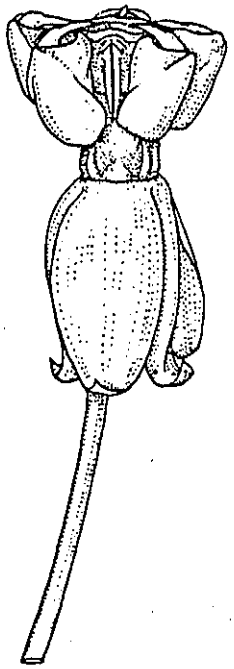
Volume 5, Number 3

Winter 1981



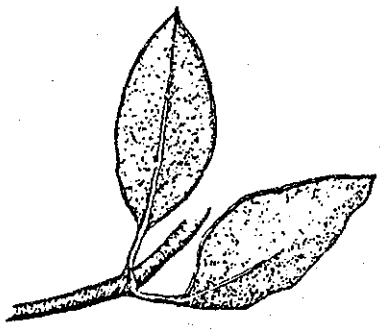
THE PLANT PRESS !

Asclepias latifolia

by Lucretia Breazeale Hamilton

THE PLANT PRESS, Newsletter of the Arizona Native Plant Society is printed quarterly. Volume 5, Number 3, Winter, 1981.

TABLE OF CONTENTS



Garrya wrightii
(Silk Tassel)
drawing by Margaret Kurzius

EDITORS' PAGE

Another issue brings yet another format. Because we were still receiving complaints about the size of our print, we have now gone to full-size reproduction. This is unfortunate, because it doubles our printing costs, but it is after all your money. Speaking of printing, we again want to thank Frank Crosswhite of the Boyce Thompson Arboretum for graciously handling the printing responsibilities.

At the top of our list of announcements this issue is the announcement of our own immenent retirement. Yes, that's right, both of us will be leaving the area sometime this summer. What this means is that we are NOW beginning the search for someone to replace us. What we need, is one or two people, from either chapter, who would be willing to take over editorial duties starting with the third issue of 1982. To make the transition as smoothly as possible, we would like to have this new editor aboard as soon as possible, to avoid a delay in issues.

Anyone who thinks they might be interested in working on a newsletter like this one, should contact either the editors (Dept. of Plant Sciences, Univ. of Arizona, Tucson 85721) or Tim Clark (same address). This is your chance to show your interest in the Society, so remember, we're waiting!

Due to space limitations this issue, both of our regular columns: Fern Talk and Desert Landscaping aren't in this issue. They got written, though, and will appear in Volume 6 number 1. We are slightly behind this time in bringing the issue out, but we are already hard at work on the next one.

The editors are still looking for articles, letters, or just about anything you might care to write to show that we still have a readership. While we are constantly soliciting articles personally from Society members that we happen to see, we depend on your contributions to fill the newsletter. Keep us in mind if you have any subject to write a short article on, or a drawing (we even accept "native plant" cartoons).

Well, with spring approaching and the next issue to look forward to, we'll shorten this sermon and wish all Society members a good year and many new native plant "adventures".

Judy Conger

Judy Conger

George A. Yatskievych

George Yatskievych

How does the geology of the Catalinas make possible the existence of Tucson? Where can we find bedrock mortars, petroglyphs, and peach trees near the Mt. Lemmon Highway? How can we distinguish between Chihuahua and ponderosa pines? Why do corkbark firs grow below the top of the mountain, but not at the summit? These were some of the questions that Robert Barnacastle, of the U.S. Forest Service, answered for two carloads of us on an October 24 field trip up Mt. Lemmon.

The rocks which make up the Catalinas have eroded over the centuries, filling the valley with coarse gravel which holds water; if the material were finer and less permeable, there would be no ground water to supply the city. Roots can penetrate the porous rock on the mountain so that plants can grow with little or no soil.

