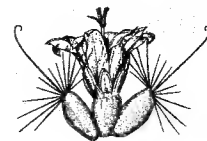
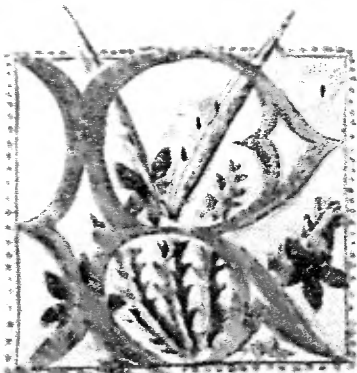


ESPINAS Y FLORES

Newsletter of the San Diego Cactus and Succulent Society, Inc.

Affiliated with the Cactus and Succulent Society of America,
Volume 36, Number 12, Saturday, December 1, 2001 at 12:00 Noon

PROMOTING KNOWLEDGE, STUDY AND INTEREST IN CACTI AND SUCCULENT PLANTS, VISIT US AT SDCSS.COM



Rest is not quitting .

The busy career,
Rest is the fitting
Of self to one's sphere.



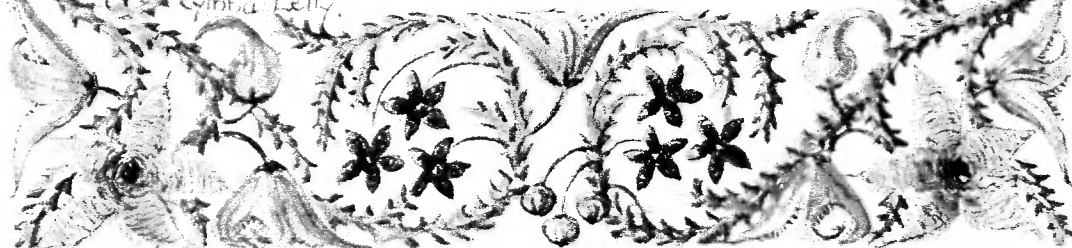
'Tis the brook's motion, .
Clear, without strife, . .
Fleeting to ocean
After its life.



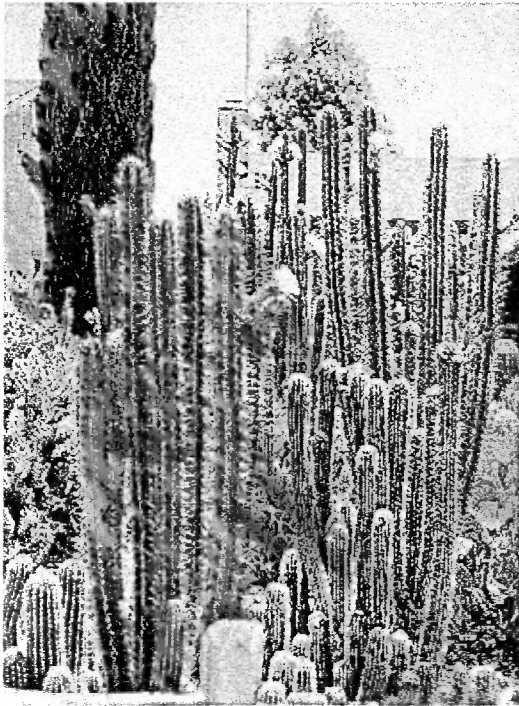
'Tis loving and serving
The highest and best, .
'Tis onward, unswerving—
And this is true rest .

Goethe

by Anna Letty



VOLUNTEERS NEEDED!



Hello, I am from the Stockton C&S society. I want to donate the world's largest private collection of columnar cacti to the San Diego Zoo. Because of the recession they cannot at this time buy a greenhouse to make at the zoo site. I want to buy a temporary pole type shelter to set up there to hold some plants for one or two years until they buy a regular type greenhouse there to keep the plants in. Can you make a list at your next meeting to find out if there are any volunteers to take care of the plants for a couple hours on the weekends, such as watering and occasional bug spraying? Please get back to me on this. Thank you.

Bob Ressler- Treasurer, librarian, Stockton C&S society, California USA Milky Way galaxy. Photopoint website is in the cactus mall pictures section (in the photopoint photo store) or click here: <http://albums.photopoint.com/j/AlbumList?u=162853> Also our new columnar site with Tony Mace of England under construction go to the cactus mall .

Cover Plate: Reproduction of a Christmas card made by botanical artist, Cythna Letty, FCSS, for Alain White, co-author of *The Stapelieae*, during their collaboration on that monumental work. Note that the design of the card is made up entirely of parts of *Stapelieae*: stems, flowers, fruits and seeds! Courtesy of J. Reese Brown. Published on the cover of the Cactus & Succulent Journal, Vol. 52, 1980.



