

Huitzilopochtli



September 2011

Miscellaneous *Mammillaria* musings, brought to you by the left-handed postman

Last December's freeze-up made me more determined than ever to become a 'Snowbird' and migrate south to warmer climes at the onset of winter. As Flanders & Swann famously sang at the end of their *Calendar* song: 'December brings the snow and rain... Then it's bloody January again!' In the event I didn't get away till almost the end of February, but I did then enjoy a month in the sun – not Mexico this time but Patagonia! Not the best place to see *Mammillarias*, of course, but there are other cactological attractions beginning with 'M', and I'm pleased I can now say I've seen *Maihuenia* and several taxa of *Maihueiniopsis*, not to mention Magellanic penguins. This trip, and then attendance in Monaco for the IOS Inter-Congress, has delayed other projects. Amongst these, motivation to press on with the 'Lau project' has been lacking, as I've received very little new information or images to swell the list I gave last December. I have, however, been busy on two parallel projects concerned with mapping the distribution of cacti, both using or intending to use locality data from Lau's collections.

Mapping *Mammillaria*

Encouraged by an inspirational teacher at my primary school, and by my older sister, I was interested in maps and drawing maps from a very early age (and have some very crude examples to prove I wasn't very good at it!). Once I started work at Kew, I had artists to help me, and the base-map for the dot maps in my 1971 article *Schumann and Buxbaum reconciled* was produced for me by one of them (regrettably unacknowledged). The maps for the various Series were based almost entirely on the published type localities of the component species, but gave a reasonable overview of the distribution of the genus at that group level.

During my editorship of the *Cactus & Succulent Journal of Great Britain*, a few more maps, such as the one we made for Lau's article on the *Mammillarias of Tomellin Canyon* (CSJGB 41(3): 64. 1979) were drawn for me by the artist Christabel King, who also drew the plates for Nigel Taylor's monograph of *Echinocereus* (as well as many for *Curtis's Botanical Magazine*). A few years later, when I had got myself an early Sanyo computer (128 kb RAM, no hard disk) I was introduced to a computer specialist in Dorset, Mike King, who was developing mapping software for another Kew colleague. He devised a programme to plot the coordinates I had obtained for the Lau and Reppenhagen collections. I could then manually superimpose the species numbers etc on the maps, but it was a laborious business and I only published the map for series *Polyacanthae* (*Mamm. Postscripts* no. 4: 21. 1992).

