MEXICAN FIELD-NOTES (7)

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The north-eastern part of the state of Oaxaca, as well as bordering Puebla has many cliffs which are the home to various populations of most attractive Mammillarias. We have selected three for this article.

The oldest-known is *M. crucigera*, which was described by Martius in 1832, and re-described (first as *M. falsicrucigera* and then as *M. buchenauii*) by Backeberg in 1962/63. This species is the only member of the *Supertextae* to regularly divide dichotomously. Like numerous other field researchers, we have been dazzled by the large colonies of this species growing on the gypsum cliffs near San Jose Tilapa. These have been illustrated so often that we have resisted the temptation to show them once more. Our own observations relate to two cliffs in the San Jose Tilapa area, about one mile from one another (ML 14 and ML 194). The most notable point to be mentioned here is the fact that, although the plants are spectacular, growing in an easy-to reach well-known site, there is no trace of human predation. We find this astonishing, as it goes against the oft made claim that habitats of rare plants will be devastated by collectors once their sites are published. Or perhaps we are the only ones to marvel before a large clump of *M. crucigera*! All published field-numbers attributable to *M. crucigera* sensu stricto come from the area from Teotitlan del Camino to San Jose Tilapa, in the state of Oaxaca or just into the state of Puebla. We have made the following description:

- ML 14: San Jose Tilapa (Puebla). Alt.: 1000m. Pure gypsum. Stems dividing dichotomously. Tubercles arranged in 13:21 series (when they can be counted !). Axils woolly, becoming very woolly in the flowering axils. Areoles with abundant white wool when young, later naked, round. Radials: 24-26, glassy pale yellowish, brown base, less than 2mm. Centrals: 6, much stouter than the radials, glassy pale brown, with dark brown base, to 2mm, in a plane parallel to that of the radials.

The second complex we would like to discuss here is *M. huitzilopochtli*. We shall start with a population found in the cliffs of red crumbling agglomerate rock above San Juan Bautista Cuicatlan (Oaxaca). This population has been known for many years, being first discussed by F.Otero in CySM 14:27-29 (1973). It then was collected by Alfred Lau (its field number is LAU 66b according to his 1983 list of field numbers, or LAU 66a, according to his paper on the Mammillarias of Tomellin Canon, CSJGB 41:61-66. 1979). It was also noted in 1974 by Werner Reppenhagen (R 898) and by David Hunt (DH 8841).

Then, there are the various field numbers of Woody Minnich (WM 4540 [*M. minnichii* ?], WM 5170). Apart from these records all stated to originate from San Juan Bautista Cuicatlan, there are various other field numbers in the same general area. Most are usual referred to *M. crucigera*, *M. Huitzilopochtli*, *M. supertexta* or *M. lanata*! We can mention here LAU 65, LAU 681, LAU 1116, SB 529, R 892, etc. But one has to ponder if all the plants around San Juan Bautista Cuicatlan are identical or not: Alfred Lau says of LAU 66b that it is a form with yellows areoles, whilst WM 4540 is stated to be with black spines . Not very far from there, in the Rio Santo Domingo area, Alfred Lau has reported LAU 1495, the form of *M. huitzilopochtli* with long curly centrals, and LAU 1400, the form with *no* centrals! One can apparently repeat the statement made by David Hunt about Series Polyacanthae (M. Postscripts 3:10 1991): *"every valley seems to have developed ii own distinctive populations "*.

Should we really follow John Pilbeam's wish (JMS 31:55. 1991) and give names, even if only at a varietal rank, to LAU 1495 or to WM 4540 ? Or should we stay put, attaching more weight to what these various populations have in common, namely their flowering characteristics (winter bloomers, small purple flowers more or less deeply embedded in thick wool, minute seeds) ? Should one not even go one step backwards, and put back *M. huitzilopochtli* under *M. crucigera* ? After all, the San Juan Bautista Cuicatlan population(s) are pretty much intermediate between the San Jose Tilapa and the Rio Salado - Rio Quiotepec populations, and it may be possible to explain the differences which do exist by the fact that these cliff-dwellers have been segregated from one another for a long time and grow in different type of rocks. We apologize, David, for making you sound like a crazy splitter, but then, when you described *M. huitzilopochtli*, you did not have at your disposal all these intermediate populations, and perhaps had not yet established your rules to be followed when considering the publication of new species (M. Postscripts 2)!

