Espostoa Br.& R.

Cet article est basé sur l'original écrit par Graham Charles et publié dans le British Cactus and Succulent Journal 17(2): 69-79 (1999).
Vous en trouverez une traduction sur le Cactus Francophone : Espostoa Br.& R.

Il est ici modifié et corrigé à la lumière de nouvelles découvertes.

Notez que dans l'article original, la fig 1. à la page 68 a été incorrectement légendée. On doit lire "*Espostoa melanostele* dans le Canyon Tinajas, près de Lima GC157.04"

Although cerei are not the most popular cacti for growers restricted by cultivation in glasshouses, almost all collections have at least one representative of this beautiful genus. Most species are easy to cultivate and the hairy stems of many species make them an attractive addition to any collection, even in a small glasshouse. In pots, they are slower growing than many cerei, a factor which also makes them good show plants, frequently seen winning the Cereus class. For exhibitors, those species with stems covered with white hair catch the judge's eye. The hair can also hide minor blemishes on the stem which would more likely get spotted and count against other less covered species!

In keeping with the fashionable trend towards the broader concept of genera, *Espostoa* has been expanded in recent years to include species previously included in the separate genera *Pseudoespostoa* Backbg., *Thrixanthocereus* Backbg. and *Vatricania* Backbg. Recent molecular studies have shown that *Vatricania* is not an *Espostoa* and so it will be excluded from this revised article.

The flowering of Espostoas is rarely seen in northern European collections, although I have seen a few mature specimens in large glasshouses in Holland and Belgium. Espostoa flowers are usually produced from a lateral cephalium (more correctly, a pseudocephalium), or at least from modified areoles in the upper parts of the stem. In most species, the cephalium sits in a deep groove which extends down one side of the stem from the growing point and lengthens at the top as the plant grows. Occasionally, there can be two such cephalia on opposite sides of the same stem. It has been reported that the cephalia always grow on the sides of the stems with a particular orientation but I have observed wild populations with cephalia facing in various directions. Perhaps they actually face outwards from a group of stems to allow easier access to the bats as they approach to pollinate the flowers.

I was originally encouraged to write this article having made a trip to Peru where I saw many of the species in their natural habitat. Now, having travelled more in Peru, I have seen more populations and have modified the text in accordance with my observations. The natural range of the genus extends from central Peru into southern Ecuador. They are spectacular, often dominating a hillside or forming a cactus forest with other species, the white hairy species being particularly splendid. They are the only cephalium-bearing cereoid plants in Peru, inhabiting the coastal valleys as well as the warmer inland valleys to the east of the main Andean cordillera.

The genus *Espostoa* was erected by Britton and Rose in volume II of their book 'The Cactaceae' in 1920. It was named for Nicolas E. Esposto, a botanist then connected with the National School of Agriculture in Lima. They designated *Cactus lanatus* H.B.K., (described in 1823) as the type, and only, species of their new genus. Their description and illustrations, however, make it clear that they

included the plant we now accept as another species *E. melanostele* in their concept of *E. lanata*. In fact, they did not realise that *Cephalocereus melanostele* Vaupel (described in 1913) belonged to their genus *Espostoa* and instead made it the type of another new genus *Binghamia,* together with a second species *Binghamia acrantha* (*Haageocereus acranthus*). I imagine that they came to this conclusion because they thought Vaupel's description referred to the plant we would now call a *Haageocereus* which grows with *E. melanostele*.

Espostoas from the eastern inland valleys of Peru are more cold-sensitive in cultivation, particularly so the species which live at low altitude, for instance, where the rivers enter the forest zone. Here one finds the remarkable and little known *Espostoa calva* Ritter which is hairless, so, before it grows its typical Espostoa cephalium, it is difficult to recognise as belonging to this genus. *Espostoa utcubambensis* is even more intolerant of low temperatures and is probably the most sensitive in the genus.