Please send your letters, artwork, poetry, Cactus or Succulent of the Month articles, puzzles, comments, or criticisms, etc. to:

Tom Knapik

4669 71 Street

La Mesa, CA 91941

Phone (619) 462-1805 e-mail eyf2000@aol.com

FAX (858) 569-8510

Newsletter submissions are due before the 14th each month unless other arrangements are made.

Espinas y Flores, the newsletter of the San Diego Cactus and Succulent Society, Incorporated, P.O. Box 33181, San Diego, CA 92163-3181, is published monthly with the exception of a combined May-June issue (11 issues per year). Newsletter circulation is approximately 350, with an additional 20-30 issues going to educational institutions, botanical societies, cactus and succulent nurseries, local publications, related natural history events, exhibits, and other interested groups or individuals upon request. Subscriptions are \$15 per year for bulk mail within the U.S.A.

Opinions stated in the articles and editorials of *Espinas y Flores* are solely the opinions of the authors or editor and do not necessarily represent the opinions of other SDCSS members, the Board of Directors, or the organization in general. All materials submitted to *Espinas y Flores* for possible publication may be edited in form and content. All material in the *Espinas y Flores* may be reprinted by other nonprofit organizations (unless such permission is expressly denied in a note accompanying the material) provided that: proper credit is given to the SDCSS, *Espinas y Flores*, and the author. Please send one copy of the publication containing the reprinted material to the editor. Reproduction in whole or part by any other organization of publication without the permission of the editor is prohibited. Volume 36, Number 12, Published November 19, 2001.

PRESIDENT'S MESSAGE

DECEMBER 2001

The November meeting was quite fun and it was good to see so many of you there. WELCOME to our new members! I hope you enjoyed the change of pace with my talk on ethnobotany (or at least were not completely bored), as well as the more 'hands on' talk by Tim Jackson. He certainly did take some of the mystery out of the growing of Conophytums and, if I read the audience correctly, made a few converts to these amazing little jewels. Thanks for the great talk Tim!

We also held the election for Board of Directors. At the break we came to our senses and realized it would only take approval of the membership to temporarily suspend the bylaws to allow all the nominated candidates to be elected and serve on the board... Congratulations to new board members Mark Fryer, Phil Favell, and Herb Stern. I look forward to working with you. Once again I invite any member with ideas to improve our society to contact any Board member with your suggestions - all our numbers are listed on the back page of your newsletter.

HOLIDAY PARTY—DECEMBER 1 ... we will be having a traditional Turkey Dinner this year as well as our now traditional - potluck desserts. I just love this part - there are always so many scrumptious selections. So make your reservations TODAY. Special thanks to Laura De Merritt for all her efforts in searching out the best food for the best price, a true deal at \$10.00, and you get a gift plant as well!

Also remember to bring something for the gift exchange (this is separate from the gift plant). It works like this; you bring in a nice gift plant (or other item), all the plants are judged and the best set aside for our auction. The owner of that plant gets first choice at the other plants, then the owner of the plant they select gets next pick on down the line. This is lots of fun so look around for some special plant or other item from home and join in the fun!

Don't forget the Winter Show and Sale January 12, 2002 ... get your winter growing plants ready to show off!

Best Wishes for a Peaceful Holiday Season,
Pam Badger pambadge@earthlink.net

Brag Table Winners

Judged by Tim Jackson

Cacti

1. *Turbincarpus jauernigii*; Juergen Menzel
2. *Copiapoa barquitensis*; Tom De Merritt
3. *Ariocarpus bravoanus*; Juergen Menzel

Succulents

1. *Othonna herreae*; Rudy Lime
2. *Pseudolithos caput-viperae*; Juergen Menzel
3. *Aeonium sedifolium*; Terri & Colette Parr

CALENDAR OF UPCOMING EVENTS

❄️ DECEMBER

— 2001 —

- 1 SDCSS Holiday Dinner **THIS IS A CHANGE FROM THE FEBRUARY CALENDAR.** Details in the President's message. Please plan on attending.

❄️ JANUARY

— 2002 —

- 12 SDCSS Winter show will be this date. Please groom those winter growers and plan to show them off! Your assistance will be needed. Please contact Ed DeLollis to find out how you can help (760-945-7892).

❄️ FEBRUARY

- 22-24 C&SS of New Zealand Convention. Hosted by Bay of Plenty Branch at the Hotel Armitage, Tauranga. Info: Andrew D A Ross, PO Box 1011, Tauranga, New Zealand, or e-mail: cactus@xtra.co.nz.