Our own records are as follows:

- ML 189: Santiago Quiotepec, Barranca do Rio Grande (Oaxaca). Alt.: 900m. Simple Hard red conglomerate rock. Stem ovoid elongate. Tubercles arranged in 8:13 series. Axils slightly woolly, becoming very woolly in flowering axils. Areoles woolly when young later naked, elongated (when the areole is woolly, the little tuft of white wool is surrounded by the dark bases of the radials giving the areole the appearance of an "eye" once the wool has disappeared, and if then are no centrals, a small vertical cleft will appear in the middle of the areole). Radials 16-24, glassy white, the laterals thicker than the uppers and lowers, about 3-4mm. Centrals: 0-2, dark brown, when 2 present, then one pointing upward and the other downward, about 8mm.

- ML 191: San Juan Bautista Cuicatlan (Oaxaca). Alt.: 950m. Soft red agglomerate rock. Simple. Stem globose. Tubercles arranged in 13:21 series. Axils with white wool, becoming very abundant in the flowering axils. Areoles slightly oval, with a little wool, not persistent. Radials: 20-35, glassy pale yellowish, all of equal length, to 2mm. Centrals: 6-12, slightly stouter than the radials, glassy brown with darker base when young, later glassy yellow, in a plane parallel to that of the radials, a little shorter. The organization of the centrals and radials presents quite a striking similarity with that of M.crucigera (ML 14).

- ML 198: junction of Rio Salado and Rio Grande (Oaxaca). Alt.: 700m. Hard red volcanic rock. Simple. Stem globose elongate. Tubercles arranged in 13:21 series. Axils with a little white wool, becoming very woolly in the flowering axils. Areoles elongated, woolly when young, soon becoming naked, and then showing a vertical cleft in the middle. Radials: 22-30, pale brown when young, becoming glassy-white, with brown base, about 3mm. Centrals: 0-1 (2), dark brown, the upper strongly pointing upward. A stout porrect black central is only rarely present.

The last taxon we will mention here is *M. tlalocii*. Discovered by Alfred Lau many years ago (his field number LAU 1109), it was first compared by him with *M. crucigera*, and then with *M. lanata*. It received its name in 1987. It is only known from the Barranca Ixcatlan, on the side of the recently built dirt road which leads from the highway MEX 131 to Santa Maria Ixcatlan. There, it grows in pure limestone just at the top of a monumental cliff. The population is quite abundant, and large specimens (such as the one pictured - which shows

about twenty five growth rings) are not rare. Frankly speaking, it is not easy to find a relationship between *M. crucigera* and *M. tlalocii*, or for that matter between *M. tlalocii* and any other taxon. A form of *M. dixanthocentron* with very stout centrals, which may be related to *M. dixanthocentron v.rubrispina*, grows less than a mile from the home of *M. tlalocii*; to our mind, this proximity excludes any close relationship between *M. tlalocii* and *M. dixanthocentron*.

The plants we have observed may be described as follows:

- ML 43: Barranca Ixcatlan, Carretera Pemex (Oaxaca). Alt.: 990m. Crumbling limestone. Simple. Stem cylindric, with a maximum diameter of 75mm. Tubercles arranged in 21:34 series. Axils slightly woolly, becoming very woolly in the flowering axils. Areoles with abundant white wool to the point of fully hiding the apex, fairly persistent. Radials: 2225, chalky white, the laterals the longest, to 2mm. Centrals: 2, pale brown with darker tips, to 2mm. Minute crimson flowers and tiny fruits.

Certainly more fieldwork is necessary before a clear picture of the relationships between the inhabitants of these cliffs may be drawn upl

ML198 = Lau 066. *Mammillaria huitzilopochtlii*. Junction of Rio Salado and Rio Grande, Tomellin Cañon, Oaxaca.

ML43 = Lau 1109 = Repp. 1328. Mammillaria tlalocii. Barranca Ixcatlan, Carretera Pemex, Tomellin Cañon, Oaxaca.