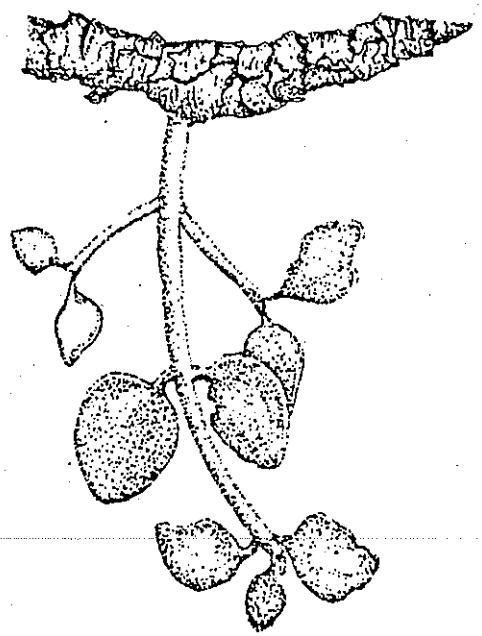
Near the old prison camp, bedrock mortars and petroglyphs mark an area where the Hohokam camped; more recent history is indicated by non-native trees and shrubs planted by residents there and surviving after a decade or more of neglect. Some, such as the tree-of-heaven, are flourishing. From this location, too, we could see a lone saguaro growing in the encinal well above its usual habitat.

In addition to their shorter needles, Chihuahua pines are characterized by their persistent cones; and when the cones finally fall, they retain a bit of stem, rather than breaking off flat like ponderosa cones.

After a visit to the very top of Mt. Lemmon, we stopped among the corkbark (subalpine) firs. Here was a good example of cold drainage in a canyon - our jackets, which were not needed at the summit, seemed inadequate here. This, combined with the north-facing slope, makes possible the growth of these cold-climate trees. We had seen other examples of this effect as we went up the mountain - lusher growth on north-facing slopes, trees and shrubs from higher life zones in the cool canyons.

Of course we saw and identified many plants in addition to looking at the larger ecological picture: turpentine bush covered with yellow blossoms, silktassel bush with its dark blue fruits, manzanita, several species of oak, Arizona cypress, narrowleaf cottonwood and sycamore along the streams, Arizona walnut, brilliant red sumac and golden aspen, Douglas fir, and many more. The weather was beautiful and all agreed that Mr.Barnacastle was an excellent guide to the mountain he knows so well.

- Evelyn Lance
Tucson Chapter



OAK MISTLETOE
(Phoradendron coryae)
drawing by Margaret Kurzius

Irrigating the Desert Landscape.
by: Gene Joseph

In the previous issue of The Plant Press, Greg Starr listed some very interesting, but lesser known species of drought resistant trees, which can be used in our southwestern desert landscapes. In addition to these are the more readily available mesquites, blue paloverdes, desert willows (being selected for larger, darker flowers and longer flowering seasons), and others, including a multitude of desert shrubs and ground covers. The key to these, and in fact to any kind of landscaping is however, to get the plants to grow and reach optimum size in as short a time as possible. Imagine growing a fifteen foot tall blue palo verde in five or six years, from seed, or a fifteen foot Chilean mesquite in four years!

It is no secret that plants respond to water and fertilizer, but it seems that most people are not aware of how to go about supplying these to the plants. Two important things to remember about watering plants in the ground are when and how much. All of our desert trees are warm weather growers and, as such, need to be watered regularly from the time they leaf out in the spring, throughout the summer, and into the fall, until they stop their seasonal growth. Since roots grow almost all year round, it is also a good idea to water a couple of times during the driest parts of winter.

The timing is very important to keep the plants in an actively growing state. As with all waterings, one needs to entirely soak the root mass. For a desert tree this usually means a slow, deep soak for as much as eight hours and as often as twice a week, depending on your soil.

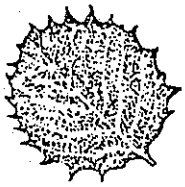
An irrigation that I have used with much success both at my home and at the Arizona-Sonora Desert Museum is a drip system, with many emitters on one line, all controlled by one valve. There are many ways to go about this, with many types of pipe and emitters available, all obtainable locally from any of a number of hardware or irrigation stores, but one which I have found to be by far the easiest and cheapest is a system that I installed at my house.

I have a loop of black poly-pipe about two hundred feet long snaking through my yard, with emitters next to the plants, using one for each shrub and with three around my soon-to-be-large trees. The pipe need not be buried, but for appearance sake I found it best to bury it in a shallow trench.