❄️ APRIL

- 7-13 27th Congress of the International Organization for Succulent Plant Study (IOS) at the Desert Botanical Gardens, Phoenix, AZ. See IOS Web Page: www.iosweb.org

❄️ JUNE

- 1-2 SDCSS Spring Show and Sale. Start planning for those award winners, it is never to soon!
- 7-9 Mid-West Regional Conference, Kansas City, MO. Details: Eva Allen 816-444-9321 or e-mail: emallen@earthlink.net Check out their web page at <http://ourworld-top.cs.com/kccss1809>
- 8-9 C&SS of Queensland Show and Sale Mt. Cootha Botanic Gardens. Details from club, e-mail: cssq@powerup.com.au or check out their web page at <http://www.powerup.com.au/~cssq>

FYI FYI FOR YOUR INFORMATION FYI FYI

⇒ READ THIS CAREFULLY → BRING IN THOSE PLANTS FOR OUR WINTER SHOW
Start grooming your plants for our January show. Pssst, don't tell anyone ... but our show has grown to the best one around. Our show is during the perfect time of the year and we 'got' the best growers of winter succulents around. Also, the venders will make a good showing this year, save up that holiday money to make some great purchases.

⇒ Please call the show chairman, Ed DeLollis and let him know how you will help, 760-945-7892. We will need people to bring in boxes and bags, folks to help the venders set-up in the morning and break down their displays in the evening.

⇒ Did you get the message that our Holiday Party is a week early! Well it is, read the President's message for details on Page 3, and fill in the form and mail it NOW. See Page 5 for this form.

⇒ Is your membership about to expire? Not sure: look at your mailing label. If it says 2002/01 in the upper right corner, please mail in your check for renewal. HEY, save a stamp and pay for your place at the Holiday Party and Membership in the same envelope. The membership form is on the other side from the Holiday Party form.

⇒ In 1928, George Lindsay visited Baja and met Doña Anita Espenosa. George was one of many early Baja explorers to visit her. Recently, Frank Thrombly and friends visited her and she said, "Say hello to Bob Taylor and to everyone who has visited over the years."

Wishing You A Happy Holiday Season, From Our Household To Yours

PROGRAM FOR DECEMBER 1ST, 2001

HOLIDAY PARTY - 12:00 NOON - RM 101
POT LUCK DESSERTS
LUNCH PROMPTLY SERVED at 12:30 PM
SPECIAL PLANT EXCHANGE
DISTRIBUTION OF GIFT PLANTS TO MEMBERS
MINI-AUCTION
(NO LIBRARY and NO PLANT SALES)

BY POPULAR DEMAND WE'RE BACK TO A TRADITIONAL
HOLIDAY BUFFET MENU:

- * Roast Turkey
- * Sage Dressing
- * Corn
- * Mashed Potatoes with Giblet Gravy
- * Tossed Green Salad
- * Fresh Vegetable Trays
- * Cranberry Sauce
- * Rolls with Butter
- * Coffee, Tea, Soda, Beer, Wine

WE'LL CONTINUE WITH OUR PAST "TRADITION" AND HAVE A POTLUCK
DESSERT . . . so please bring something sweet and delicious!

Please mail as soon as possible* to make your reservation, make checks payable to SDCSS.

Mail TO:

SDCSS

P.O. BOX 33181

SAN DIEGO, CA 92163-3181

Please reserve a Holiday Lunch for Members(s) @ \$10.00 per Member:

MEMBER NAME _____

MEMBER NAME _____

Please reserve a Holiday Lunch for Guest (s) @\$10.00 per Guest (sorry, no gift plant for non-members or members not purchasing a lunch)

GUEST NAME _____

GUEST NAME _____

The Plant Exchange will be conducted during the luncheon, Gift Plants during dessert.

* If you want to insure a dinner, mail in your check and call the President to reserve your space!

SAN DIEGO CACTUS & SUCCULENT SOCIETY MEMBERSHIP APPLICATION

The San Diego Cactus & Succulent Society is a nonprofit, hobby organization (affiliated with the CSSA) created to stimulate interest in succulent plants. This society brings together people with a common interest for the purpose of educating the public about the beauty and uniqueness of these remarkable plants, encouraging proper collecting and maintenance of the plants through preservation of native habitats and horticultural propagation, and to foster good fellowship. You are invited to join our society, whether you are an expert, amateur, or a beginner with an interest in unusual plants and flowers.

You will receive our publication *Espinas y Flores*, one of the best cacti and succulent newsletters. We produce 11 issues a year. You will get great articles and keep up with club news for the next year.

Our meetings are on the second Saturday of the month (except June and September) and newsletters are received the week of the meeting. We offer knowledgeable speakers who present educational & entertaining programs; many are world renowned scholars, botanists, explorers and authors. The San Diego Cactus & Succulent Society's Annual Show and Plant Sale occurs the first weekend of June in Room 101, Casa del Prado, Balboa Park, San Diego. A wide range of succulent plants, ceramic pots, and growing supplies are available during most meetings. There is also a plant exchange table and a library. For more information regarding membership or the club, please write to the address below or look us up on the web at SDCSS.COM.

