaparral shrubs do not reach the ground water level. When the soil water content is less than 0.1%, the feeder roots die. The authors of this article feel that the drought conditioned dying of feeder roots during the summer is a cyclic process comparable to the annual shedding of leaves in deciduous plants.

THE LEAF SYSTEM

There is a waxy covering called the cuticle which protects against water loss. The cuticle is a continuous and impermeable sheath. Furthermore, there are vertical lines that go all the way through the cuticle. The authors contend that they are conduits through which wax passes from the cell wall to the surface of the cuticle. Their role is in the excretion of wax. An example of how wax excretions play an adaptive function in survival is exemplified by manzanita (*Arctostaphylos glauca*). These manzanita leaves are typically in a vertical position. Most leaves are usually in a horizontal position. It is no surprise then that stomates are found on both sides of the leaf. The function of the conspicuous wax deposits is to be an efficient reflector of heat radiation from the sun. This, in addition to the leaves vertical position, decreases exposure to radiation and therefore decreases the possibility of overheating the plant.

THE STOMATE

Water vapor, carbon dioxide, and oxygen are exchanged between the leaf and surrounding air through pores called stomates which are opened and closed by their adjacent guard cells. An example of how stomate work is seen by examining the leaves of chamise (*Adenostoma fasciculatum*). It is hard to distinguish between the upper and lower leaf surface. The leaves are cylindrical with stomates found all over the entire surface. They seem to be elevated above the leaf surface as if to increase transpiration rates. This is only part true. Using an electron microscope to look into the stomate, one finds at the bottom of the cavity a narrow slit between two small and inflated cells. It is these cells that change the width of the slit which controls the rate of transpiration. This structure protects against excessive water loss.

Another interesting mode of transpiration is seen by examining the stomates in Gregg's ceanothus (*Ceanothus gregarii* var. *perplexans*). There are stomates on the upper portion of the leaf but the underside shows dense clusters of intertwining hair. Only certain areas have hairs, while others show hairless epidermal cells. The hairy zones are pits in the leaf surface, lined with epidermis and filled with hairs. The stomates are concealed under the hairs on the walls of these pits. In these crypts we find a special microclimate with a relative humidity much higher than that of the surrounding air. The moisture gradient between the stomate and air in the pits is not very steep. Therefore, the stomates lose less water.

CHAPARRAL continued

Although Gregg's ceanothus and whitebark ceanothus sometimes grow side by side, Gregg's has the aforementioned crypts and the whitebark does not. Instead, the whitebark sheds a fraction of its foliage when water stress increases. A plant which sheds part or all of its leaves during the summer is avoiding the drought (whitebark), whereas the evergreens (Gregg's) are tolerating the drought. But isn't it expensive, so to speak, for the semi-deciduous plant to rebuild lost foliage each year rather than having a conservative use of water and keeping its foliage? The evergreen is best adapted for chaparral conditions while deciduousness is better for coastal sage vegetation where drought conditions are even more severe than in the chaparral. It seems that the rebuilding each year is not as costly as first thought. One square yard of dry leaves weighs 120 grams for whitebark versus 370 grams in Gregg's. So the whitebark is only investing one-third of the energy that Gregg's does to rebuild the same area!

NOTEABLES

The membership list will be printed in the next issue of Torreyana. If anyone has any objections to their address and telephone number being published, please call me (452-7683) and I will delete it.

If you have a favorite snapshot or slide of the Reserve, bring it to the next meeting. I would like to form a committee to start choosing an appropriate scene to be used on a postcard.

Does anyone have any chairs or plants they would like to donate to the lodge?

There is an interesting radion program on at 11 p.m. each Sunday night on KFMB-76 am. It is called "Environment San Diego".

Ranger Ross suggested that if we have any extra money, we might want to use it to preserve road killed animals as exhibits in the lodge. The cost of the taxidermy would be about \$35 per animal.

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FIRST CLASS