The emitters are of various types and water flows (mine are one gallon per hour and snap directly onto the pipe), with as many as a hundred on a single line possible. In my system I have five soon-to-be-large trees and over forty shrubs. This required over fifty emitters, a filter, a pressure regulator, and a shut-off valve (all easily installed), which all cost less than $100 (in 1981). It took me about eight hours to install and I go out about twice a week in the summer and turn it on to run overnight. This same system can also easily be controlled by a time clock.

A very effective fertilizer for landscape plants is ammonium phosphate. It is important to administer to near the root zone. The best way to apply it is to use a digging bar to poke a hole next to the plant (one hole for a one gallon plant, two to three for a five gallon plant, etc.) as deeply as possible (twelve to eighteen inches) and toss in a handful of fertilizer. This should be done once a month throughout the growing season.

You will find that your plants will increase in size amazingly quickly. In some cases you may even need to prune for strength and a natural shape. Remember though, that all of this is not free. There will be an initial expenditure of water that I feel is more than offset by the beauty and, equally important, the shade provided by the larger trees. After the plants reach an optimum size, the supplemental water and fertilizer can be gradually cut back to nothing.



SPRING PLANT SALES

March 27-28 Desert Botanical Garden Spring Plant Sale, Auxilary parking lot, 9 a.m. - 5 p.m.

April 3 -4 Boyce Thompson Arboretum Spring Plant Sale. Tucson Chapter will have a plant information booth. Volunteers are needed to work in the booth and help with the sale. Contact Dave Palzkill (326-9715).

April 17-18 Arizona-Sonora Desert Museum Spring Plant Sale. Tucson Chapter will have a plant information booth. If you would like to help, contact Dave Palzkill (326-9715).

SIDEOATS GRAMA
(Bouteloua curtipendula)
drawing by Margaret Kurzius

C. Hart Merriam and the Life Zone Concept.

By: Frank W. Reichenbacher

Since the early nineteenth century, plant ecologists have struggled with a need for an established system to name and identify the immense variety of plant communities. Plant communities are abstractions. In naming a plant community, the scientist assumes that all of the plants forming the vegetation of some given area constitute a community of sorts. Vegetation is itself a general term for all the plants that occur together in a given area. Plant community work has proven to be a difficult field, one inwhich none of the experts agree on everything, and few agree on anything!

It is no coincidence that Arizona has become the intellectual battleground for many such disputes. Our state straddles three major centers of diversity: the Colorado Plateau (northeast and northwest), Lower Colorado River (southwest and northwest), and the northern tip of the Sierra Madre (southeast). Climatically, we lie in a unique position. The western half of the state tends to have most of its precipitation in the winter, while the eastern half tends to have the majority in the summer. It is not unusual for Arizona to claim both the highest and lowest temperatures in the nation on the same day. These facts have a tremendous influence on the numbers and kinds of plants we have and help explain the amazing diversity of both plant species and plant communities found in Arizona.

One of the first serious attempts to formalize the study of plant communities in the United States was developed by C. Hart Merriam in the 1890's. During his work with the U.S. Biological Survey (an agency he largely created) he came to northern Arizona and spent a summer in the Flagstaff area. Here Merriam was especially struck by the regular progression of plant communities and their orderly replacement of one by another from bottom to top in the San Francisco Mountains. He saw the obvious reason for these changes of vegetation with elevation was the change in climate, principally temperature and precipitation (such changes are termed gradients). He also knew that temperature (but not necessarily precipitation) also changed with latitude. Broadly speaking, then, temperature decreases, at a predictable rate, as elevation and latitude increase and precipitation increases (also at a predictable rate) as elevation increases. Merriam pulled together these seemingly phenomena and developed a classification (meaning a formalized anming system) of what he called the "life zones" of North America, based also on his field work in Arizona.

Merriam maintained that all of North America could be divided into three major provinces. The Boreal Province has plant and animal species that evolved from the cooler climates of the north (the word boreal is derived from Greek and Latin roots, meaning north). This province occurs across Canada, with arms penetrating far southward along the Appalachian, Rocky Mountain and Cascade/Sierra Nevada axes at high elevations.