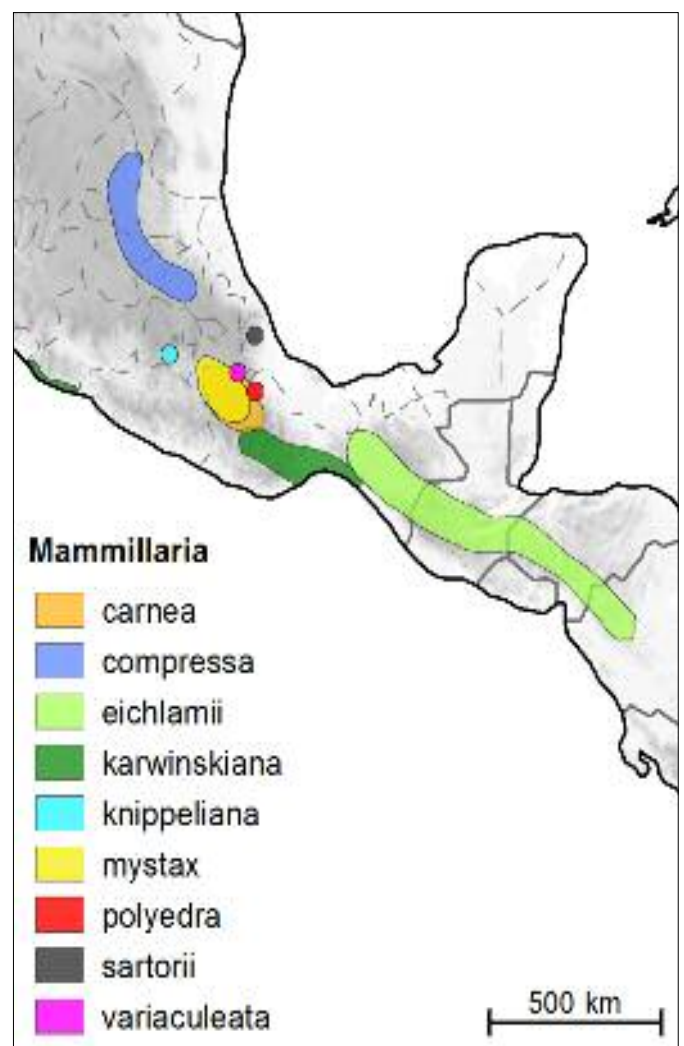
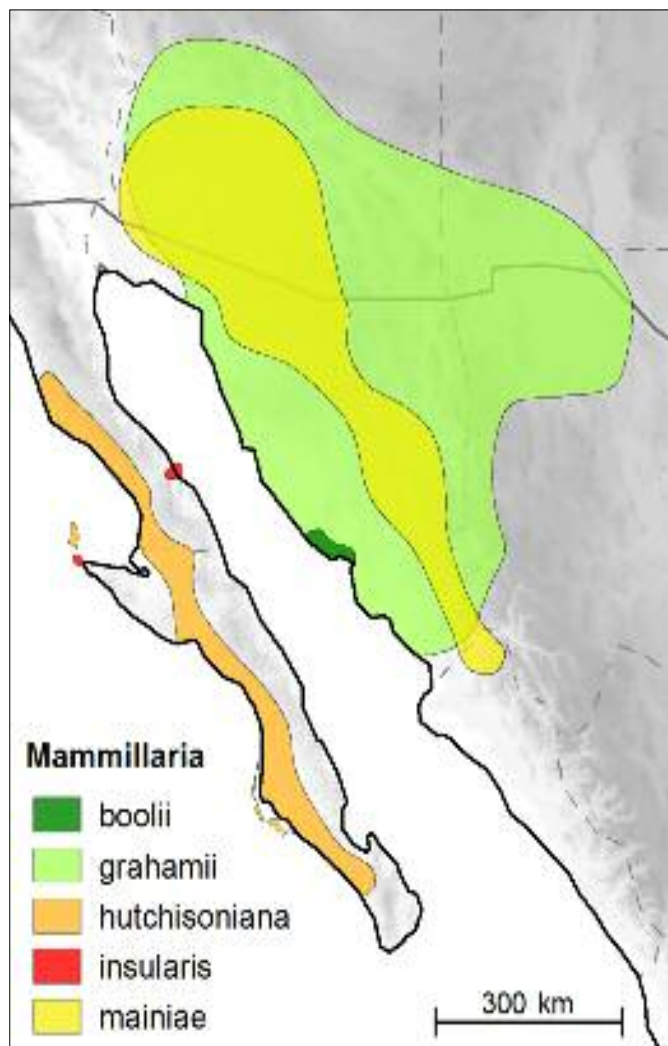
Backeberg's interest in the evolution, distribution and biogeography of cacti strongly influenced his views on classification and he published his ideas (influenced by Alfred Wegener's theory of Continental Drift) with some generalized maps in the *Yearbook of the German Cactus Society* as early as 1942 (an extensive paper yet to be translated into English, I think). 'Balloon' maps of his many 'Sippen' (groups of genera) followed in his 1966 *Kakteenlexikon*. I had hoped to emulate him by including up-to-date balloon maps of all the genera in the *New Cactus Lexicon*, but that proved impracticable without delaying the long-delayed project still further. Modern map-making software had been obtained, however, and Dr Martin Lowry was compiling a substantial database with the help of those of us with GPS or map-derived coordinates.

