



Manchester Branch

Newsletter December 2000

Editorial

Recently many of you asked for some feedback from our committee meetings through the newsletter. At the last meeting we again discussed a dilemma that has affected this and many other branches over the last few years. Whilst membership remains fairly static we continue to attract only about a quarter of our branch members to branch meetings. New recruitment to the meetings is not common.

Without new blood we become stale and stagnate. Branch meetings have changed little over the last thirty years. In that time, what differences have we noted in other aspects of society. Imagine going back thirty years and visiting a supermarket, hospital or doctors surgery, cinema or simply driving on the road. The changes have been slow but gradual year on year. I am not however advocating change for the sake of change. The last thing we want to see is numbers dwindle even further because members who are happy with the present format feel uncomfortable with changes and leave.

The committee has therefore proposed that Mr Peter Bint be offered the newly created post of honorary development officer for the branch. His role is to find new ways of promoting the branch, increasing membership, finding new ways of doing things and new things to do without making drastic changes that make our existing members not want to come back month after month. In this way we can all get more enjoyment from the hobby.

Editor - Ivor Crook. Phone or fax

If any of you have any ideas I am sure Peter would be only too happy to listen. Please share your thoughts with him. Over the next twelve months I hope to be able to stimulate the debate further by printing some of your ideas and letters in the newsletter. So here is your chance to have your say, anything goes with the exception that personal assaults on individuals will not be published. Excepting that, please give it some thought and share with us all your own ideas on how you would like to see the branch develop. Do you want to see more or less meetings? Do you want to change venue? Do you have an interest that is not covered in our speaker programme? Would you like to see us organise something radically different from what has gone before?

I will start the debate with my own thoughts. I believe our speaker programme has brought the best and most knowledgeable speaker to Manchester branch over the last few years that I have attended meetings. Along with the travelogues we have a very entertaining evening. My friend in Germany tells me that his branch often meet several times a year to study in detail a species or group of plants. They also have a genus of the year in the newsletter where all branch members can contribute articles on a particular species from that genus, cultural or habitat information or comments on the genus in general.

Saying nothing is no longer an option if the branch is to survive.

or e-mail

New books etc.

As advertised in the September journal, Michael Kiessling has recently published *Tephrocactus und andere Feigenkakteen*. (Tephrocactus and other prickly pears). At the early bird price of £20.80 direct from the author my copy arrived within two weeks. The quality is impressive, 319 glossy pages, the book smells like a £50 publication and looks like it. Each double page has a photograph and text in English and German. Despite rumors circulating that some of the plants may be incorrectly identified it is an excellent text of high quality printing.

Has anyone seen a copy of Ernst van Jaarsveld's new book *Vygies, Gems of the Veld?* My latest information is that the final draft for the authors to proof read contained so many typos it had to be reset. I understand the authors have thus taken the opportunity to add some more photos to the new book. Publication was initially put back to November but it's not now expected this side of the New Year. Oh, and expect a premium over the published price when it is finally released.

Bradleya 18 seemed to arrive early this year. I don't want to appear too harsh on Gordon Rowley's last edition especially as he has been responsible for so many excellent publications in his own right but the latest yearbook seems a little short of meat for the cactophile. There are several scientifically excellent articles but epiphytes and bulbines are not high on everyone's list of favorite plants.

Finally I have at last seen a copy of the Cactus File's latest recruit on the Genus *Mammillaria*. Not being too interested in the group myself I was unwilling to fork out £55 but having now seen a copy it represents good value for money. At 425 pages it is by far the largest and most ambitious project yet. Good quality colour photos, distribution maps and informative text is like its predecessors and it covers several new species that most of us are yet to see in the flesh.

The Cactus Belt

A light-hearted view of cacti is offered by a 1941 book *What Kinda Cactus Izzat?* This who's who of the desert has enjoyed 34 re-printings up to April 1985 and is still available both sides of the pond,

The US -Mexican border is one region which should never have to worry about an invasion by parachutists. It would be hard to suit a territory in the world less suited for haphazard dropping in on. North of the border, from Texas to California, is the cactus belt of the United States, where nearly every native plant, including the lily, comes armed with needles, knives or swords. South of the border is the same, only more so.