Yes, I/We wish JOIN or REJOIN the San Diego Cactus & Succulent Society.

NAME(S): _____

ADDRESS: _____

CITY, STATE, COUNTRY & ZIP+4: _____

PHONE/FAX/E-MAIL: _____

Do you know that for an additional \$5.00 paid on your membership dues - you can have *Espinas y Flores* delivered by first class mail, instead of bulk mail? Check here and add \$5.00 to your dues payment, if you are far away you will receive our newsletter faster.

Dues are \$15.00 per person, \$5.00 for each additional person in the same household for (bulk rate USA), add \$5.00 for First Class Delivery (optional). International dues, including Mexico and Canada, are \$30.00 (US funds), additional members as above.

◆ Amount enclosed \$ _____

Thank you for joining the SDCSS

SEND THIS FORM TO:

SDCSS - Treasurer/Membership, P. O. Box 33181, San Diego, CA 92163-3181

The effects on research specimens and museum collection items from electron beam irradiation of mail by the US Postal Service

1. Proposed radiation technology to be used in sterilization of mail sent by USPS

The US Postal Service intends to irradiate selected mail to sterilize it from possible anthrax contamination, using high-energy electron irradiation technology. Irradiation facilities are to be established at a number of major mail handling centers. At this time it is unclear whether irradiation will be restricted to first class mail or whether package mail is also targeted for this treatment. Some information on the methodology was obtained from Mr. Jeff Boeger of the SureBeam Corporation, which manufactures the 150 kW linear electron accelerators that will be used to irradiate mail by the USPS. This equipment produces electrons with energy of 10 MeV. Electrons of such high energy have a relatively high penetrating power; for example their range in aluminum is about 2 cm. In organic materials, mainly composed of elements with a much lower Z value, this range will be appreciably longer, and for mail (paper, cardboard) it will be approximately 30 cm. The technology is used in the irradiation of food, for purposes of pathogen sterilization, where the packaged food is transported on a conveyor belt through the radiation field. This same technique would be used for the application to USPS mail.

Besides the biocide application, radiation is also used industrially to initiate specific chemical reactions (such as polymerization of synthetics) or, through the chemical effects, to affect the properties of materials. A few examples of the latter: the plastic coating on virtually all electrical wire is irradiated to render it more resistant to weathering; heat-shrink tubing is irradiated polypropylene; and the non-stick coating of cookware is irradiated Teflon -- where the non-reactivity of Teflon is modified so that it will adhere to the metal cookware surface, while still retaining most of its non-stick characteristics.

2. Interaction of radiation and materials

High energy irradiation causes the deposition of large quantities of energy in the irradiated material, and this in turn causes chemical reactions that are responsible for the desired as well as undesirable effects. The irradiated matter absorbs the energy through ionization. Thus, an electron from the accelerator can hit an atom in the target material, and in this process the former may lose all or part of its energy. The amount of absorbed energy minus that needed to induce the ionization is transmitted to the ionization products; the electron(s) emitted from the atom will move at high energy through the material and induce secondary ionization. If the original electron did not transfer all its energy in the first interaction with a target atom, the process is repeated, until all its energy has been transferred. The secondary ionization process will continue till all the kinetic energy of the accelerator particle has been used up in ionization processes.

The ions that are formed will eventually recombine with free electrons, but these recombined atoms (and molecules) will be highly energetic and chemically reactive. Free radicals are formed, and many of these may have life times well beyond the time span involved in the initial processes. The number of chemical reactions of a given type that take place will depend on the total amount of energy deposited. This is represented in the concept of radiation "dose", expressed in Grays, notation Gy. The latter unit represents the deposition of 1 Joule of energy per kilogram of irradiated matter. Similarly, the dose rate, a measure for the rate at which the energy is deposited, can be expressed in Gy/min. Obviously, the total dose is a product of the dose rate and the time of irradiation, and the dose rate, in this case of high energy electron irradiation, is a function of the particle energy and the beam intensity. It is of interest to note that the yield rate of a radiation induced chemical reaction often is itself somewhat dependent on the dose rate, but for the purposes of this discussion paper that effect has no great significance.

The induced chemical reactions are the basis of all practical applications of radiation technology. In the biocide applications, they cause damage that leads to the demise of the organism. The dose

needed to induce sufficient damage depends very much on the type of organism. Generally, the lethal dose is inversely related to the complexity of the organism. For example, in highly developed life forms such as humans, a dose of around 1 Gy to the whole body will kill enough cells in vital organs to cause death. For insect control, doses of around 500 Gy are needed for a satisfactory kill rate. Microorganisms, which have no vulnerable cell structures, are killed by major destruction of their DNA, requiring much higher radiation doses for eradication, in the order of tens of kGys. Food irradiation is typically performed with doses of 1.5 - 3 kGy, while eradication of fungal spores requires doses of around 10 kGy and higher.