Then, in July 2008, I learned that a research group at Professor Dr Wilhelm Barthlott's Nees Institute for Plant Biodiversity at the University of Bonn were working on a project to map not only

all the 124 genera of cacti but all 1433 species recognized in NCL. And the project was designed not merely to map the range of every species, but to show the centres of highest diversity of species and of genera. Two students (with no prior knowledge of the Cactaceae) had been given the seemingly impossible task of compiling all the maps in just a few months, relying on the data in NCL and what they could download from Tropicos and other plant databases accessible via the Internet. By the following May, nevertheless, in time for the IOS Inter-Congress hosted by Prof. Barthlott in Bonn, they had accumulated more than 45,000 records and produced their 'Diplom-Arbeiten', and one of them reported on the work and screened some of the maps. Martin Lowry, who by then had accumulated 40,000 records, also spoke about his work and our plan to produce maps to generic and subgeneric level for a projected Supplement to NCL.

Summaries of both talks were later published in IOS Bulletin 15(2): 45–46. (2009), but in the discussion that followed, the accuracy of the students' maps we'd been shown was questioned. For many species, the distribution had been extrapolated from very limited data. Thus a species known only from a single locality might be shown as occupying the whole of a large area defined by political, altitudinal or vegetational boundaries. Prof. Barthlott therefore suggested that the maps should be checked and revised in collaboration with IOS members, and there have followed numerous consultation meetings in both Bonn and Milborne Port.

Revision of the maps has been a very salutary, not to say time-consuming, exercise, especially for problematic and little documented genera like *Opuntia* but also for *Mammillaria*, where we may know where each of the 160+ species recognized in NCL "comes from" but not really enough to draw a line on a map to indicate its range with much confidence. If you think you can improve the examples shown below, please let me know – these are draft maps as revised by me, and publication of the projected book is still some way off.



An independent Cactaceae mapping project is also under way at the Institute of Biology at the University of Mexico (UNAM). Dr Héctor Hernández and his colleague Carlos Gómez-Hinostrosa (both also members of IOS) plan to cover all the indigenous Mexican species. So far they have covered 33 of the approximate total of 50 genera and 114 of the estimated 560 species. At Héctor's request I have seen this first volume through the press, and it is now published. Simple arithmetic will of course tell you that *Mammillaria* is not among the genera included, and nor are other complex genera like *Echinocereus* and *Opuntia*. But it is a good start.

For this project, the mapping is all 'geo-referenced', i.e. based on locality records documented by herbarium specimens, of which the authors have also made or obtained photographic images. It will not be easy to compile reliable locality records for some of the 'difficult' genera like *Coryphantha*, let alone all the *Mammillaria* species, in view of the difficulty of verifying herbarium specimens. Photo-vouchers are often more useful, especially if accompanying herbarium material. But their requirement has reminded me that I need to database the locality notes I copied from specimens at various herbaria in pre-computer and pre-GPS days, and determine the latitude and longitude coordinates for each specimen if this data is to be made available for use in computerized mapping.

Focus on the *Supertextae*

Following on from my brief survey of the Lau collections belonging to series *Polyacanthae* (*Huitzilopochtli* pp 19–21), my attention has turned to series *Supertextae* mainly because it is the 'sister' series to the *Polyacanthae* in southern Mexico, with a marked preference for limestone, gypsum or alkaline conglomerate areas, whereas the *Polyacanthae* mainly inhabit rocks of volcanic origin. The plants are also fascinating in their diversity, particularly in the mountains to either side of the valley of the Río Salado, between Teotitlán del Camino and Tomellín, in northern Oaxaca, and were (as I mentioned at the start of *Huitzilopochtli*) the main subject of my early correspondence with Alfred and his article in the 'GB' journal (CSJGB 41(3): 61–66. 1979).

Besides his draft 'report' and the half-tones that illustrated the article, Lau sent me several plants and some Kodachromes. I'll come back to these in a moment, but first (with the booklet project in mind) we need a list of all his numbers that relate to plants belonging to this series, nearly 50. My list, below, compiled from the data he tabulated for me personally and the 'Feldnummern-Liste' published by AfM in 1992, gives Lau's original names and my identifications where they differ. Figures to the right of the names are the number of members who reported having the plants at the time of the 1984 survey, followed by the reports received by Mark Masterson to his request for information in 2009. A ★ indicates there is an image of the plant in the selection from Bob Stanley in the previous issue of *Huitzilopochtli* (pp. 40-44). Notes on a few of the identifications follow on the next page.