Floating down by parachute, you might be tempted to steer for a landing in one of those patches which looks like a bed of thistle down. This would be a mistake! The 'thistle down' is the sheep's clothing of one of the orneriest species of cacti - the Cholla (CHAW-yuh) 'jumping' cactus. There is some debate as to whether this plant actually jumps on its victims; there is no debate at all about the victims jumping.

No, the Mexican borderland is definitely not the best strategic spot for setting down, via parachute or otherwise. It isn't even advisable to bend over, without first looking behind you.

Thanks to Brian Darnell for this contribution and with apologies for the American spelling.

Oh, and a small prize goes to the first person to tell me the meaning of the word 'ornierest'.

Bats and Cacti.

During a late night session surfing the internet I came across this little gem from Bat Conservation International. If anyone finds their interest stimulated by this article may I suggest you look up the June 1991 edition of National Geographical magazine which may still be available at your local library.

Studies in Mexico's central valley shed new light on the interdependence of bats and plants . . .

by Alfonso Valiente-Banuet, María del Coro Arizmendi, and Alberto Rojas-Martínez

MOST PEOPLE WHO are knowledgeable about bats know that, around the world, different bat species play important roles in fruit and seed production. In Mexico, our region of study, the agave plant's reliance on bats is often touted because we could not enjoy the popular drinks tequila and mezcal without this essential cactus species. But many lesser-known yet equally important plants of the Mexican deserts also depend on bats to reproduce.

One such group of plants, the Mexican columnar cacti (Pachycereae), constitutes a dominant form of vegetation over large portions of the Southwestern United States and parts of Mexico. Columnar cacti form forests that cover several square miles with densities of 450 to 750 individual adult plants per acre. Seventy species occur in Mexico, and the richest diversity, almost 45 species, is found in the central portion of the country, including the Tehuacán Valley (in the Mexican State of Puebla) and the Balsas River Basin. This zone has a significant number of native species and also has the highest reported density of columnar cacti: over 700 plants per acre, with as many as 12 different species coexisting.

North America's nectar-feeding bats have a strikingly similar geographic distribution, with the highest number of species for both bats and cacti in the same areas: the Balsas Basin and the Tehuacán Valley. At these locations, the most abundant nectar bats are the lesser long-nosed bat (*Leptonycteris curasoae*), the greater long-nosed bat (*L. nivalis*), and the

Mexican long-tongued bat (*Choeronycteris mexicana*). Apparently due to the extraordinary plant diversity of the region, all three species are present year-round, unlike the migratory populations that enter the southwestern U.S. each spring.

Because of the diversity of native cactus species in the Tehuacán Valley, our research team chose this region as the site for a study aimed at understanding the importance of bats to pollination, seed production, and seed dispersal. Pollination is the means by which a plant transfers its pollen to another plant, most often relying on assistance from animals, such as bats. Flowers are a plant's way of making itself attractive to animal pollinators. Once pollination enables seeds to be formed within the protective fleshy part of the flower, that part of the flower becomes fruit. The fruit serves to attract animals once again, which, after eating the seeds, drop or pass them in a different location where they can germinate and grow.

The flowers of columnar cacti have many unique adaptations for attracting pollinators such as bees, hummingbirds, hawkmoths, and bats. However, our studies show that some flowers have attributes specifically for attracting bats: they bloom at night and emit a unique and strong odor; they are bowl-shaped and large-mouthed, whitish in color, and uncommonly sturdy; they provide extra large quantities of nectar and pollen; and they contain many anthers, or extra-large anthers, to hold the pollen. Approximately two-thirds of Mexico's 70 columnar cactus species produce flowers with these characteristics.

We studied several of these cacti through the flowering seasons of 1992 and 1993, concentrating on the branched columnar cactus tetecho (*Neobauxbaumia tetetzo*). This dominant species ranges over approximately 150 square miles of central Mexico. The plants undergo a mass flowering period in late April, with up to 60 percent of all the fertile individuals (taller than six feet) blooming. The long, white flowers open at sunset and remain open until mid-morning the next day. Copious amounts of nectar are produced, especially in the early hours of the night. The bats are more abundant during this time, when it is possible

to catch up to 10 individuals in just one hour. In the first year, we noted that the flowers were visited by three species of bats, two of them regarded as specializing in nectar and pollen (the lesser long-nosed and Mexican long-tongued bats). The third was the Jamaican fruit-eating bat (*Artibeus jamaicensis*). In the second year of study, an additional nectar and pollen specialist, the greater long-nosed bat, was also observed.