Like so many cactus genera, the number of species and varietal names erected in *Espostoa* is far greater than a conservative view of the plants would support. In consulting the literature to try to put names to the plants I had seen in Peru, I was surprised to find how little had been published in English, and also how many different names had been applied by subsequent authors to what appeared to me to be the same plant! The number of species in the genus was reduced in the New Cactus Lexicon treatment, but I am left with the feeling that there is much which remains unknown about the relationships of *Espostoa* species and it is to be hoped that a molecular study will soon be undertaken. It would be very interesting to know if *Thrixanthocereus* is really part of *Espostoa*, or if its similarities are just convergence, a phenomenon which we now know is more common in Cactaceae than originally thought. I have here listed a few taxa as species that were treated as subspecies of *E. lanata* in the NCL.

The few roads in these parts of Peru and the difficult terrain means that we can only sample populations in the few places where they are accessible, leaving unknown the extent to which these populations link up. For instance, in the river Marañon gorge and tributaries, it appears that if the altitude is right then you will find an Espostoa, a fact which makes me suspect that they colonise just about all the river valleys in the area. There could be just one species there that exhibits great variability, enough to cover all the published names which have been described from accessible locations.

The flowers of Espostoa are nocturnal, usually white, and are borne over the length of the cephalium. *Espostoa (Thrixanthocereus) senilis* has purple-pink nocturnal flowers. I wonder why this species has evolved flowers of this colour? The main pollinators are said to be bats, but moths and flying insects are also likely to be involved. Espostoas in the strict sense have berry-like fruits that remain largely buried in the wool of the cephalium until ejected whole when ripe, eventually splitting to reveal the black seeds. These berries are reported to be sweet and are eaten by the local people.

In cultivation in northern Europe, Espostoas enjoy a full sun location with plenty of root room and generous watering in the summer. The species from the warmer, low altitude habitats are sensitive to cold and should be kept at a minimum of 10°C. Such species include *E. mirabilis, E. blossfeldiorum, E. calva* and *E. utcubambensis*. Young plants of *E. melanostele* and *E. melanostele* ssp. *nana* are particularly attractive, their 'cotton wool' covering making them look like shaving brushes. These two species are also amongst the slowest growing, so making them particularly suitable for showing. A well grown *E. melanostele* will be about 25cm (10inches) tall after 10 years.

Some notes about the individual species follow. I have rationalised the list by including some names as synonyms of previously described species. In some cases, these synonyms are recognisable forms which may have horticultural value and so be worth retaining as names in your collection. I have not

listed all the old synonyms for each species but these can be found by consulting Ritter's 'Kakteen in Südamerika' Band 4.

Espostoa blossfeldiorum (Werd) Buxbaum

Oesterr. Bot. Zeitschr. 106: 155 1959

syn: *Thrixanthocereus blossfeldiorum* (Werd) Backeberg

Following its discovery by Blossfeld, this distinctive plant was tentatively described by Werdermann in 1937 as a *Cephalocereus* but almost immediately Backeberg erected a new genus *Thrixanthocereus* to accommodate it because of its hairy flower tubes. In 1959, Buxbaum explained his reasons for including it in *Espostoa* and made the combination in Krainz, Die Kakteen 1966.

I have not yet seen a molecular study which addresses whether this is really an *Espostoa*. The fruits and seeds are certainly very different and the cephalium is not in a deep groove as with other Espostoas, but is composed of a slightly depressed zone of bristles and hair on one side of the stem. The plant is usually solitary, growing up to about 3m. The young plants have a characteristic growth of long fine bristles at the base of the stem, a feature also seen on *Espostoa mirabilis*. The flowers are nocturnal and white, sometimes appearing in large numbers simultaneously and remaining open for some time the following morning.

