

ON THE DRY SIDE
by Timothy Chapman

If there were a Mount Rushmore of succulent plants carved in some great, rocky cliff face, I think Adenium would be one of the great icons represented, probably the third one over. (I picture five rather than four stony figures. Carnegiea would undoubtedly be our spiny George Washington, perhaps one of the window-leaved haworthias to fill in for the bespectacled Teddy Roosevelt. You and your cliff-carving crew can choose two of your personal favorites for the other photosynthetic heroes.) Anyway, there it is, a 60 foot high granite Adenium obesum. Awesome, isn't it? As we raise our hands to shield our eyes from the sun, we admire the great swollen stem, the smooth, arching branches. And those fabulous flowers. Carving those was no mean feat, let me tell you.

There's something solid and trustworthy about Adenium. Maybe it's because they're not too terribly demanding. Or maybe it's the flowers that sprout so plentifully and last for days. If you will all take a seat on one of these rocks and try to make yourselves comfortable, I'll tell you a little something about this wonderful plant. The wind is brisk, so watch your hats.

Taxonomically speaking, we are in the Apocynaceae. Some of the less succulent members of this botanical clan are the oleander (Nerium) and little Vinca. Adenium and many of its relatives have a thick, bitter, poisonous sap. So you, leaning against the tree back there, spit that out. Perhaps even more familiar to our crowd is the genus Pachypodium. In fact, Adenium is sort of a pachypodium without the prickles. That smooth, lovely trunk is definitely part of this plant's appeal.

Adenium is considered by many to be a pachycaul, which is a transitional phase between plants with a genuine caudex and stem succulents. A pachycaul (= "thick stem") is

different from a true caudiciform plant in that there is a smooth continuity from the thick amorphous trunk to the self-supporting branches and on to the shoots, whereas in the caudiciform there is a more abrupt change from the distinct mass of the caudex to the often viney and deciduous stem. Of course, Adenium's trunk can still be called a caudex, so go figure. The exact... yes, do we have a question? Yes ma'am, those are indeed climbers rappelling down onto the cliff face. Their mission will become clear a little later on.

Depending on who you ask, there are either several species of Adenium or just one. The splitters name between six and fourteen, the differences being based on variation in the form and arrangement of the leaves and flowers. The lumpers, however, shake their fists and declare that these are simply geographical variations, since different "species" are never found in the same area. In this case, the genus Adenium can be seen as having but a single species: A. obesum. It's range, by the way, is in the hotter, drier regions of Africa, from the southwest through Kenya and on into Arabia. I hope we are far enough away from the monument that the noise of jack hammers carving away at the face of the cliff is not too loud.

Which brings us to the flower. Since I don't think that most of you can see clearly this Adenium blossom I hold in my hand, I have hired a climbing crew to cut one of the giant granite blossoms in half so you can all see the inside workings of the flower. The "karoo rose", as it is sometimes called, ranges in color from pink to red. There are five petals. Don't be alarmed by that thundering crash. Tons of granite petals and corona have plummeted to the cliff base, allowing us to see the dissected blossom in cross section.

The first thing you may notice about the flower is that it is divided into two chambers, an outer and an inner, separated by a cone-shaped partition. The outer chamber is

open to any pollinator that may happen to buzz by looking for some chow and a good time. Now I know that those look like stigma (where the pollen is received in fertilization) that are sprouting up from the partition. Actually they are the long, furry ends of the stamens, or male parts of the flower, and the act to guide our lusty pollinator to the goods. It is the stamens that form the cone-shaped partition, and on its underside are the masses of pollen. The only way into the inner chamber is through narrow slits in this stamen-cone.

Now, onto the female part of the flower. As we can see in our cliff-face illustration, the female bits are all protected from the elements and various other party-crashers down in the inner chamber. At the base of the inner chamber is the ovary. Traveling up from the ovary and toward the conical partition of stamens is the tubular style. At the style's top end are the real stigmas, ready to receive pollen with the aid of a sticky glue. This top end of the style is attached to the inside of the cone made by the stamens, where the pollen is. And even though the pollen and the stigmas are very close together, Adenium will not pollinate itself; it is not self-fertile. What is needed is an insect with a long proboscis and loose morals. (Our local oleander enlists the aid of the hummingbird-like hawkmoth for its pollination.) The proboscis, covered with pollen from another plant's flower, travels down the outer chamber and through the slits in the cone-shaped partition, leaving the pollen on the gummy stigmas at the top of the style. As it withdraws at just the right angle, it picks up more pollen for the next flower. The eventual result of all this fooling around is a pair of fruits bursting with tufted seeds, all ready for a gust of wind to disperse them.