Our experiment with tetecho involved almost 100 flowers, which we allowed to be pollinated under four different conditions: (1) by nocturnal visitors only, (2) by diurnal (daytime) pollinators only, (3) by no animals at all (self-pollination), and (4) by human hand, using the pollen of a neighbor plant (outcross hand-pollination). In addition, we had "control" flowers which we did not manipulate at all.

We were able to control the pollinator visitations by enclosing different floral buds in mosquito net bags at different times. When buds opened, we climbed a ladder propped against the cactus and removed the bags either by night or by day, or left the bag permanently in place to test self-pollination. This procedure went on for a number of weeks, allowing time for pollination to occur and seeds to be formed. About a month later, we collected the fruits produced and counted the seeds per fruit.

The results were amazing. Our experiment demonstrated not only that this species of cactus cannot produce fruit in the absence of visitors, but also that the only flowers to produce fruits are those visited by nighttime pollinators. Diurnal visitors such as hummingbirds proved to be nectar robbers, as the flowers produced no seeds when left open to their visits. Thus for tetecho, the alliance with bats is essential for the production of seeds. This relationship can be viewed as a "keystone" process—one that is crucial to the conservation and management of one of the dominant columnar cacti of the Tehuacán Valley.

Near the zones dominated by tetecho, another columnar cactus, *Cephalocereus hoppenstedtii*, sometimes known as viejo, forms similar forests. These two plant species

almost never occur as co-dominants of an area; however, they bloom almost simultaneously, have similar flowers, and share the same flower visitors. Pollen samples collected from bats, especially from the face and the head, indicate that the bats visit both plant species because pollen from both plants is often found on the same bat. Viejo, just as tetecho, cannot produce seeds in the absence of nocturnal visitors.

Nearby areas are dominated by other species of columnar cacti. To the west of the Tehuacán Valley, one unbranched columnar species, *N. mezcalaensis*, and another branched species, *N. macrocephala*, form mixed succulent forests with densities of up to 700 mature individuals per acre. Those species also flower in late April, producing long-tubed, night-blooming, white flowers with copious nectar and a characteristic bat-attracting odor. Neither species can produce seeds in the absence of animal pollinators, and both are pollinated mainly by nocturnal bats. *N. mezcalaensis*, however, can also be pollinated by daytime visitors such as birds and insects.

Other kinds of columnar cacti from the valley, such as *Stenocereus weberii*, *Stenocereus pruinosus*, and *Mitrocereus fulviceps*, are also pollinated by bats. The flowering season of many of these species is concentrated between late April and July. Later in the year, bats consume the cactus fruits, whose colors and odors resemble that of the flowers they came from. Fruiting season ends in late September, and bats disappear during the winter, possibly going to zones in the valley covered by tropical deciduous forest. A study is currently underway that will examine this possibility.

In another related and ongoing study, we are seeking to understand the relationship between columnar cacti and fruit-eating animals. We know that for some cactus species, such as tetecho, the fruits are eaten and the seeds dispersed by a wide array of animals, including bats, birds, small rodents, and ants. We also know that researchers studying tetecho in years past have concluded that the survival of young plants of this species relies upon interaction with a "nurse" shrub, a plant that

provides a protective canopy for a new cactus. We are, therefore, researching the role and importance of each group of animals in the dispersion of seeds to safe places beneath nurse plants. Bats appear to be important seed dispersers because they rest beneath the canopies of trees and shrubs, where seeds can fall into protected areas suitable for germination and survival. Furthermore, bats may drop seeds while in flight, sometimes at distances far from the parent plant.

The key role of bats as pollinators and seed dispersers in this plant community is obvious. If bats were to disappear from the Tehuacán Valley, a large number of columnar cactus plants such as tetecho and viejo would not produce seeds and their populations would decline, possibly to extinction.