The dose to be applied in the USPS mail irradiation for the protection against anthrax spores appears still to be a matter of discussion. Yet, it can safely be assumed to well exceed the 10 kGy level. Dr. Burrell Smittle of the Florida State Department of Agriculture expressed the opinion that levels of about 25 kGy would be used, while Dr. Donald Thayer of the USDA Research Service and Dr. Steven Seltzer of NIST indicated an anticipated use of significantly higher doses in the order of 50 - 60 kGy. It was also noted that, if mail were to be irradiated from both sides, this dose would be doubled. These very high doses are needed to obtain the sought after "kill ratio" which is in the order of 12-14 decades (in other words, the fraction of surviving spores is intended to be only in the order of 10^{-11} to 10^{-13}).

Ultimately, the deposited energy will be converted to thermal energy, causing a rise in temperature of the irradiated material. For the conditions considered for use by USPS, this effect could amount to a temperature raise in the order of 5 degrees centigrade.

3. Radiation effects on materials

As mentioned above, the large quantities of energy deposited during irradiation in the target materials leads through the formation of ions, activated atoms and molecules, and free radicals, to a complex series of chemical reactions, and these can have a very significant effect on the chemical and physical properties of the irradiated compounds. These effects can be even more enhanced if the irradiation takes place in a regular atmospheric environment when reactive species such as ozone, O^* and OH^* radicals are formed.

The number of occurrences of a given reaction depends on the dose. Thus, the amount of induced change in material properties can, like the biocide efficacy, be controlled by the size of the administered dose. Yet, the amount of change that is permissible (or desirable), depends on the nature and use of the irradiated materials and objects: what may be regarded as trivial effects in the context of industrial applications can be unacceptable in the case of museological and archival collection holdings. It is this latter context with which we are concerned here, and the following discussion pertains to material effects on a scale of magnitude that might compromise the value of such collection materials.

The reactions that we are concerned with include the destruction of existing molecules (chain scission and depolymerization, removal of functional groups as in deamination, decarboxylation etc., and oxidation) as well as the formation of new ones (through recombination and cross-linkages.) While inorganic materials are not immune to radiation induced effects (and later we will discuss some of these as they are of concern), it is the organic materials that are most vulnerable to significant damage. Literature data on damage rates in the ranges that are of concern to museum and archival collections are limited, but a certain amount of work has been done in order to assess the applicability of radiation technology for biodeterioration control in collections. In 1995, SCMRE was the organizing host to a expert consultants meeting on that subject sponsored by the International Atomic Energy Agency (IAEA), attended by experts from Europe and the USA. Generally, most of the information presented at that meeting still represents the current level of knowledge, since in subsequent years the development of alternative, far less aggressive methods for effective biodeterioration control in a museum collections context have made the application of radiation technology for the purpose something of limited, and at best occasional, utility. Additional information can be gathered especially from literature concerned with the sterilization of food, medical supplies and various other industrial commodities.

Of first concern are the polymeric materials, both natural and synthetic. The natural polymers are more vulnerable to significant change than their synthetic counterparts, and of the natural polymers, cellulose is the most vulnerable. The reactions of concern are chain scission, cross linkage, and oxidation. The effects of these various reactions are depolymerization, loss of strength, embrittlement, acidification and discoloration, and a greatly enhanced rate of subsequent aging deterioration. Quite a lot of experimental work has been done on radiation induced damage to cellulose materials. Since it was hoped that this technology could be used to address one of the major problems in the library and archives field i.e. mold growth in collections that have been exposed to water, for instance during the dousing of a fire. Work done in collaborations between the Centre d'études nucléaires de Grenoble and the Central Laboratory of the Netherlands Institute for Cultural Heritage, indicates that, in order to avoid an unacceptable amount of damage to paper, the dose has to be kept below 2 kGy, well below the level necessary for effective microorganism control. At dose levels of around 4 kGy, serious degradation was observed, and at 7 kGy these researchers recorded extensive oxidation and depolymerization. Other cellulose materials, especially the fibers including cotton, bast fibers, etc., tend to be equally sensitive. Studies on cotton by a team of Scottish and Greek textile scientists indicated, for example, an exponential reduction of tensile fiber strength with dose, where this strength was reduced by ca. 50% at 100 kGy, while early work at Cornell University recorded a 27% reduction in degree of polymerization in cotton cellulose at 6 kGy. While cellulose in wood must be expected to undergo comparable changes, significant mechanical damage to wood, such as investigated in the studies on waterlogged wood from the Mary Rose shipwreck, requires quite high doses, in the order of 100 kGy. Industrial sources tend to regard damages at doses up to 10 kGy as "somewhat trivial" though they concede that color changes occur quite readily at these levels.

