

ENSETE GLAUCUM (ROXB.) CHEESM. IN THE KHASI HILLS,
MEGHALAYA, INDIA

The genus *Ensete* Horan., for long, treated under the well known genus *Musa* L. (and even now so, in some Floras) was restituted by Cheesman who justified it on the basis of species of *Ensete* being monocarpic, with distinctly swollen base, the spathes persistent, and the chromosome number, $2n=18$, being different from that in *Musa*, $2n=22$ or 20 . Although, earlier, Cheesman transferred numerous species of *Musa* to *Ensete*, later, Simmonds limited only six species in Africa & Asia, of which two occur in India—*E. superbum* (Roxb.) Cheesm. and *E. glaucum* (Roxb.) Cheesm. However, Roxburgh originally described *M. glauca* from plants introduced into the Company's botanic garden (now the Indian Botanic Garden) from Pegu, Burma, then part of the Indian Empire. The subsequent record of its natural occurrence in India has been doubtful, all the plants seen being in gardens' or nurseries in the North Eastern Region. Hence, Simmonds attributed its occurrence in India 'probably in Assam'. Apart from the uncertainty of its distribution, he also remarked that only 'a general though still incomplete account of *Ensete* in Asia' could be given.

In drafting an account of the monocot families to complete the hitherto incomplete Kanjilal's Flora of Assam, the family Musaceae posed difficulties due to unsatisfactory collections making it necessary to bring together adequate material from different parts of the N. E. region (the former Assam Region). In this context, a fine inflorescence of what was obviously *Ensete glaucum* exhibited in the Shillong Flower Show in 1968, attracted our attention, but unfortunately no data as to its source could be obtained, as the exhibitor, an unlettered Khasi farmer had himself obtained it from somebody else.

Presumably it was from a kitchen garden. From then onwards a careful watch was kept, and on 20th June, 1973 a fullgrown plant of *E. glauca* was spotted in the front yard of a Khasi farmer, in the village Umdihar near Nongpoh. Enquiries revealed that it was a five year old plant which he had raised from seed gathered from the jungle and that he grew it for the sake of its edible soft inner pseudostem. Subsequently, he guided us to the jungle location, where several scattered plants of various ages were seen naturally growing, near a stream, on a gentle slope. Some more were subsequently spotted in the vicinity of Nongpoh. Further a few plants in full bloom were also discovered in the Barnihat Orange Research Station, and enquiries revealed that these were raised from the parent plant which itself had grown from seeds obtained from the Garo Hills, undoubtedly the same material, about which Simmonds has remarked.

This discovery of *Ensete glaucum* naturally occurring in the forests of the Khasi Hills, conclusively establishes its distribution in the N. E. Region of India (Old Assam). Plants were introduced into the Experimental Gardens at "Woodlands" in Shillong and at Barapani. Subba Rao, G. V. & G. R. Kumari, (in Bull. bot. Surv. India 14: 164-166. 1972) have reported *Ensete glaucum* as a relict species in the Eastern Ghats of India, and provided a description. However, considering that this plant is poorly known, and the description is based on plants from that part of the country, it is felt useful to provide a comprehensive description, based on our detailed field observations, supplemented by photographs of various parts of the plant, not amenable to treatment by usual herbarium procedures. Here, it may be relevant to quote from G. C. G. Argent: The Wild Bananas of Papua New Guinea, in

Notes Roy. Bot. Gard. Edinburgh 35(1): 77-114. 1976—'Bananas are difficult to collect as adequate herbarium specimens and representation in herbaria will probably remain poor; *photographs and accurate field notes almost always carry more taxonomic information* than dried herbarium material. Although pickled specimens are quite useful and ripe seed samples can be diagnostic, field observation is of paramount importance in the study of these plants' (*underlining ours*). The detailed description furnished here is based on field observation of many plants, and together with the photographic illustrations should help in a clearer understanding of these plants.

