Columnar forms of cacti are well represented in Brazil as a whole from which some sixty species are described, but nearly all of these are known only from a small part of the country east and northeast of the Rio São Francisco. Those of the interior are virtually unknown, and *Cephalocereus cuyabensis* (Backeberg) comb. nov. is the only species reported from the vast central region south of the Amazon River. Accordingly, it was of greatest interest to discover, in several localized habitats in the vicinity of the headwaters of the Rio Tocantins in Goiás, colonies of what appear to be at least three different species of *Cephalocereus*. Cuttings of one of these flowered recently in cultivation both in Berkeley and in Santa Monica, California, and has proved to be of a species unlike any previously known. It is described below.

*Cephalocereus machrisii* sp. nov.

Pls. 1-3

Plantis ad 3.5 m. altis, ad basim ramificatis, ramis simplicibus, 7-8 cm. diametro, circa 11-13 costas habentibus, glaucis; areolis dense positis, 3-4(5) mm. distantis, pulvino capillorum receptis 3-4 mm. longis, caespitis lanato croceo vel fusco, canescenti, ad ultimum deciduo; spinis 15-17 flavis, fuscescentibus stramineiscentibusve, haud distinctis ad situs radicales vel centrales, aliis 12-13

1. Expedition Botanist.
2. *Pilocereus cuyabensis* Backeberg, Blätter für Kakteenforschung, 1935-1, genus 98, species 4. 1935. This and other new combinations are made in *Cephalocereus* due to the illegitimate status of *Pilocereus*.
3. For localities and the general account of the botany of the Expedition see No. 2 of this series (Jan. 1957).
PLATE 1

_Cephalocereus machrisii_ Dawson, from a plant of the type collection, University of California Botanical Garden 56.879-1. Fig. 1. Stem, buds, open flower and closing flower, x 1; Fig. 2. Stigma, x 3.5; Fig. 3. Flower in apical view, x 1; Fig. 4. Edge of inner tepal, x 7.5; Fig 5. Longitudinal section of flower showing stamen insertion, x 1; Fig. 6. Funicles, x 27; Fig. 7. Stem cross section (in somewhat shrunken condition) x 0.3; Fig. 8. Nectary chamber, x 3. Drawing by Mrs. M. Bios.
Plants to 3.5 m. tall, with 8 or more branches from the base; branches closely erect, simple, 7-8 cm. in diam. when well filled out (5.5-6.0 cm. in somewhat shrunken cultivated cuttings); ribs 11-13, 1.0-1.5 cm. high; upper parts of stems appearing yellow-brown from a distance because of the brown wool and yellow spines; epidermis grey-green to bluish-pruinose on upper parts, but not powdery; areoles closely set, mostly separated only 3-4 (5) mm., consisting of a cushion of short, straight hairs 3-4 mm. long and a tuft of yellow-brown wool which becomes grey with age (developing white in cultivation) and is ultimately lost; wool tufts prominent and individually distinct on mature flowering heads; spines mostly 15-17, yellow at first, becoming brown or straw-colored, not distinct as to radial and central positions, the 12-13 more or less radial ones 5-8 mm. long, the 2-4 central ones semi-erect and longer, 10-15 mm. and occasionally to 20 mm. long; flower buds dull red, abundant, 8 or more borne radially and equally from all sides of the upper 10-15 cm. of the mature branches, arising from densely brown woolly areoles from which part of the wool is lost during development; flowers reaching 4.0-4.5 cm. in length when open, the corolla 30-35 mm. across the spread limb, dull reddish without, not glaucous, grading into pale green at the receptacle, naked, scaleless but somewhat fluted in the lower third; perianth reflexed, white within except the tips of the outermost segments; stamens with white filaments and yellow anthers; stigma yellow, with 9 non-spreading lobes; perianth segments all irregularly, minutely denticulate to short-fimbriate along their outer margins; anthesis occurring in early May about 11-12 days after appearance of buds which develop in close succession, the flowers opening about an hour after sunset and closing about 4 hours after sunrise, turning black, if unfertilized, and falling off the second day; ovules 275-325 μ long, their integument cells prominent, 16-21 μ in diameter, appearing to suggest that the mature seed coat is pebbled rather than smooth, borne on twice, or thrice-branched
PLATE 2

PLATE 3
*Cephalocereus machrisii* Dawson. Apical portion of the plant shown in Plate 2 (upper), fig. 1.
funicles; placentae 9, the roof of the ovary clearly showing 9 radiating locular ribs; fruits not seen; attempted crosses with *Cephalocereus arrabidae* and *C. nobilis* negative for all three plants.