The other major group of natural polymers, the proteinaceous ones, tends to be less susceptible to radiation damage than the cellulose materials. The major effects result from reactions involving individual amino acids, including deamination, and total disconnection of an individual amino acid from the polymer. There appears to be less susceptibility to chain scission, nor evidence of cross linkage, at the dose levels of the published experiments (up to about 250 kGy). Research on the effects to wool fibers, for instance, showed a loss of about 10% in tensile strength for wool fibers exposed to doses of 20 kGy of gamma radiation, while exposure to accelerated electrons only showed perceptible damage at the 50 kGy level. However, such damage cannot be overlooked when assessing its admissibility in the context of museum collection items, especially since the doses anticipated to be used by the USPS are in this same range.

Synthetic polymers are generally less vulnerable to radiation damage than their natural counterparts. The most sensitive is Teflon, which is reported to show significant effects at dose levels of 10 kGy. Canadian textile researchers at the University of Manitoba studied radiation effects on a number of nylon fibers, where they found that doses of 10 kGy resulted in about a 5% loss of tensile strength, while 15 kGy induced losses of 10-20%.

A special case is that of DNA molecules. The relatively large size of the DNA molecule results in a high probability of it being hit by one or more radiation particles. It is worth noting that the primary mode of radiation induced eradication of micro-organisms is major destruction of the DNA. Hence, irradiation at the levels intended for anthrax spore extermination would also induce major damage to DNA in research specimens. These effects will include fragmentation of the molecule and, through recombination, formation of mutations. The mutagenic properties of ionizing radiation are, of course, well known, and result from these recombination reactions. While a significant fraction of the original DNA of the specimen irradiated at dose levels of 10-50 kGy may be preserved, the question, which arguably can only be addressed on a case-by-case basis, is to what extent the research value of the specimen is compromised, for the intended or future studies, by the large scale destruction of the specimen's DNA, and the formation of significant quantities of mutated varieties and of major concentrations of fragmented DNA. ...to be continued.

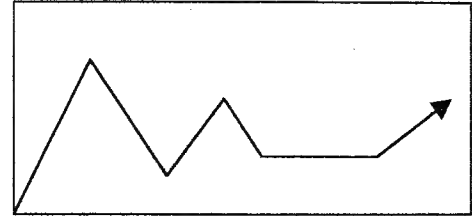
This information was forwarded to me by Paul Steward and will be continued in the January issue. It may have far reaching effects on our hobby.

WHAT'S THE STATUS?

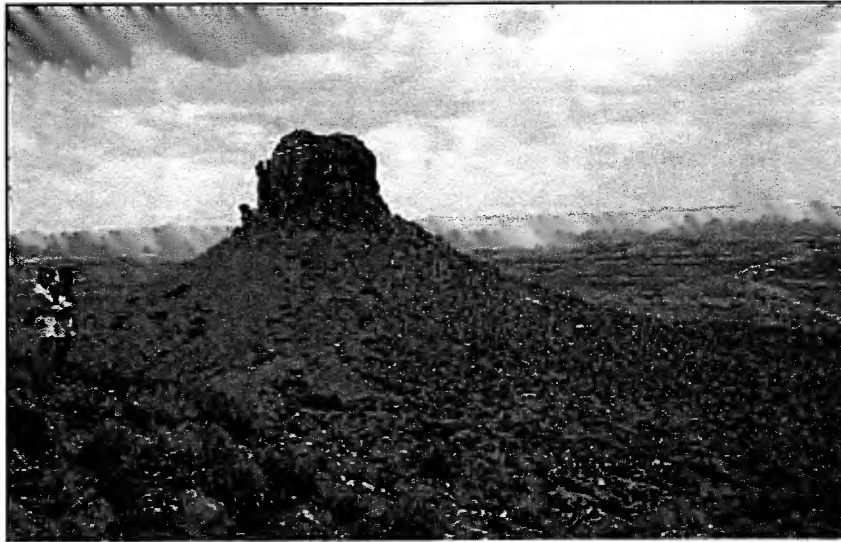
by Tom Knapik

Topic #19: *Dioscorea elephantipes*, *Cylindrophyllum hallii*

This article was submitted by Joe Kraatz and was dated Wednesday, 16 May, 2001, 00:24 GMT 01:24 UK