Neat, huh? And pretty complicated. So complicated, in fact, that some authors see a close relationship between the Aponyaceae and the Asclepiads (Stapelia et al.) The carrion flowers have a similar structure, fruits, and tufted seeds.

These are very sophisticated plants indeed, another good reason to have Adenium sculpted in stone. The carvers certainly did a convincing job on those granite stamens.

Adeniums are frost-tender plants and enjoy some protection from the full Arizona sun. They can take liberal amounts of water during their warm weather growing season. They may want to drop their leaves during the cold winter months when only light occasional watering is necessary. If kept warm, however, they may keep their leaves and take more water. Cactus they ain't.

So, thank you all for braving the elements and coming out to this grand monument dedicated to our favorite plants. Now, where are those port-a-potties?



AN APPEAL FOR ORIGINAL OBSERVATIONS

In this issue Jim Elliott has offered his observations on saguaro "molting."

Many of you have intimate experiences and knowledge of surprising, unusual, probably unreported manifestations among your own plant.

It is all worth hearing about and reporting.

Your editor will be very happy to print any paragraphs concerning unusual displays among the plants you are so well acquainted with-----your own.

Vera Gamet, Editor.



LARGE SCALE SPINE RENEWAL OF THE SAGUARO CACTUS
by Jim Elliott

In the past 15 years I have relocated thousands of saguaro cactus while doing business as Arizona Cactus Sales. In spite of taking extraordinary measures to protect these plants through thick carpet padding, on several occasions I have been chagrined to discover large sections of spine clusters pulled off. Surprisingly the saguaro sometimes is undamaged with a complete complement of spines remaining. A close examination of these plants reveals a complete set of new spines. These have grown in under the existing spines which are no longer attached securely to the areoles, much like permanent teeth replacing baby teeth. Without some outside agent to remove the older spines they remain on the plants until they weather off. The overall effect is to give the saguaro a rather 'bushy' look with the double spination.

Birds molting their plumage and snakes shedding their skins as a form of renewal is old news and well documented. That saguaros have a similar mechanism is not! I have never seen any reference to this in the literature and do not have an explanation as to why or even when it occurs. Current research points toward the essential defense a saguaro's spination affords to combat potentially fatal overheating during extreme heat episodes. I do know that some plants have the capacity to replace their spination.

Unfortunately, the realization that these specimens may have been unique did not occur to me until a number of repetitions gradually have forced me to see instead of just look. In general all of the saguaros that have exhibited this adaptation have been five foot tall or taller. While I have not conducted anything resembling adequate documentation, it seems that this renewal (duplicate spination) occurs only towards the end of periods of above average precipitation. They have all been in very robust condition. I guess this is logical as a plant could not commit an exorbitant amount of resources to rebuilding its defenses if it were in a debilitated condition.

This is a subject that intrigues me and I would assume it must occur in species other than saguaros also. If you have knowledge of similar behaviors, please contact me through this publication and provide as much documentation, and rumination, as you can. I will consolidate whatever data surfaces and attempt to fill in many of the blank spaces from my own experiences. Perhaps we can convert our observations from random happenings into theories or even into fact if we get some professional help. Quien sabe?



MUCH MORE MULCH by W. GOERGE WATERS

For many years Lawrence D. Hills was gardening correspondent of the London Observer, a newspaper I enjoyed twenty years ago and which, I am happy to learn, still flourishes. Hill's writing was marvelously economical having a spareness that gave it telegraphic urgency. He was also secretary to the Henry Doubleday Research Association, a small organization in Braintree, Essex, that disseminated information on soil health and organic gardening.

In 1961 the Observer published Hill's SLUDGE GUIDE, a three-penny booklet that "will help gardeners buy fertility from those corporations that sell municipal compost or sludge." (You will detect Hill's refreshing terseness even in this short excerpt from the introduction.) The booklet summarized the qualities of seventeen sewage sludges, and four municipal composts with the ardor of James Beard on his favorite restaurants. I followed Hill's advice, bought municipal compost and came to appreciate the advantages of mulching in the garden.

The soil in the garden I then had was mainly sand and gravel, through which water passed as through a sieve. A few days without rain in the summer left plants desiccated and wilting.