060 dixanthocentron18	2	680 flavicentra.....3	0	1132 supertexta f. → albilanata f.5	1
061 lanata f. → supertexta.....3	0	681 lanata f. → crucigera?.....1	1	1158 supertexta	
061a [see note 1]		1015 collina → haageana		1271 supertexta f.1	0
062 dixanthocentron f.1	0	1018 conspicua0	1	1321 dixanthocentron f.	
063 dixanthocentron f.1	0	1056 martinezii → supertexta?		1413 conspicua	
063a dixanthocentron		1059 dixanthocentron f.4	5★	1428 fuauxiana → albilanata?	
065 crucigera3	0	1087 celsiana? → dixanthocentron.....16	3	1431 haageana	
066 huitzilopochtli.....38	3★	1093 eleg. v. schmollii → haag. schmollii 1	1	1454 vaupelii → haageana	
066a huitzilopochtli4	1	1097 albilanata		1495 huitzilopochtli niduliformis.....3	5★
066b huitzilopochtli		1108 halbingeri [see note 3].....22	4★	1500 huitzilopochtli f.0	3★
067 dixanthocentron2	0	1109 lanata f. → crucigera tlalocii.....17	3	1503 supertexta f.	
067 buchenau [dupl. no.] → crucigera		1116 sp. [lanata]. → supertexta17	3★	1507 yucatanensis → columbiana.....	★
068 lanata f. → supertexta]4	2★	1116a [see note 1]		1557 huitzilopochtli f.0	3★
069 conspicua		1126 crucigera f. [4] → albilanata oaxacana		1558 huitzilopochtli f.	
676 supertexta f. [note 2]		1128 supertexta f. [2].....22	3★	1586 huitzilopochtli f.	
677 dixanthocentron f.3	1	1129 albilanata f.		1588 halbingeri	
679 lanata f. → supertexta [note 2].....3	0				

Notes

[1] *Lau* 061. *Lau* (AfM Feldliste 37): “David Hunt wrongly regarded this as *M. supertexta*.” This was indeed one of several plants I referred to “*M. supertexta* – *M. lanata* complex” and I have subsequently treated *M. lanata* as a synonym of *M. supertexta*. The type locality of *M. lanata* was in Puebla south of Zapotitlan, and on the basis of Britton & Rose’s illustration and description I would have no hesitation in identifying it as *M. supertexta*, likewise *Lau* 061 (see photo below).

[2] *Lau* 676. This form was later described by Reppenhagen as *M. lanigera* v. *juxtlahuacensis* and the name taken up in the AfM list. *Lau* (l.c. 51) says “David Hunt places it to *M. supertexta*”. This was because he originally called it a *M. lanata* form. I do not recall seeing the plant, but I refer *M. lanigera* to *M. albilanata*, not *M. supertexta*.

[3] *Lau* 679. Said by *Lau* to be the same as his 061, so presumably a form of *M. supertexta*.

[4] *Lau* 1116 (Cuicatlan, Oax.) *Lau* (l.c. 80) claims “These plants are regarded as *M. conspicua* by David Hunt”. I actually listed it as *M. supertexta* – *M. lanata* complex, but in an initial response to *Lau* I noted that “061 and 1116 have no central spines, but 061a and 1116a have relatively strong brown centrals and a very different appearance. They have more in common with *M. conspicua* than *M. lanata*”. John Pilbeam’s photo (NCL fig. 436.4) shows how plants with and without central spines can grow ‘cheek by jowl’, though in this instance the centrals are white.

[5] *Lau* 1126. *Lau* (l.c. 81) lists this as *M. lanigera* and writes “I regarded this taxon as a form of *M. crucigera*”. Werner Reppenhagen described it in 1987.