**Holotype:** Dawson 15110, from a sandstone outcrop on the east side of the Ceres road 3 km. south of Uruacu, Goiás, Brazil, May 26, 1956, deposited in the Museu Nacional, Rio de Janeiro. A duplicate type, representing the other half of the same cutting, is in the Los Angeles County Museum Herbarium.

The species is named in honor of Mr. Maurice A. Machris, cosponsor with his wife of the 1956 Brazilian Expedition.

This new plant appears to be most closely related to *Cephalocereus cuyabensis* (Backbg.) Dawson from Cuyabá, Matto Grosso, but that species has more slender branches and its flowers are described as “much powdered and creamy white.” In *C. machrisii* the flowers cannot be interpreted as “powdered” at all, and the tepals are pure white within and reddish without.

Four other Brazilian species are somewhat similar, but still markedly distinct. *Cephalocereus piauhyensis* (Gürke) Britton & Rose differs in being treelike rather than basally branched, in having unilateral instead of radial flowering areoles, and white rather than yellow-brown hairs and wool. *Cephalocereus minensis* (Werdermann) comb. nov. differs in being smaller, in having more slender branches with more ribs, and in having scales on the ovary with some hairs in their axils. *Cephalocereus bradei* (Backeberg & Voll) comb. nov. differs in its unilateral flower zone, its grey felted areoles, chocolate brown rather than yellow spines, and greenish white flowers. *Cephalocereus hapalacanthus* (Werdermann) comb. nov. differs by its grey wool and white hairs, by its shorter spines and longer, curved rather than straight flowers with a green midrib on the tepals.

The colony at the type locality consisted of about a dozen mature plants scattered in open places on the north end of the sandstone outcrop and occupying an area of about 150 by 50 meters. The associated vegetation was moderately heavy and, with the exception of an occasional bromeliad, did not contain other succulent plants. Although a number of similar sandstone outcrops were visited in the Serra Dourada and along the road to Peixe over 300 km. to the

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4 *Cereus minensis* Werdermann, Brasilien und seine Säulenakteen, 93, 1933.
5 *Pilocereus bradei* Backeberg & Voll, in Backeberg, Cactaceae, Jahrbücher der Deutschen Kakteen-Gesellschaft, 78, June 1942.
6 *Pilocereus hapalacanthus* Werdermann, Brasilien und seine Säulenakteen, 110, 1933.
Above and lower left. Cephalocereus sp. growing on a sandstone outcrop 40 km. south of Uruacu, Goiás; Lower right. Cephalocereus sp. growing on a sandstone outcrop 15 km. northwest of Veadeiros, Goiás.
north, no other terrestrial cacti were encountered. To the south, however, about 40 km. below Uruaçú on the Ceres road, another colony of *Cephalocereus* was found (pl. 4). These plants have the same habit as *C. machrisii* but lack the bluish pruinose character and have a somewhat heavier and longer armament. The specimens now under cultivation may prove upon flowering to be a distinct but closely related species.

The only other columnar cacti found in the nearly three months of botanizing in Goiás in 1956 were collected in three localities in the Chapada dos Veadeiros at 15 km. northwest of Veadeiros on the Cavalcante road, and at 7 and 14 km. south of Veadeiros on the São João da Aliança road. All were on sandstone outcrops and appeared in the field to be variants of a single species of *Cephalocereus*, but none were found in flower or mature fruit. These plants, unlike *C. machrisii*, were characterized by a unilateral wooly flowering zone on the north side of mature stems (pl. 4). Cultivated cuttings of this species have not yet flowered.
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