Something was needed to improve the soil, and a heavy layer of compost did the trick. But something cheaper than municipal compost was needed because I had many square yards to cover and little money to spend. It also seemed wise to use a thick layer of mulch so that in decomposing it would deliver a heavy deposit of humus to the soil, improving its fertility and water retention more quickly than would a thin layer.

A search of local industries and their wastes located a brewery that had hops to dispose of, and this became my mulching material for several years. A five-ton load was delivered to me each spring---a small mountain of hops (flowers of the hop vine *Humulus lupulus* are light and fluffy even after stewing for beer making) that steamed gently by the gate as I worked all day barrowing it into the garden and spreading it four inches thick between plants.

The mulch not only reduced the need for water and kept plants turgid and growing during dry spells, it also suppressed weeds and reduced garden maintenance. The color of the hops improved the look of the garden, too, hiding the inhospitably stony native soil beneath a carpet of pure tobacco brown..

With the mulch in place there was little to do in the garden except cutting grass and amusing myself taking seeds and cuttings for propagation, grafting my favorite apples and pears onto dwarfing stock and attending young plants in the greenhouse.

The lawn was a tyrant: watering in summer could not be ignored and mowing twice a week was unavoidable. I conceived the idea that without the lawn I could reduce obligatory work to one day a year----the day mid-May when the hops arrived.

Neighbors and friends tut-tutted the idea, but I went ahead and redesigned the garden without lawn and left a stand order for hops at the brewery.

After a few years of generous mulching the once-harsh gritty soil had the springiness of a mattress, and the plants flourished and grew larger. The order for hops was reduced to a three ton load.

There was, however, an unexpected chore that could not be avoided----sweeping hops off the path. You see, the birds loved the hops and spent many happy hours scuffling through the mulch in search, I suspect, of the seeds. Displaced hops littered the path. Many birds seemed to lounge in the mulch after a feed in a rather stupified way. I wondered whether their torpor was induced by the seeds. Humulus lupulus is, after all a cousin of Cannabis sativis.

Despite their dissolute condition, the birds were never prey to the neighborhood cats because the family dog chased the felines away. But was the dog afraid of the birds, or amused by them?

The above article was taken from the Pacific Horticulture magazine, editor W. George Waters. and through the courtesy of Sol Kleinman of "THE BEAVER TALE" EDITOR OF THE Cactus and Succulent Journal of Southern Nevada.



Do not recklessly spill the waters of your mind
In this direction and in that, lest you become like a spring
Lost and dissipated in the desert
But draw them together in a little compass and hold them
still, so still
And let them become clear---so limpid, so mirror-like.

--by Edward Carpenter, British poet.
The Lake of Beauty.

DIATOMACEOUS EARTH (DE)

Plant growers are currently experimenting with a potting soil additive that appears to kill soil mealy bugs. Not a chemical, not an artificially produced poison, it is a natural substance-----Diatomaceous earth. You have seen bags of this stuff in hardware stores because it is used in swimming pool filters.

Composed of the skeletal remains of diatoms, microscopic sea creatures, DE is lethal to insects because its tiny particles have razor-sharp edges that pierce the insects epidermis, causing them to dessicate and die.

Dry up and die? Sounds too simple, doesn't it? Especially in light of the expensive chemicals we have resorted to in the bug battles only to have them build up a tolerance to it.

African violet growers, who have used DE over several seasons, have eliminated soil mealybugs from their plant collections which were long plagued by them. Some have also found a reduction in the problem of thrips as well as springtails and fungus gnats which live in the soil during part of their life cycle.

Diatomaceous earth is also effective against such household pests as cochroaches and can be spread around flower beds to discourage slugs and snails.

Vast deposits of DE exist in the Western United States. The commercially processed product has been partially melted and baked, resulting in a white substance that feels almost silky to the touch. It should be used in well ventilated areas since it releases dust in the same way that perlite does. The natural DE is preferred, if you can find it.

I have just begun adding about two (2) heaping tablespoons of DE to each quart of potting mix. I don't know about your asclepiads, but mine have been martyrs to mealybugs for years. I have tried everything to combat them. The prospect of an effective weapon which is also natural and safe to use, is too attractive to ignore.

TAKEN from the Sunset Succulent Society's SLIGHTLY SKINNY SHEET
Judy Campbell editor, by way of the Michigan CASS SPINAL COLUMN,
Lous Kilbert editor. Courtesy of Sol Kleinman, editor of THE
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