All the reported habitats are in the Marañon river system including the Chamaya and Huancabamba rivers, the type locality being near the town of Huancabamba. As I mentioned before, the reported populations are where roads give access to the valleys, so it is more than likely that this species grows in suitable places throughout the whole river system between the reported localities. I have seen it near Huancabamba, along the Chamaya, as well as further south at Balsas and even further upstream. At Puenta Crisnejas, the closely-related *Thrixanthocereus cullmannianus* can be found, a form described by Ritter in 1961. It is not as large as *E. blossfeldiorum* so will flower at a smaller size in cultivation. Ritter also described *Thrixanthocereus longispinus* from even further upstream in the Marañon valley at El Chagual, a plant which I saw recently and appears to be another form of this species. It was interesting to note that wherever I saw this plant in habitat, it grew only on shallow ground over rocks, for instance on rocky outcrops where it grew in large numbers. There were none to be found in the surrounding areas of flatter ground where other cacti were growing, presumably in deeper soil.

All these forms make fine specimens in the glasshouse. If you can keep them above 10°C and give them good light and plenty of water in the summer, then they will grow surprisingly quickly and flowering is certainly possible, particularly with *T. cullmannianus*.

Espostoa calva Ritter

Kakteen in Südamerika 4:1432 (1981)

In my original article, I misapplied this name to the *Espostoa* in the Utcubamba Valley, now described as *E. utcubambensis*. In fact, the habitat of *E. calva* is high above the Marañon river to the east of Balsas. At first, I failed to spot it from the road because its hairless green stems are difficult to see against the leafy trees amongst which it grows. Most of the hillsides are quite bare, but groups of

trees and bushes grow in favourable places such as in the grooves on the hills where streams run in the rainy season.

In age, this species makes a multi-branched tree of great size. The cephalium comprises brown wool in a groove on one side of the stem and the small white flowers are produced in quantity at night. Ritter suggests that the lack of hair is a primitive characteristic making this species nearer to the naked ancestors of the genus.

It is still quite uncommon in collections, the oldest plants probably originating from Ritter's seeds or from Lau who saw this plant when he travelled on the road from Leimabamba to Balsas.

Espostoa frutescens Madsen

Flora of Ecuador 35:36-37 (1989)

This is the most recently described and the most northerly species, first appearing in No 35, part 45 of the Flora of Ecuador in which Jens Madsen, a Danish botanist, documented all the cacti of that country.

It looks like *E. melanostele*, branching from the base and growing up to 2m high but it differs in not having small shiny black seeds, instead they are larger and matt black like those of *E. lanata*. The type locality is at San Francisco on the road from Santa Isabel to Pasaje in southern Ecuador. In cultivation, young plants look just like *E. melanostele*, although as yet they are rarely seen in collections. Because this part of Ecuador is not often visited by cactus enthusiasts, seed has only been available recently.

Espostoa huanucoensis Ritter

Kakteen in Südamerika 4:1435, 1981

From further inland and south, Ritter described another species, *E. huanucoensis*, from near Huánuco which is in the Huallaga river system, to the east of the Marañon river. Here it grows in extensive stands on the hillsides as pictured in Ritter's book (1981). This taxon has been treated as a subspecies of *E. lanata* but now I have seen it, I consider it to be a good species. The branching habit is different from *E. lanata* and it has white fruits.

This is a particularly attractive species to grow, the seedlings are densely hairy and unusually stout when small. Seed was supplied by Knize some years ago, but I have not seen many plants in collections.

Espostoa hylaea Ritter

Taxon 13 (4): 143 1964

One of the more recently described species resulting from the extensive explorations of Friedrich Ritter. It comes from the transitional zone between the tropical jungle and the dry forest in the Bagua

province of the Peruvian department of Amazonas. Ritter says it is related to *E. superba* and *E. ritteri*, found nearby, and that it is well defined with no intermediates found. I saw it near Pongo de Rentema on steep cliffs near the Marañon river. It is characterised by its more slender stems than other Espostoas and the narrow cephalium. Ritter illustrates its large wide opening flowers in his book 'Kakteen in Südamerika' 1981.