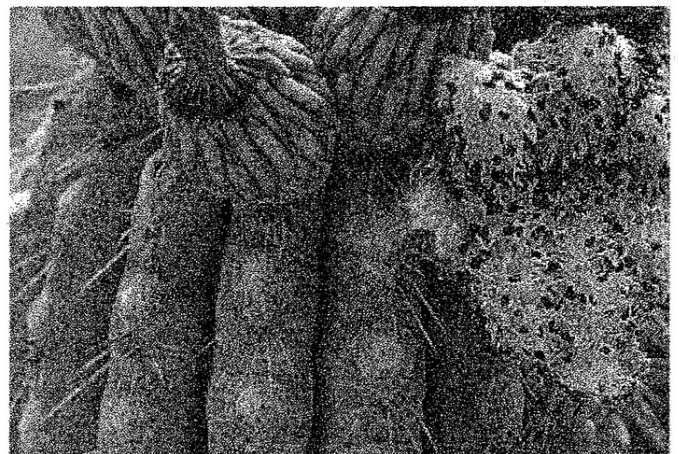
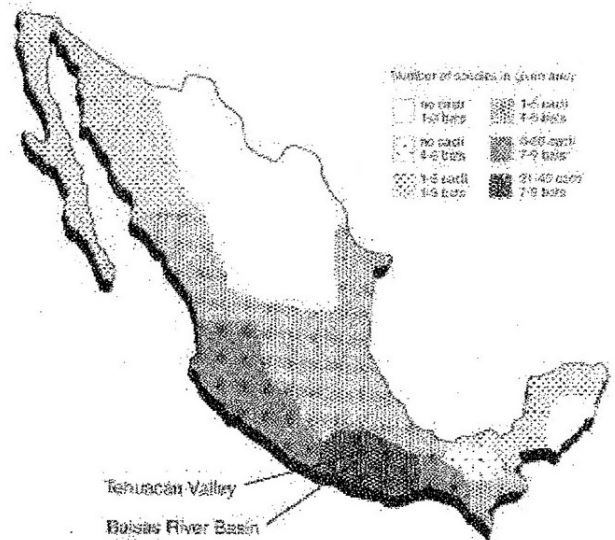
The identification of biological co-dependence between species such as nectivorous bats and columnar cacti is of great importance to ecosystem management planning. Nearly 60 percent of Mexico is covered by arid and semiarid lands that historically have been considered useless. Today, increased knowledge about such places is essential to maintaining biodiversity found nowhere else in the world. Although the Tehuacán Valley has been occupied by humans since prehistoric times, this center of endemism and diversity for columnar cacti is now susceptible to the increased activities and pressures of modern life.

Our team is working to create a management and conservation plan for the area, which will be supervised by the National University in conjunction with government agencies and local residents. We are collaborating with researchers from other institutes of the University, such as Dr. Patricia Dávila and Dr. José Luis Villaseñor, as well as with the Mexican government. Through these efforts we hope to ensure the survival of Mexico's unique bat-and-cactus connection.

Alfonso Valiente-Banuet is a researcher at the Centro de Ecología, a research institution of the National Autonomous University. Alberto Rojas-Martínez is working on his doctoral thesis with Dr. Valiente-Banuet. María del Coro

Arizmendi is a researcher specializing in the ecology of avian interactions with plants.

Geographical Distribution of Nectar-feeding Bats and Columnar Cacti in Mexico



The fruits of this tetecho cactus have burst open and exposed the seeds, many of which will be dispersed to new locations by lesser and greater long-nosed bats and Mexican long-tongued bats.

Comment on August Newsletter

At last I have some evidence that someone out there is reading the newsletter! Two articles in the August newsletter seem to have provoked comments from various quarters. First the Lithops article by Peter Bint and the accompanying pictures.

From Harry Mak:

1. Lithops jullii cv hot lips:

"cv" is not allowed under the current Cultivated Code. Article 17.6 states that "Each word of a cultivar epithet must start with an initial capital letter". If "hot lips" is a valid cultivar epithet, the name should be Lithops jullii 'Hot Lips'.

2. Lithops jullii cv. Bubblegum: Lithops jullii 'Bubblegum'

3. L. salicola 'bacchus' should be Lithops salicola 'Bacchus' 'Bacchus' is the God of wine. It is allowed under the present Cultivated Code article 17.9(...except they are the classical name of an ancient Roman person or of a place).