[6] *Lau* 1128. *Lau* (l.c.) also lists this as *M. lanigera* and writes “I regarded this taxon to be a form of *M. supertexta*”.

[7] *Lau* 1132 (Tlacotepec, Oax.). *Lau* (l.c. 82) lists this as *M. supertexta* but says it “is listed by David Hunt as *M. haageana*”. I don’t think I ever saw this plant or a photo of it, but would surely not have expected *M. haageana* anywhere Tlacotepec, which is in *M. albilanata* territory.



M. supertexta *Lau* 061, his own photograph (from a transparency (dated by Kodak Feb 76) of what looks like the remains of a very old cluster.

His locality notes (dated 3 Mar 1974) do not give coordinates but state that 061 was found W of Teotitlan del Camino, going beyond San Antonio*, then via a narrow gully to a ranch called Calapa, alt. 700 m. The habitat he described as ‘*Hechtia*-covered hills on limestone gravel’.

*approx. 18:08N/97:07:30W



Another of Lau's photographs of *Lau* 061, from a Kodak Kodachrome dated Dic [Diciembre] 1974



Lau's photo of *Lau* 063a (Kodak Jul 1974), not in the AfM list but mentioned on p. 65 of his CSJGB article.

Though these plants are superficially very different in appearance, the differences are mainly to do with details of the central spines, their presence or absence, number, arrangement, length, and colour; then there is shape and size of the stems, whether remaining simple or branching dichotomously, the size of the tubercles and the amount of axillary "wool", the position of the flowers and their colour. All, of course, one would think, adding up to enable us to distinguish several 'good' species. But do they?

Taking a longer perspective of the Supertextae, their distribution seems to resolve into three or perhaps four geographical zones, each with what I will call a principal species. The overall picture can be seen from the map on the next page. By far the largest is the one occupied by *M. columbiana*, with its scattered known occurrences SE Mexico, Central America, northern South America and Jamaica. Replacing it in SW Mexico is *M. albilanata*. Then, in NE Oaxaca and



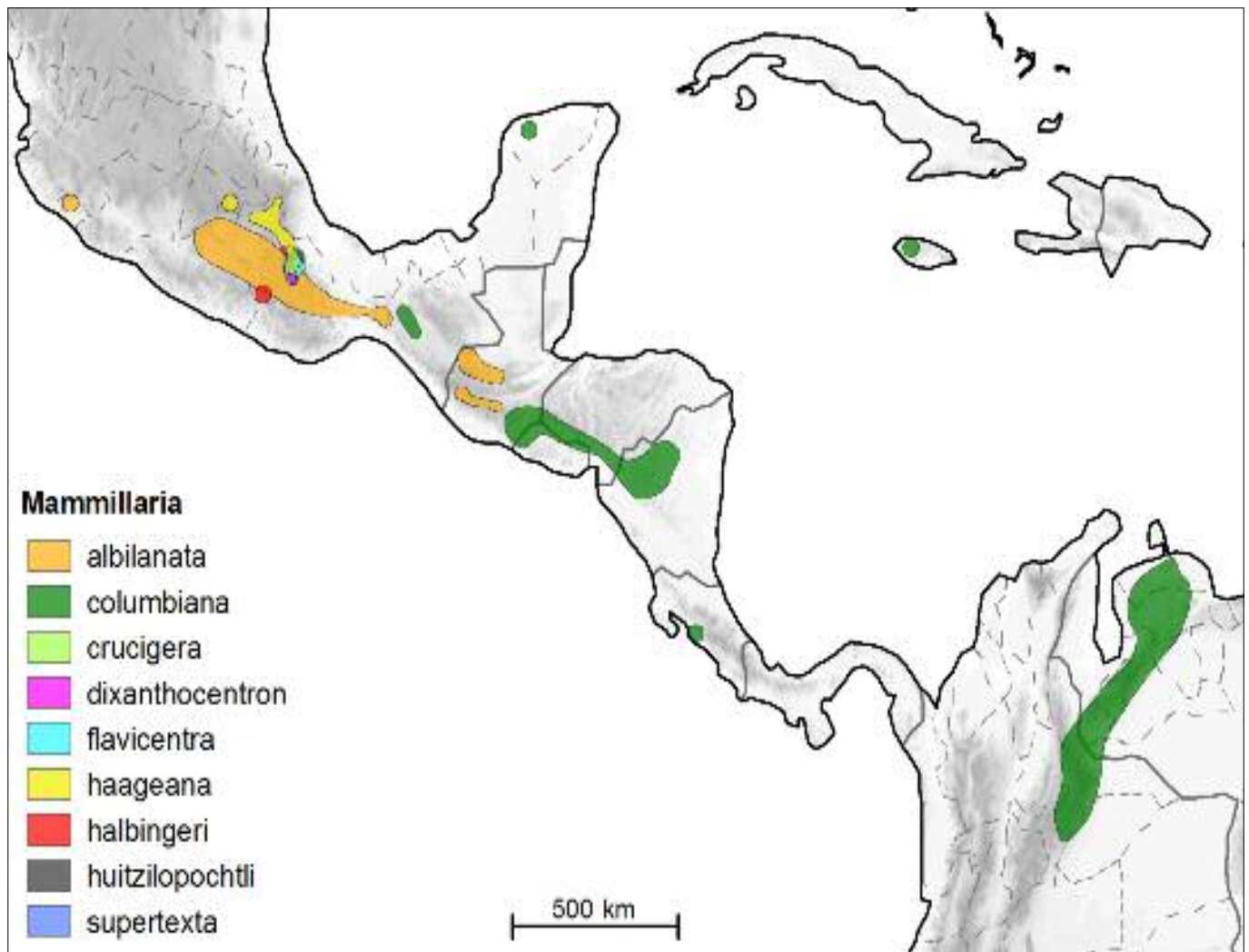
The original illustration of *M. supertexta* in the Munich herbarium