It is rarely seen in cultivation but I photographed a plant in the DeHerdt collection early in the 1970's which had retained its thin stems, and my seedling is also similarly slender.

Espostoa lanata (Kunth) Br.& R.

The Cactaceae Vol.II:60-63, 1920

This, the first plant to be discovered which would be classified as an Espostoa, was found by Humboldt at Guancabamba in Ecuador and described by Kunth as *Cactus lanatus* in 1823 . It became the type species of the new genus *Espostoa* when Britton and Rose erected the genus in 1920. Today, Huancabamba is in Peru, the border with Ecuador having moved northwards.

There have been many names erected for forms of this widespread species, some old, but many in recent times. Some of the species I have listed separately here could probably be included in *E. lanata*, but certainly some synonyms are *E. laticornua* Rauh.& Backbg., *E. procera* Rauh.& Backbg., *E. ritteri* Buin., and *E. sericata* Backbg. Most recently, Madsen and Aguirre (2004) described the pink-flowered form of *E. lanata* from Ecuador as subspecies *roseiflora.*

E. lanata is one of the largest Espostoas, said to grow up to 7m high with numerous branches. These branches usually appear from the upper part of the main trunk, giving it a tree-like appearance. Near to Bagua, I saw the densest cactus forest I have ever seen anywhere. It consisted of *Browningia altissima*, *Armatocereus rauhii* and *Espostoa lanata*, the Browningia and Espostoa having a similar branched candelabra-like appearance. This form of *E. lanata* is the one which was given the name *E. laticornua*.

In cultivation, *E. lanata* is one of the most frequently grown species. It needs plenty of root-space so that it can grow properly and if planted in a free root run, it can grow several inches a year and make an impressive specimen particularly when it forms branches. It usually needs to be over 2m tall before a cephalium is formed and I have seen such fertile specimens in European glasshouses. The large red fruits are expelled from the cephalium whole and contain many seeds in white pulp. The seed is often available and is easily grown.

Espostoa lanianuligera Ritter

Kakteen in Südamerika 4:1443-4, 1981

This is another of Ritter's species which he said is related to *E. lanata*. In fact, it probably does not deserve specific status and would be better treated as a variety or form of *E. lanata*. It is a spectacular plant, growing up to 5m high with many branches. It has prominent ivory-coloured spines which protrude through the wool, a feature that is retained in cultivation. The DeHerdt collection in Belgium had a beautiful specimen in free root run and the nursery often listed seed of this splendid Espostoa for sale. This is my favourite form of the *E. lanata* complex.

I saw it at its type locality at Puenta Crisnejas where the road crosses the Crisnejas river, quite near to where it joins the Marañon, along which so many Espostoas can be found. Plants I saw on the hills further north, above Balsas, looked to me to be a form of *E. lanata* but Ritter states that the plants there belong to *E. lanianuligera*.

At Puenta Crisnejas, I was puzzled by the extensive damage done to the stems by human activity but now I read in Ritter that the local people cut down the stems to harvest the wool from the cephalia for use in cushions. This activity is also reported by Madsen in connection with *E. lanata* in Ecuador who says that it results in few plants reaching their full potential size.

Espostoa melanostele (Vaupel) Borg

Cacti:112 1937

This species was known to Britton and Rose when they erected their genus *Espostoa* but they included it in their other new genus *Binghamia*. They pictured a plant of this species as an example of their *Espostoa lanata* apparently without realising that their illustration was the plant Vaupel had described in 1913. Ritter makes a case for saying that *Pilosocereus haagei* Ruempl. is the oldest name for this species, but this is not certain enough to accept, so this old name is usually discarded as being of uncertain attribution. Backeberg created the genus *Pseudoespostoa* in 1934 to accommodate this species and later included *E. nana* also. The reasons he gave for the separation were the glossy black seeds, as well as minor differences in the cephalium and fruit.