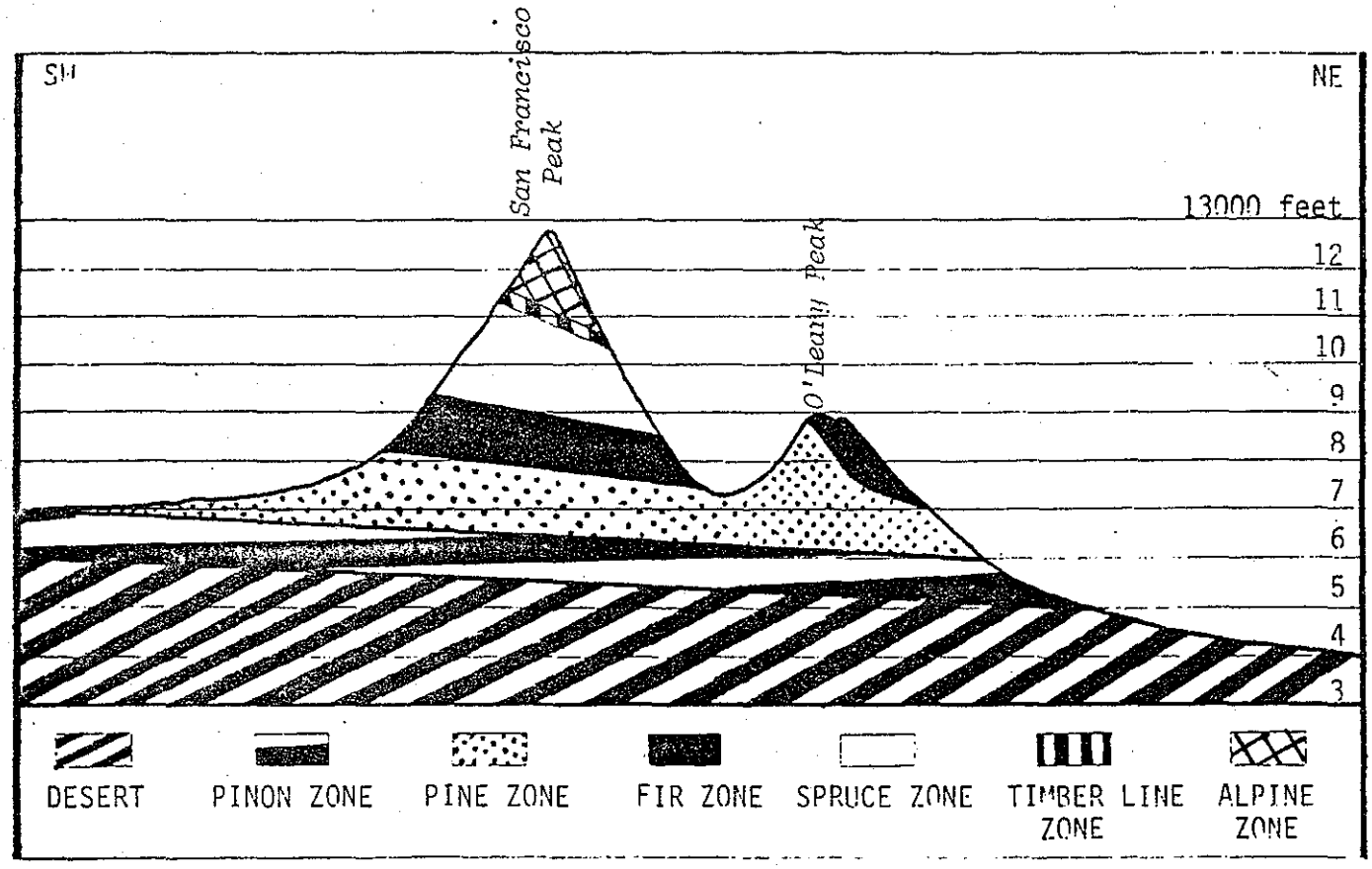
The Sonoran Province (Merriam later changed it to Austral Province: austral is derived from Latin roots meaning south) occurs throughout the southern United States and Northern Mexico, mainly at lower elevations. Its characteristic plant and animal species evolved from the deserts and lowlands of the mid-latitudes.

The Tropical Province includes the western and eastern coasts of Mexico, the mouth of the Rio Grande, southern Florida, and Mexico, from Mexico City south to the Panama Canal.

In northern Arizona, two of these major provinces or zones can be seen to include the actual subdivisions of the landscape, which most of us have known about intuitively for years. The Boreal Province includes the alpine tundra (the area of the San Francisco Peaks above timberline) and the coniferous (needle-leaved) evergreen forests dominated by spruce and firs (but not pines). The Sonoran Province includes the deserts, the grasslands, and the vast open woodlands dominated by juniper and pinyon pines.