Seed search finds vanished plants



South Africa's Northern Cape, where the vanished plants were rediscovered

**By BBC News
Online's
environment
correspondent
Alex Kirby**

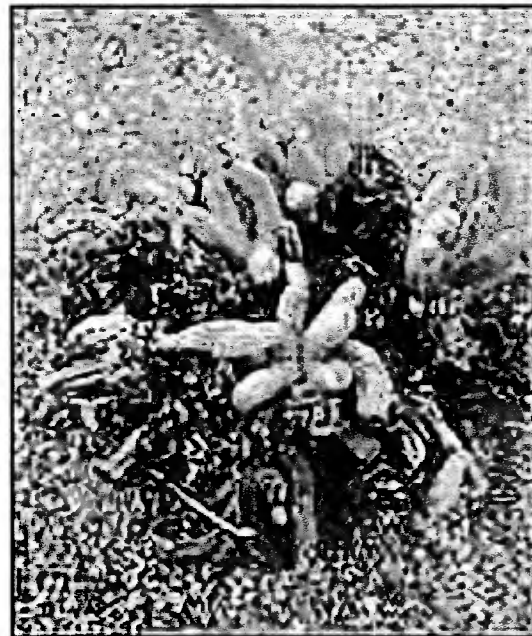
UK scientists have found healthy specimens of two plants thought to have become extinct decades ago. The

scientists, from the Royal Botanic Gardens' (RBG) millennium seed bank, found the plants on a trip to South Africa. The discovery means the plants should now be safe from extinction, because the seeds will allow their reintroduction. The team says the discovery proves the value of the seed bank's work.

The two species were found in South Africa's Northern Cape by a team led by Dr Paul Smith, a botanist from the seed bank. It is housed not at Kew, the RBG's London site, but at Wakehurst Place, its country estate in West Sussex.

Famine standby

Dr Smith's team was working with colleagues from South Africa's National Botanical Institute. One plant they studied is known as elephant's foot (*Dioscorea elephantipes*). A wild yam, it used to be cooked and eaten by local people in time of famine. Dr Smith said: "Owing to its unusual appearance this attractive plant has been over-collected.

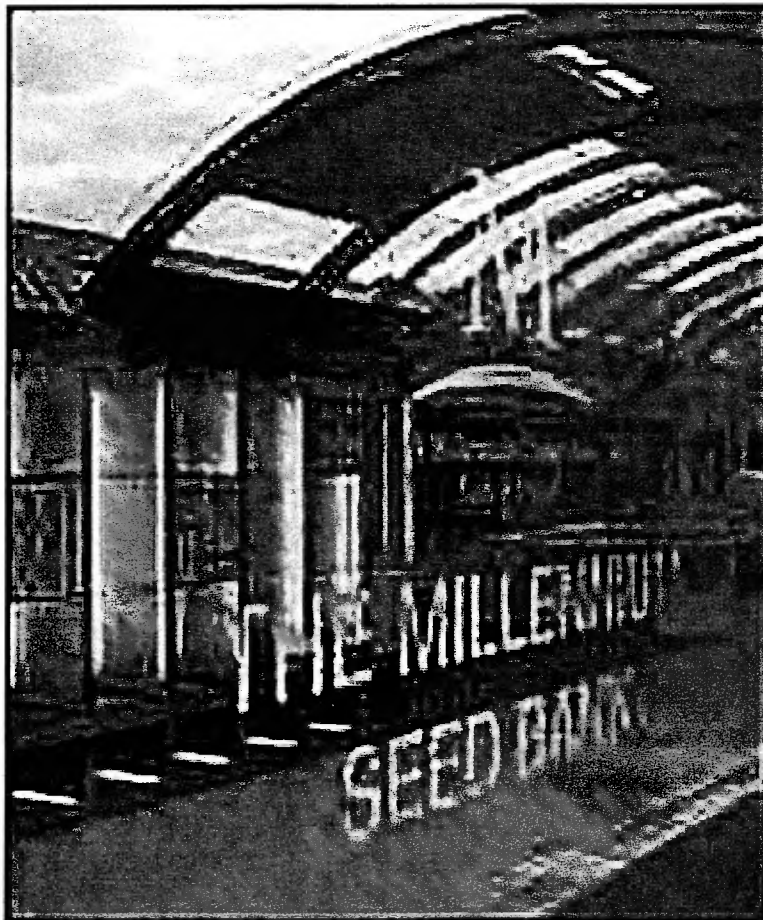


Cylindrophyllum hallii in all its glory

"It is now threatened in the wild and has not been seen in the region since 1954. Many people thought it lost forever. "We spent a whole day searching for it, with no success. "Finally, on the point of giving up, we asked a local shepherd, who immediately recognized the plant we were looking for and directed us to a very healthy population." He and his colleagues found about a thousand plants, concentrated on a steep mountainside. There were no seeds for them to collect, but they documented the discovery thoroughly so that the plants can now be closely monitored.

The other plant they found is a member of the Mesembryanthemaceae, *Cylindrophyllum hallii* L. Bolus. It belongs to the family of Namaqua daisies, and is described as of great botanical interest: its sister species all come from the Little Karoo desert. Dr Smith said: "This population has not been documented or collected since 1960, and we were very excited to find it. "Only about 219 living plants were left, with clear signs of having been ravaged. We saw many dead plants though, possibly victims of drought or destruction by animals feeding." But there were plenty of seeds, and the team took less than 5% of what was available.