And my article on Opuntia quipa seems to have provoked lots of comment from several sources:

From Marlon Machado (Brazil)

O. quipa is a synonym of O. inamoena. I don't understand why Hunt lists it as a hybrid between O. inamoena and O. palmadora. I would like to see where this nomenclatural change was made, and why.

Regarding O. quipa, it was described as a smaller plant than O. inamoena. Well, O. inamoena is very variable in body size, and I know populations of this species whose cladodes are only 3cm in height and 2cm in width, and all the plants in the population are small. But the flowers and fruits are typical for O. inamoena, thus this dwarf form is just this, a form.

Regarding the name "quipa", this is how the Indians called O. inamoena. I personally prefer the name O. quipa for this species, because I don't like the name "inamoena" - it means "not attractive", and I disagree with such description! But unfortunately O. inamoena is the older name and as such we need to stick to it.

There are two articles discussing O. inamoena and O. quipa in one of the old Ashingtonia journals. If you wish I can look for the proper reference to these articles.

From Roy Mottram.

Braun and Esteves have studied this plant and its distribution in Brazil and concluded that the following species could be recognized in the complex:

Op inamoena Schumann and its form spiningera (Ritter) B&E

Op estevesii Braun

Op saxatilis (Ritter) and its vars pomosa, occibahiensis and minutispina B&E

The segregates of Braun and Esteves seem to be quite unnecessary. Op inamoena and Op palmadora seem to be good species, but they intergrade and form hybrids (= var. spiningera). Incidentally, Op inamoena does not produce flowers that are terminal in the joint as you illustrated in the bottom three pictures. That plant appears to be Op stenopetalata, which is an unrelated Mexican species.

(Ah well, Opuntia identification has never been my strong point- Editor.)

News from Abroad

It seems we have something interesting to look forward to next year.

*From our German correspondent
Konrad Mueller.*

After a long time of nothing from Leipzig I promise to write an article about the activities of the Leipzig branch "Astrophytum" of the DKG and if you are interested about my five weeks trip to northern Chile and Argentina. I'm back from this trip last Saturday. But during the next two weeks I have a strong program in my job. A realistic time schedule leads to a contribution between the last week of this year and the first two weeks of 2001.

And from New Zealand some news of the activities of hobbyists from the capital city.

Brief History of the Auckland Branch

The Cactus & Succulent Society of New Zealand Incorporated commenced in Auckland in November 1947 with the first "Newsletter" produced on 27 November 1947 by Phyllis Bruce. This Newsletter has gone on to become our national New Zealand Cactus and Succulent Journal which is produced quarterly. As other branches opened throughout the country the Auckland area became the National Body and an Official Auckland Branch did not originate until May 1950.

The Branch has grown and declined with the general popularity of our plants and is now by far the largest Branch in the country (270 members at September 2000). Our plants are enjoying huge popularity at present with interest in our Branch producing the record membership mentioned above. With the population increasingly wanting easy care gardens, interest can only increase. Visitors to our monthly meeting are very welcome and may enjoy our large monthly sales table.

Rear Cover

This months rear cover contains photos of Geoff Bailey's recent trip to Mexico for the *Ariocarpus* flowering season.

RAYONES and west over the Sierra Madre Oriental

Two choice Mexican rarities grow in the vicinity of Rayones, *Ariocarpus scaphirostris* and *Aztekium ritteri*.

The *Aztekium* grows in degraded gypsum pockets in almost vertical hard gypsum cliffs, so its orientation is near to vertical and the plant shown in Fig 1 has a suntan on its uppermost parts, although this is not readily seen in the black and white reproduction. *Agave lechuguilla* also present nearby.

Ariocarpus scaphirostris grows on steep limestone shale hills together with *Echinocactus ingens* and *Agave lechuguilla*, which are very sparsely populated compared with other *Ariocarpus* habitats where it almost always grows. This sparseness of vegetation is due to the extreme aridity created on these very well drained slopes Fig 1, albeit the Rayones valley is relatively green and lush when compared with the more westerly parts of the state on the other side of the Sierras.

Travelling in a westerly direction from Rayones on a very narrow rough road over this mountain range brings us to Galeana where an attractive form of *Ariocarpus retusus* is to be found growing on limestone hillsides, Fig 3. Not too far from here but along another narrow mountain road grow *Aztekium hintonii* and *Geohintonia mexicana* described less than a decade ago but that is another story.