Between the Sonoran and Boreal Provinces, Merriam placed the Transition Zone, which in northern Arizona is dominated by ponderosa pine. He felt that this area had too many species evolved from both Boreal and Sonoran Provinces to place it in either.

He further subdivided the Boreal and Sonoran Provinces. The Boreal Province includes the Arctic-Alpine Zone (the tundra, above treeline), the Hudsonian Zone (dominated by spruce), and the Canadian Zone (dominated by firs). The Sonoran Province is split



DIAGRAMMATIC PROFILE OF SAN FRANCISCO AND O'LEARY PEAKS FROM S.W. TO N.E., SHOWING LIFE ZONES AND EFFECTS OF SLOPE EXPOSURE

Adapted from C. Hart Merriam & Leonhard Stejneger (1890)

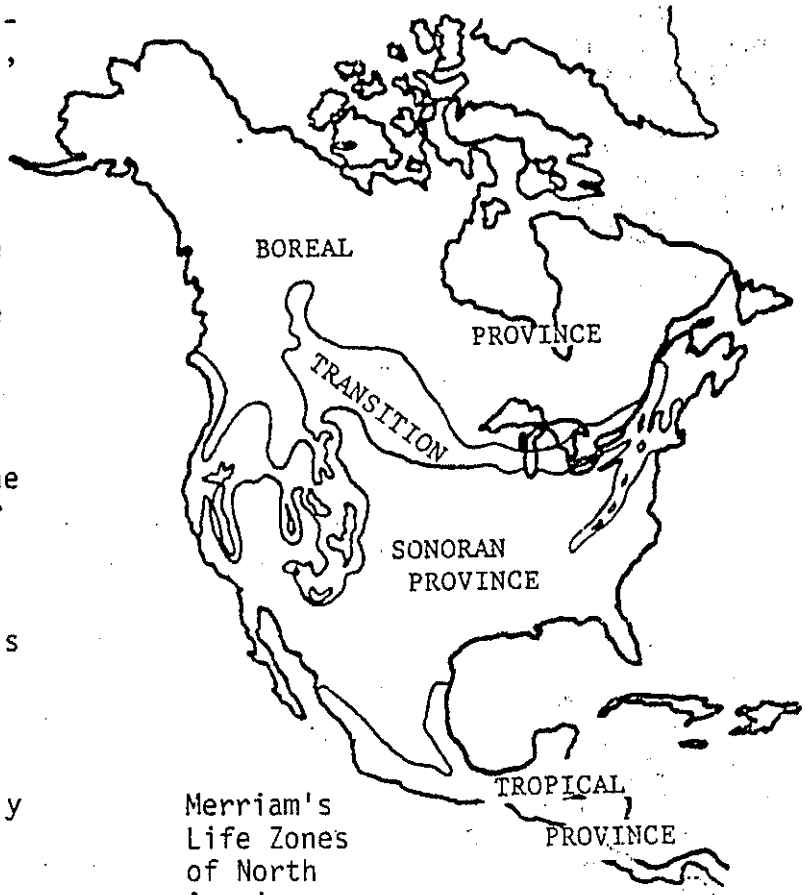
into the Upper Sonoran Zone (woodlands dominated by evergreen oaks, pinyons, junipers, and certain Mexican pines; grasslands; the Great Basin Desert - a cold desert) and the Lower Sonoran Zone (including the Mahave, Sonoran, and Chihuahuan Deserts - the warm deserts).

Other biologists at the time were quick to recognize the novelty and potential of Merriam's attempt to explain distributions of plants and animals (this is called bio-geography). His was the first system that pulled together information on climate, animals, and plants. It was a monumental step in the budding science of ecology, which developed from this and many similar studies of the relationships between organisms and their environments.

Merriam's system gradually fell into disuse, but surprisingly it persists to this day in the scientific literature. Perhaps this is because, while his contemporaries and descendants may have quarreled with the details of his work (ie. the numerous charts and graphs he presented showing temperature and humidity correlations with plant and animal distributions), the broad outlines of the theory are clearly accurate.