"This is exactly the kind of species that needs conservation off-site in the millennium seed bank", Dr Smith said. "The seeds will be safely stored in our vaults." The seed bank will work out its germination method so that, if the wild plants do



Safe haven in the seed bank

vanish, the seeds can be successfully reintroduced. Dr Smith told BBC News Online: "There is certainly a good chance of finding other similar plants. "There's an element of luck about it, obviously. And it is the more obscure plants that are likely to go under. "We have a program continuing over the next five years, and we shall certainly be looking for other plants which at the moment we believe to be extinct."

South African photos courtesy of Dr Paul Smith, Royal Botanic Gardens, Kew

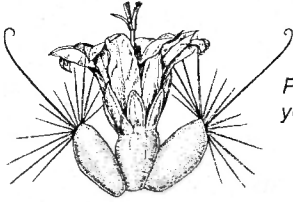
You know our own Joey Betzler is in charge of the NEW seed bank at the Wild Animal Park. If you're interested in learning more about this great facility, give him a call!

Issue Highlights

Page 2 Request for Volunteers
Page 3 Presidents Message
Page 4,5,6 Calendar, Dec. Party, and Membership app.
Page 7,8,9 Beam irradiation effects
Page 10,11 What's the Status

NONPROFIT ORG.
U.S. POSTAGE
PAID
SAN DIEGO, CA
PERMIT NO. 737

The San Diego Cactus & Succulent Society, Inc.
P.O. Box 33181, San Diego, CA 92163-3181



Please check the top line of your label for, year/month your membership expires. If the date is getting close –
PLEASE RENEW. THANKS for your help.



ESPINAS Y FLORES

Editors: Tom Knapik - 619-462-1805
Joey Betzler - 858-569-8510
Mail to: 4669 71 St., La Mesa, CA 91941
call for fax or e-mail eyf2000@aol.com

San Diego Cactus and Succulent Society, Inc.

2001 Executive Board Members

OFFICERS

President - Pam Badger
619-589-1223
Vice Pres.- Jeff Harris
619-294-5708
Secretary - Laura De Merritt
858-270-5544
Treasurer - George Flaisted
619-583-9551

EX OFFICIO

Immediate Past President
- Tom De Merritt
858-270-5544

DIRECTORS

Lee Badger
619-589-1223
Ed DeLollis
760-945-7892
Joe Kraatz
760 758-7042
Spencer Maze
858-454-1870
Terry Parr
619-460-9111
Kelly Parrott
619-696-0376

SDCSS Volunteers on Standing Committees and Sub-Committees

Conservation:

Joey Betzler and Kelly Griffin

Education and Exhibits:

Brag Table – Shirley Berry
and Kay Quijada
Plants of the Month – Jeff Harris
and Lee Badger
Summer Show – Tom Knapik, J.
Betzler and Kay Quijada
Winter Show – Ed DeLollis

History: Terry Parr

Liaison:

Balboa Park Desert Garden–
Susan Hopkins
CSSA Affiliate Rep. –
Kelly Griffin
Quail Botanic Gardens –
Phylis Flechsig
San Diego Botanic Garden
Foundation – George Flaisted
San Diego Floral Association –
Elizabeth Glover
S. D. Wild Animal Park's Baja and
Succulent Collections – J. Betzler

Library:

Tom Birt and Cynthia Santorini

Membership:

Joey Betzler (858-569-8510) , Tom
De Merritt

Mailing:

Pam Badger and Jeff Harris

Plant and Seed Exchange:

Plants – Michele Heckathorn and Sara
Schell

Seeds – Kelly Griffin

Plant Sales and Supplies:

Annual Sales – Tom Birt
Auction and Holiday Plants – L. Badger,
and Tom DeMerritt
Benefit Table – Lee Badger
Monthly Plant Sales – Jeff Harris and
Joe Kraatz
Monthly Supply Sales – George and Jerry
Plaisted

Publicity: Tom DeMerritt and Stan Yalof

Programs: Kelly Griffin (760-942-4866)

Reception:

Ethel Standish

Regalement:

Monthly – Rudy Lime and Stefy Mangold
Picnic – Laura and Tom DeMerritt

The SAN DIEGO CACTUS AND SUCCULENT SOCIETY, INC. is open to all persons interested in growing cacti and other succulent plants. Meetings are held the second Saturday of each month (except June, Sept. and Dec.) at 1:00 PM in room 101, Casa del Prado, Balboa Park. Executive Board meetings are open to all members; call any officer or director for the time and location. Annual dues are \$15.00 per single member per year, \$5.00 for each additional (associate) member within the same household. Single copies of *Espinass y Flores* are \$2.00 per copy sent within the USA; foreign subscriptions are \$30.00. Affiliated with the CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC. The *new* SDCSS Web Page is: SDCSS.COM - please take a look and give feedback to the webmaster.