E. melanostele grows to 2m high, branching freely from the base to form a cluster of stems. It is found in the river valleys of western Peru which drain into the Pacific Ocean from about 800m up to over 2,000m. It has a wide distribution range from the Pisco valley in the south to the valley of the Rio Saña in the north.

This is one of the most popular species in cultivation, the seedlings being particularly attractive with their covering of long white hair, and as I mentioned earlier, they are often seen on the show bench. Seed is always available and raising plants from seed is easy in an open soil and good light. I cannot recall seeing this plant flowering in a northern European glasshouse, but it earns its place without flowers.

Espostoa melanostele subsp. nana (Ritter) Charles

Cactaceae Systematics Initiatives 14:15 (2002)

Originally published as a separate species by Ritter in 1964, this taxon is very like *E. melanostele* except that it forms broader, shorter clumps. Like *E. melanostele*, it was included by Backeberg in his genus *Pseudoespostoa* since it has the same glossy black seeds. It has a pale-coloured cephalium rather than the dark brown of *E. melanostele* and less ribs. It also grows further inland and at higher altitude than *E. melanostele* in the valley of the river Santa near to Huallanca, but it is very similar so I made it a subspecies of *E. melanostele* when preparing for the New Cactus Lexicon.

In cultivation, young plants of *E. nana* are indistinguishable from *E. melanostele* except perhaps it is slower growing. Its extremely dense covering of hair makes this a very attractive plant for our collections, although I am unaware of it flowering in northern European glasshouses.

Espostoa mirabilis Ritter

Taxon 13 (4):143 1964

A very distinct species from the Marañon river gorge near Balsas and further south. It forms a clump of stems branching from the base, each reaching 2 to 4m high. It is less hairy than most Espostoas and the cephalium is made of unusually dark brown wool. Its habitat is the steep sides of the gorge from river level up to about 1600m, over which range it is very plentiful. Plants I have seen in cultivation of *E. baumannii* Knize look like the same plant and are reported to occur just south of Balsas.

Balsas is a hot place which gives a clue to this plant's intolerance of low temperatures in cultivation. The seed is often available and the resulting seedlings hardy look like Espostoas at all, but interestingly, they do grow very long spines at the base of the stem just like *Espostoa (Thrixanthocereus) blossfeldiorum* with which it shares part of its habitat. The practical purpose of these basal bristles is not known but could be protection from being eaten, especially when the plant is young. I saw a 2m tall plant with a cephalium nearly 1m long in a collection in Holland many years ago. The owner told me that it flowered almost every day of the year, and indeed it was in flower when I saw it, even though it was a dull wet day.

Espostoa mirabilis v. primigena Ritter

Taxon 13 (4):143 1964

Ritter describes this variety from El Chagual, another location on the Marañon river where a road crosses it, to the south (upriver) of Balsas. He says that this plant is similar to his *E. ruficeps* which occurs even further south, also near to the Marañon. When I visited El Chagual, the Espostoas there were very variable in size, spination and cephalium. They made me wonder if I was observing a population of hybrids, perhaps between *E. mirabilis* and *E. lanata* forms.

Interestingly, this plant was possibly mentioned by Britton and Rose in their description of the genus Espostoa, where they speculate that a member of their new genus may occur at Chagual, having seen a photograph taken there.

Espostoa ruficeps Ritter

Kakteen in Südamerika 4: 1448, 1981

This is a freely branching species related to *E. lanata* but with thinner stems and less tall, growing to just 2.5m high. I saw it on steep slopes near to Rahuapampa at 2400m. Also growing there I saw a single plant of what I think must be hybrid of Espostoa. It did not have a continuous cephalium, but a number of tufts of fine spines near the top of the stems. I can only guess that this plant was a hybrid with the *Matucana comacephala* which also grew on the hillside. Ritter mentions hybrids of Espostoa in his book, including ones with Matucana.