C. Hart Merriam impacted three quarters of a century of biology. His Bureau of Biological Survey increased the knowledge of North American mammals fourfold in five years. His most valuable contribution, the description of the life zones of North America, was based on one summer's work in northern Arizona. It cost the U.S. government $600..

Reference:
Merriam, C.H. & L. Stejneger (1890): Results of a biological survey of the San Francisco Mountain region and the desert of the Little Colorado in Arizona. North American Fauna #3. U.S.Dept. of Agriculture Publication.



Merriam's Life Zones of North America

VOLUNTEERS NEEDED!

The Tucson Chapter has a good general collection of slides on the flora and the fauna of the Sonoran Desert. In the past, Mildred Pierce has used the slides to compose a number of shows. These were presented to children, through the public schools, and to local garden clubs.

Mrs. Pierce has moved out of town and we now need a volunteer(s) to continue these educational slide presentations. For information call Judy Conger at 626-4595 (work).

Cactus Trade Meeting -
Tucson, Arizona
by: Ken Bolton

On the 7th and 8th of December, 1981 a meeting was held in Tucson, Arizona concerning the international and interstate trade of Cacti. This meeting came into being as a result of a discussion about the then upcoming changes in the Lacey Act. The four people involved in this discussion were Russel Kologiski - U.S. Fish and Wildlife Service, Albuquerque, N.M., Tom Gibson, Graduate student and researcher into the international plant trade at the University of Arizona, and the two Native Plant Investigators from the Tucson District, Steve Derks and Kenneth Bolton. During the discussion concern was expressed about the adding of plants to the Lacey Act (which before had provided for the control of illegally taken fish and wildlife but not plants) and the implications involved. Mr. Kologiski suggested a meeting of all parties concerned and the other three gentlemen pledged support in organizing and setting up the meeting.

In total, representatives attended from U.S. Dept. of Justice, U.S. Fish and Wildlife Service, Division of Law Enforcement Wildlife Permit Office, Office of Scientific Authority, U.S. Dept. of Agriculture, Animal and Plant Health Inspection Service, National Park Service, U.S.D.A. Forest Service, Arizona Sonora Desert Museum, Boyce Thompson A-boretum, Museum of Northern Az., Pacific S.W. Biological Service, Natural Resources Defense Council, Commission of Agriculture and Horticulture, Arizona, Texas Parks and Wildlife Dept., Arizona Natural Heritage Program, Cactus and Succulent Society of America, Arizona Land Dept., New Mexico Dept. of Agriculture and Horticulture, Nursery representatives from Texas, Arizona, New Mexio and California. Natural Resources Defense Council TRAFFIC, U.S.A. The last two organizations were highly instrumental in the passage of the plant addition amendments to the Lacey Act.

The desired aims for the meeting were several. The first was to explain to the parties most concerned what addition of plants to the Lacey Act means. The second aim was to bring together the various agencies (both State and Federal) so they could meet each other, compare problems and make plans for future communication and cooperation. Thirdly, it was hoped that other organizations from private, academic and commercial areas could air their concerns and provide input into enforcement and regulatory agencies.

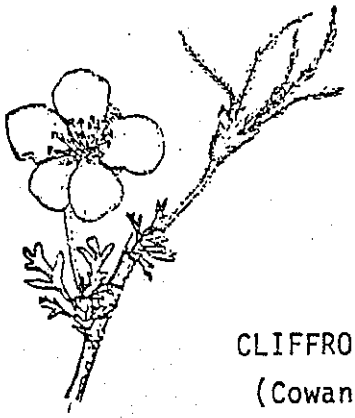
The Lacey Act amendments for plants were signed and the explanation of it at the meeting was as follows: "THE LACEY ACT makes it illegal to transport in interstate or foreign commerce wildlife or plants that are taken, possessed, bought or sold in violation of the laws of States or other countries." Under the new amendments violators charged with serious offenses would now face a possible felony charge with maximum fines of $20,000 and jail sentences of up to five years. Conviction on misdemeanor charges could now bring a $10,000 fine and a 1 year jail term. Civil penalties include fines of $10,000 or less. When local states laws are not taking precedence the plants protected come from the list compiled and listed by the "Convention on International trade in Endangered Species of Wild Faura and Flora", (CITES). The C.I.T.E.S. list of plants (Appendix I) was made to include all species threatened with extinction, and Appendix II plants, which are defined as all species which although not necessarily now threatened with extinction may become so. Many look alike plants are included in Appendix II. Plants on Appendix I and Appendix II would need export or import permits from the U.S. Fish and Wildlife Permit Office (export) and APHIS (import).