Lau's photo of *Lau* 1158 (Kodak dated Feb 1976). For a photo of the plant he sent me under this number, grown on at Kew, see his CSJGB article, p. 66



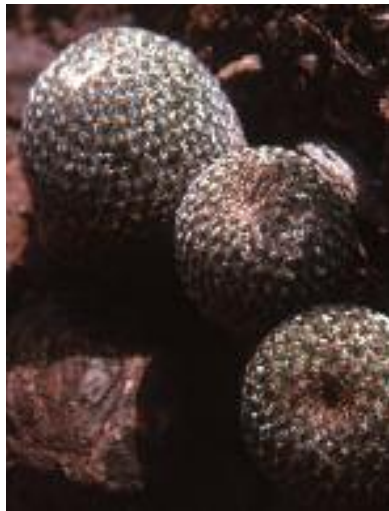
One of Lau's photos of *Lau* 1109 (Kodak dated Jul 1974), subsequently named *M. tlalocii* by Reppenhagen



Puebla we have what, for reasons of date priority, I will call the '*M. crucigera* zone', though *M. haageana* is more widespread and might be regarded as having a zone of its own, centred in Puebla. It is certainly in NE Oaxaca, and particularly in the mountains on either side of the Rio Salado, that *M. crucigera* and its allies seem to have gone slightly crazy, perhaps thanks to the variety of habitats on limestone, gypsum and conglomerate subsoils, steep-sided canyons and so on. When I proposed *M. huitzilopochtli*, I was not by any means sure that it was a distinct species, but it certainly needed a 'handle'. I said 'I have not overlooked the possibility that hybridization between the neighbouring and contrasting species *M. crucigera* and *M. dixanthocentron* could account for *M. huitzilopochtli*, but field-collected seed appears to be true-breeding'. My feeling now is that the whole 'Formenkreis' in this *M. crucigera* zone should perhaps be treated as a single species until gene-sequencing can tell us its probable phylogeny or if indeed hybridization has been an important factor. That's not to say I would favour discarding all the many names that have been proposed, or indeed any of them that are properly typified, in this or the other *Supertextae* 'zones'. We still need the familiar names as handles, at least for the plants in cultivation, AND the original collection numbers associated with them, where available.