Espostoa ruficeps was first offered as seed in the Winter catalogue of 1957, although Ritter admits to some confusion in later editions of the catalogue with his *E. lanianuliger*a, which he first treated as a

variety of *E. ruficeps*. Plants of this species, which is probably a form of *E. lanata,* are not often seen in cultivation. The central spines are described as red or sometimes yellow and it is a very attractive form to grow, spines on older specimens becoming a rich red.

Espostoa senilis (Ritter) N.P.Taylor

Cact. & Succ. J. Gr. Brit. 40(2):54, 1978.

syn: *Thrixanthocereus senilis* Ritter

This outstanding plant was described in 1961 by Ritter in KuaS as *Thrixanthocereus senilis*. It was the first new Thrixanthocereus to be found following the erection of the genus for *Thrixanthocereus blossfeldiorum* by Backeberg in 1937 and remains the only other distinct species.

The stems, which grow up to 4m high, are branched and densely covered in white spines making this one of the finest species for cultivation. The cephalium can be formed in cultivation when the plant is about 1m high from which the unusual deep pink nocturnal flowers are produced. It is slower growing than *E. blossfeldiorum* but flowering specimens are often seen in European glasshouses. I have had a few flowers on one of my plants which was then about 1m high.

This species is reported from only a few localities in Ancash and La Libertad, perhaps influenced by the type of rock. I have seen it near to Rahuapampa, growing on steep slopes amongst quite dense low vegetation following an unusually wet rainy season. Quite a number of the largest stems were dying back from the tips but new vigorous branches were growing from lower down. Only a few plants had cephalia and (in April) I found neither flowers nor fruits. It is unfortunate that seed is only occasionally offered for sale but I recommend you to grow it if you get the chance.

Espostoa superba Ritter

KuaS 11(6): 85, 1960

Another of Ritter's discoveries, this tall species grows amongst dense bushes and trees where the tops of the stems protrude above the mass of tree branches. These stems are noticeably fastigiate and closer together than *E. lanata* and its fruits are white. Its distribution is restricted to near the city of Jaen, west of the junction of the Marañon and Chamaya rivers. I was only able to find a few plants. They were north of the city on steep slopes and fortunately there was a single white fruit lying on the ground below one of these tall plants. The cephalia were out of reach so it was impossible to search for fruits hidden in the wool.

Young plants in collections are handsome, most having been grown from Knize's seeds. The surroundings of Jaen are particularly hot because of the low altitude, so a minimum temperature above 10ºC is recommended. Regrettably, seed is rarely available.

Espostoa utcubambensis Charles

BCSJ 21(2): 69-74, 2003

This is a very interesting and distinctive plant. It lacks the covering of hair usually associated with Espostoas but in other respects is much like the other species. It is found only in the valley of the Utcubamba river where it is extremely common between 1800 and 2400m, growing on the steep valley sides often amongst a dense covering of trees. This easterly locality receives plentiful rainfall in the summer resulting in the lush growth of vegetation, which includes Rhipsalis growing over rocks and many bromeliads flourishing in the trees.

In my original article, I misidentified this taxon as *Espostoa calva*, a species I had not seen at the time and, although also naked, *E. calva* has greener stems and a cephalium with yellow-brown wool. *E. utcubambensis* makes a tree up to 9m high, the tallest species in the genus. In places, it makes dense stands on the steep rocky slopes of the valley sides. At lower altitudes it shares the hillsides with other cacti including *Corryocactus chachapoyensis, Melocactus bellavistensis*, *Borzicactus hutchisonii* and *Browningia altissima*.

This is a rare plant in cultivation. Young individuals look like *Weberbauerocereus* and would certainly look out of place in an Espostoa class on the show bench. I first saw top cuts of this at DeHerdt's nursery in the early 70's. It was described as 'species Utcubamaba' and a few seedlings came into cultivation. Seed of the same plant was distributed as *Thrixanthocereus jelinkyanus* n.n. KK282. The resulting seedlings certainly look very similar to those I have grown from habitat collected seed and are clearly the same plant.

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