Speeches were given on Trade patterns in Mexico, California, and Arizona, collecting on Bureau of Land Management and National Park Lands, overcollecting of plants, status of wild populations, the various state laws in the Southwest, the roles of

the Office of Scientific Authority, the Endangered Plant Enforcement Program, the Endangered Species Act and role of APHIS (Animal and Plant ..alth Inspection Service.

Several Nurserymen who deal extensively with cacti also spoke and voiced their views of trade and endangered plants. Two of the highlight speakers were Hernando-Sanchez-Mejorada from the Institute of Biology, Universidad Nacional Autonoma de Mexico, and Edward Anderson, Department of Biology, Whitman College, Walla Walla, Wa.

I think that all who were at the meeting agreed on the seriousness of trade in plants which are endangered not only in their collection but in their transportation and handling. It became clear at the meeting that the general lack of knowledge and research about Cacti, (and other threatened plants) is as serious a problem as the public's lack of knowledge about widespread plant, wildlife and ..bitat destruction. It is not a ..oblem of the future but one of the present. I believe that this meeting is but one of many steps that need to be taken.



CLIFFROSE
(Cowania mexicana)
by Margaret Kurzius

CHAPTER NOTES

Tucson Chapter - Upcoming Activities

All programs unless otherwise indicated are held at the Porter Gardens, 2150 N. Alvernon Way.

Feb. 10 (Wed.) 7:30	"Riparian Zones of Sabino Canyon", David Lazaroff. Sabino Canyon Visitors Center.
March 10 (Wed) 8:00	Botanical Lecture of the Year - "The Hybridization of Cacti" Dr. Donald Pinkava, Professor of Botany and Herbarium Director at Arizona State University. This program is co-sponsored by the Dept. of Plant Sciences, University of Arizona, and will be held in Bio-Science East, Room 100.
March 14 (Sun) 9:00 a.m. - 4:00 p.m.	10th Annual Flower and Garden Fair in Reid (Randolph) Park. Tucson ANPS will have an informational booth on use of native and other arid-land plants in the landscape. Many other booths covering all aspects of gardening in the southwest will be set up. If you would like to help at our booth for a few hours between 9 a.m. and 4 p.m. contact Dave Palzkill (326-9715) Bring a picnic lunch if you wish.
March 20-21 (Sat-Sun)	Cactus Class begin. Four field trips to study and observe cacti in their native habitats under the guidance of Gene Joseph

are planned for March 20-21, April 10, May 8 and May 15. Each field trip will be to a different location. Enrollment will be limited to 20 persons. The series of 4 classes will cost $8 per person. Members will provide their own transportation or car-pool. The first field trip will be to Organ Pipe National Monument on March 20-21. Call Dave Palzkill for information (326-9715).

April 10 (Sat)	Cactus class field trip to Gunsight Pass in the Santa Rita Mountains.
April 14 (Wed) 7:30	"The Boojum Tree", Robert Humphrey, former professor of Range Management, University of Arizona.
April 24 (Sat) (10:00 a.m. - 4:00 p.m.)	Annual Meeting of all ANPS members will be held at Tumamoc Hill in Tucson. Meet at the facilities just inside the gates at the foot of the hill.
May 8 (Sat)	Cactus class field trip to the Ruby area.
May 12 (Wed) 6:00 p.m.	"End of the Year" Pot Luck Dinner and Program. Dinner begins at 6:00 p.m. R.S.V.P. to Judy Conger- 623-8357. Bill Kinnison will present a slide show on arid-land plants.
May 15 (Sat)	Cactus class field trip to Owl's Head in the Tortolita Mountains.
June 19 (tentative)	All day visit to Ramsey Canyon preserve. The lemon lily (Lilium parryi) should be blooming. Limited to 12 persons because of preserve policy. Telephone Dave Palzkill for reservations (326-9715). Carpooling to be arranged.
July 17 (tentative)	Visit to Canelo Hills Preserve near Elgin. Details available in early summer.
Sept. 3-6	(Labor Day Weekend, Friday evening - Monday). 3rd Annual visit to El Coronado Ranch at Turkey Creek in the Chiricahua Mountains. An announcement with details about arrangements and applications for space reservations will be mailed to all Society members in June.
October 23 or 30 (tentative)	Fourth Annual Native and Arid Plant Workshop to be held at the Porter Gardens, 2150 N. Alvernon Way, Tucson.