The importance of collection numbers as a link to source data was a point surprisingly overlooked by Gordon Rowley when he advocated the more general use of cultivar names for introduced plants or taxa of debatable status (Rowley 2007/Tephro. Study Group J. 13 (3A): 47 et seq.) but I strongly support the fundamental point he makes – that though 'botanical' and 'horticultural' classifications serve different purposes, they can happily co-exist.

For now, anyway, I hope that any reader who has good images of Lau plants of *Supertextae*, bearing his numbers but not so far illustrated for our proposed booklet, will communicate with me or Mark Masterson, so that we can compile as complete a record of his collections as possible.



Reproductions of photos from Lau of his *Lau* 066 (left and centre) long- and short-spined, and *Lau* 066a (right).



Lau's photo of his *Lau* 681, listed in the AfM list as *M. crucigera*.

Lau's photo of his *Lau* 1087 in its habitat at 600 m 'on gypsum crystals and clay' to the west of Tomellin canyon.



Kodachromes by Lau of *Lau* 1087 in habitat. The images on this page are all from Kodachromes date-stamped by Kodak [19]74.

From my Mexican notebooks

Following discussion of Lau 1096 (*M. guerreronis*) in the first issue of *Huitzilopochtli*, I began this series with brief accounts of two excursions I had made with Mexican botanists, the first in August 1969 (to Acapulco and back) and the second in October 1974, when I had seen *M. guerreronis* myself (pp. 5-6). I described two earlier trips in July–August 1969 on pp. 15–16 and there were to be two more before I left Mexico that year. First, however, a little more about the trip to Acapulco.

Mexico City to Acapulco 1969

8–9 Aug 1969

As I mentioned before, the distinguished ethnobotanist Efraim Hernández Xolocotzi had kindly invited me to make this weekend excursion from Mexico City to Acapulco with him and his young daughter. Officially, I was in Mexico to collect material of *Tradescantia* and other Commelinaceae for collaborative research at Kew, and finding the pretty (and succulent) species *T. mirandae* was as much one of the delights of the trip as seeing *M. albilanata* (NCL pl. 433.1), *M. beneckeii* and *M. guerreronis*. I did not see such a large clump of *M. guerreronis* as Paul Hoxey's monster illustrated in NCL (pl. 430.2) but although much of this Kodachrome of *M. beneckeii* is out of focus, I am reproducing it as a challenge to anyone who has photographed larger clumps!



M. beneckeii near Puente Mescala, Gro., 600 m, 9 Aug 1969 [DH 690632]



M. guerreronis in the Cañon del Zopilote, Gro., 650 m, 9 Aug 1969 [DH 690922]



Drawing by
Margaret Stones
for Curtis's
Botanical Magazine
vol. 178, n.s. t. 615
(1972) © RBG Kew

Tradescantia mirandae, from the Cañon del Zopilote, Gro., 650 m, 9 Aug 1969, Hunt 7252 (K).

10–12 August 1969

Acapulco looked no less dreary under the overcast Pacific sky than an average UK seaside resort. We found a beach where you didn't have to pay, but it was unsheltered and the incoming waves were taller than me; OK for expert surfers perhaps, but a hazard for would-be paddlers. I ventured in, but escaped before being crushed and sucked under by the next big one. The following day we returned to Iguala, and then, on his way back to Mexico City, Dr Hernandez Xolocotzi delivered me to my next chauffeur, Dudley Gold (whom I had met during my initial stay in Mexico City, see photo, p. 15) at his country residence at Cuernavaca.

As a young man, Dudley had moved from the USA to Mexico in March 1918, to work at the copper mines of Nacozari, Sonora. It was near there, as recounted half a century later by Charles Glass (CSJA 40(4): 149-151.1968) when describing *M. goldii*, that Dudley had 'first observed the plants during an outing on horseback through the pine groves on the eastern slopes of El Globo mountain some nine miles to the east of town.' Now retired, but still a keen plantsman and Hon. Treasurer of the Mexican C&SS, he was very happy to go plant-hunting, though I later discovered it would be scary driving with him on mountain roads – he tended to pay more attention to the plants he could see above the road than the precipice on the other side!