NOTE: Other 1 day hikes are tentatively planned for this spring with no specific dates in mind yet. If you would like to be contacted and given information on these hikes, contact Dave Palzkill (326-9715).

PLANT TAXONOMY CLASS
sponsored by
ANPS Tucson Chapter

The Spring Plant Taxonomy class is now in the planning stages. It is scheduled to begin in early March and run for 8 weeks. For more information call Don Lobiondo (299-6351) evenings. A sign up sheet for interested parties has been started.

ANPS Display at University of Arizona Science Library

Tim Clark and Judy Conger have put up a display in the main lobby of the Science Library at the University of Arizona. The display features the work of illustrator, Lucretia Hamilton, and Authors Ray Turner and William McGinnies, all ANPS members.

The exhibit will be on display until March 15.

Phoenix Chapter, past and present:

November 14 Phoenix Chapter Field Trip to Arrastre Creek in the Weaver Mountains NW of Wickenburg. Led by Mary Butterwick - Field Botanist with the Bureau of Land Management. This area is a beautiful unspoiled Riparian habitat that houses stands of walnuts, ash and alder. The slopes have an unusual variety of cacti and succulents.

December 7 Christmas Potluck at the Botanical Garden. Members brought dinner and afterwards Phoenix chapter members witnessed a demonstration on making Christmas decorations using native plant material. The wreaths and table planters and plants brought to the meeting were raffled off for the groups treasury.

January 11 The January meeting features Charlie Sacamano from the University of Arizona Department of Plant Sciences. He'll talk on the Use of Native Plants and Boulders to Create a Natural Stream. His talk begins at 7:30 p.m.

The ANPS has been invited to participate in the Desert Botanical Gardens Annual Cactus Show, February 20-28, 1982. If there are any suggestions for a display at the show contact Marc Mittleman, 343 East El Parque, Tempe, AZ 85251 or telephone. The booth at the show should provide information on the activities of the Society, its goals, accomplishments and might be a source for new members. Handouts, flyers and information can be given out.

The ARID LANDS PLANT FAIR will be held again this year. It will take place at the Fiesta Mall in Mesa on April 17 and 18, 1982. Anyone that would like to volunteer to help during this event should contact Marc Mittleman at 829-1885 after 6 p.m.

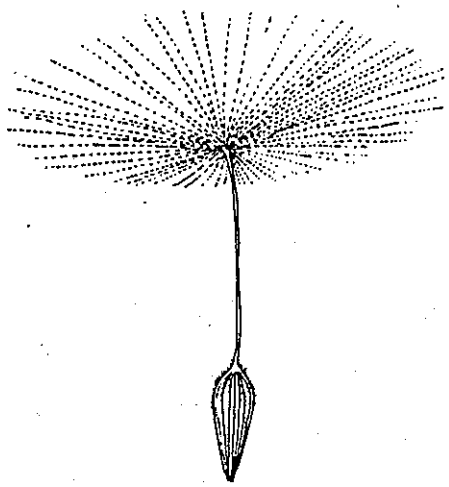
The Fair is educational in purpose, planned to inform the public about the beauty, usefulness and water-saving aspects of drought tolerant plants, and at the same time stress the conservation of native flora.

ANPS ANNUAL MEETING APRIL 24

Mark your calendars now for this year's Annual meeting to be held on Tumamoc Hill. The program will begin at 10:00 a.m. in the building at the foot of the hill, just inside the gates. The days agenda includes:

- a short business meeting to elect new State ANPS Directors.
- History of Desert Laboratory - Dr. W. McGinnies
- Vegetation of the Area - Ray Turner
- Future Plans for Tumamoc Hill - Ken Brickler
- A short hike on the hill to see the old Carnegie Desert Laboratory and to look at the vegetation.

Bring a brown bag lunch, refreshments will be provided.



Fruit of WILD LETTUCE
(Lactuca serriola)

drawing by Lucretia Breazeale Hamilton

Courtesy of University of Arizona Herbarium