For my first trip with him, Dudley generously offered to take me to that paradise for cactophiles, the Tehuacán valley (now the *Reserva de la Biósfera Tehuacán-Cuicatlán*), with its unrivalled assortment of columnar and candelabriform Pachycereae, as well as numerous other cacti more suitable for collectors with small glasshouses. Definitely an offer not to be refused!

13 August 1969

Tehuacán is about 230 km from Cuernavaca as the crow flies but there is no direct road and one must go via Puebla, about 120 km due east. To get to Puebla you must either circumnavigate the twin volcanoes of Popocatepetl and Ixtaccíhuatl by the northern route via Mexico City (176 km) or else detour south via Cuautla and Izúcar de Matamoros (180 km), making the total distance either way about 300 km. We took the southern route, skirting Puebla to the south.

On Mex 150 south of Tecamachalco, in gently sloping limestone country, Dudley stopped to show me *M. pectinifera*, *M. mystax*, *Coryphantha pallida* and the first of various forms of what I would now call *M. haageana*. In that area it is represented by what I have called ssp. *elegans*. A few km further on we saw *M. carnea* and *M. sphacelata* and the *M. haageana* form again, including some seedlings piggy-backing a big clump of *Ferocactus robustus*. Then more *M. mystax* and *M. sphacelata* on a hillside close to San Lorenzo, just before the town of Tehuacán where we made our overnight stop at the Hotel Tehuacán, even then a popular tourist hotel.



M. haageana in one of its many manifestations, cosying up to *Ferocactus robustus* near Mex 150, km 195, south of Tecamachalco, Puebla,



M. pectinifera nearby, but earthbound [DH 690725]

14 August 1969

From Tehuacán we took the Mex 125 that leads SW across the mountains towards Huajuapán de León. Beyond the first village of San Antonio Texcala the road descends to Zapotitlán de las Salinas, the type locality of *M. conspicua*. Beside the road there were big clumps of *Echinocactus platyacanthus* (the *grandis* form; see cover of CSI 18) and then more modest clumps of *Ferocactus flavovirens* and *M. haageana schmollii* beneath impressive stands of *Cephalocereus hoppenstedtii*. On the alluvium of the valley the flora was rather different, with the columnars *Neobuxbaumia tetetzo* and *Pachycereus hollianus* much in evidence and, scattered among the shrubs, *Peniocereus viperinus* and forms of *M. carnea* and *M. viperina*. Then we continued a short distance up the road to where, Dudley told me, Felix Krähenbühl, visiting the area with Francisco Buchenau, had collected what he recognized as *M. albidula*, the taxon Backeberg had named (invalidly) on the basis of an old plant Felix had earlier given him (see JMS 9: 7. 1969). So it had to be the same as *M. conspicua* (see NCL pls 435.3–4).



M. sphacelata Puebla, Mex150 Tecamachalco--Tehuacán km 226, 13 Aug 1969 [DH 690732]



M. sphacelata-viperina form; Puebla, Zapotitlán, 14 Aug 1969 [DH 690909]



M. carnea Puebla, Zapotitlán, 14 Aug 1969 [DH 690926]



M. conspicua Puebla, Zapotitlán, 14 Aug 1969 [DH 690916]

A trip to the Barranca of Metztlán north of Mexico City with Dudley and Hernando Sánchez-Mejorada was planned for the next day, but before returning to Mexico City, I had some 'official business' to attend to. A plant allied to *Tradescantia* had been collected at Puerto del Aire, the summit of the road east from Tehuacán towards Orizaba. A herbarium specimen had been preserved but living material was wanted for chromosome studies, as I suspected it was a new species. So we made haste to Puerto del Aire, where I was lucky enough to find and collect the material I needed.