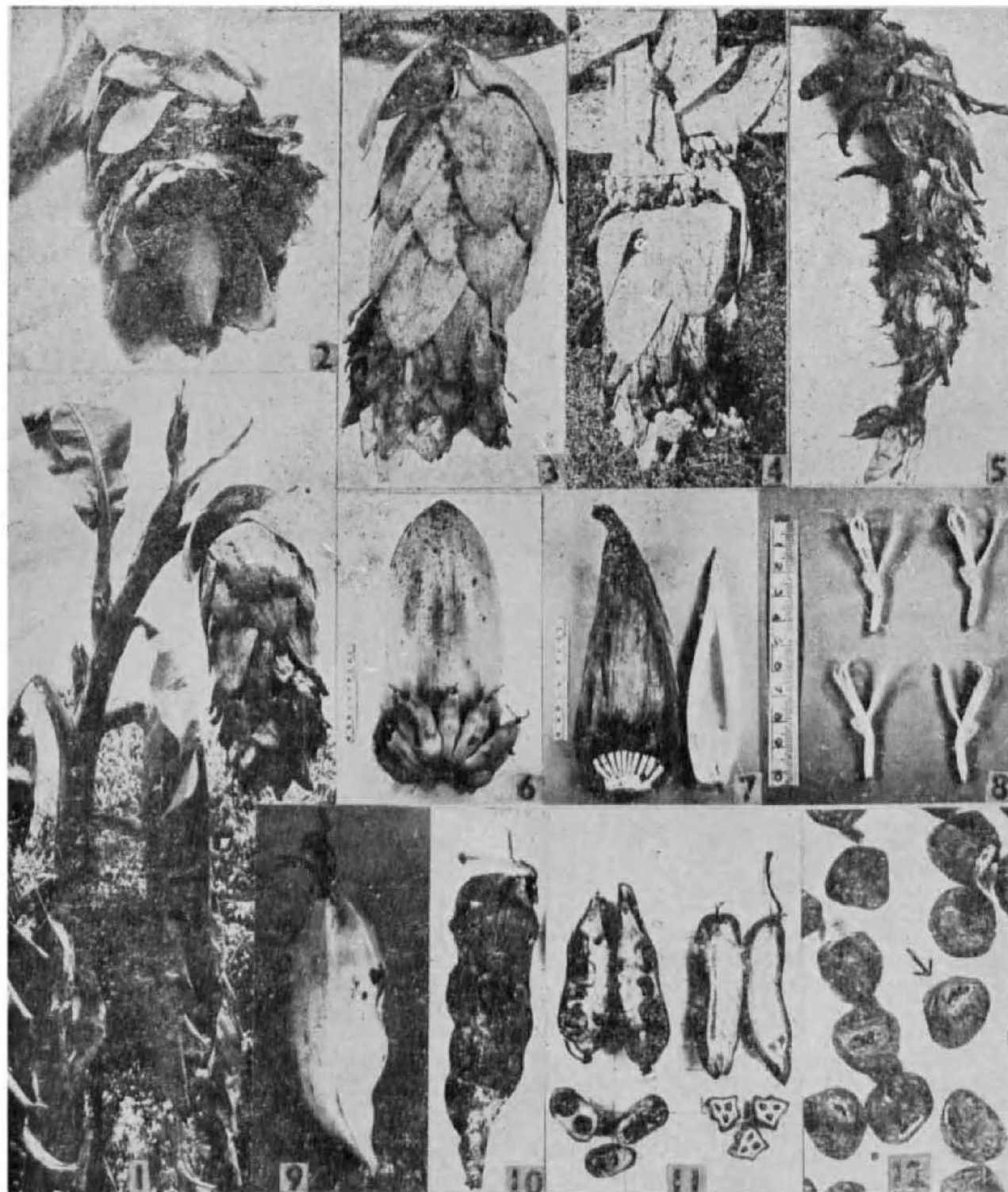
A reference may also be made to Chakravorti's Notes on the genus *Musa* L. in India, and his new species *Musa agharkarii* from the Chittagong hill tracts. Our study has led us to conclude that *M. agharkarii* is only *Ensete glaucum*, and accordingly we have put it in synonymy.

Ensete glaucum (Roxb.) Cheesm. in Kew Bull. 1948(2): 101. 1948; Simmonds in Kew Bull. 14(2): 198-212. 1960. *Musa glauca* Roxb. Corom. pl. 3: 96-98. t. 300. 1820; Fl. Ind. 1: 670. 1832; Baker in Hook. f. Fl. Brit. Ind. 6: 262. 1892; Backer & Bakhuizen van den Brink jr. Fl. Java. 3: 36. 1968. *Musa agharkarii* Chakravorti in Journ. Ind. Bot. Soc. 27 (2): 90-95. 1948. (ex Char. et Icon.).

Giant herbs. Corms shallow, encircled at the top by stout rope like roots 30-50 cm long. *Pseudostems* 2-4 m tall, distinctly swollen, conical and ridged at base, cylindrical and narrow at top, white pruinose, draped in old leaves in various stages of shrivelling up and decay, the stem 3-4 dm in diam. at base, 2-2.5 dm about the middle and 1-1.5 dm at top. Sap bright orange when fresh, turning a dirty grey to black after considerable time. *Leaf-sheaths* glaucous abaxially, pinkish-brown adaxially at the point of its divergence from the pseudostem.

Petioles stout, green-glaucous, 10-45 cm long. *Lamina* oblong, 1-2.5 m long, 0.30-0.60 m broad, the margin entire, rimmed by a thin narrow (ca 2 mm) membrane at first white opaque and in age becoming black, the apex acute (caudate in young leaves), the lamina cut up into several segments along the nerves, in age. *Flag leaf* much smaller than other leaves, 70-75 cm long, 30-35 cm broad (the midrib quite prominent). *Inflorescence* pendulous, cylindric, large, 1-1.5 m long. *Spathes* several, the basal ones loosely and the apical ones closely imbricate, entire, ovate to ovate-lanceolate, acute, persistent, green, except the apical ones which are sometimes white; those at base 6-9 empty, with no flowers, subsequent ones (up to about half the length, 15-25 hands) with female flowers, followed by male bisexual flowers up to the tip; spathes at Inflorescence-base larger, progressively diminishing in size towards the apex, 20-35 cm long, 10-20 cm broad. *Female flowers* 13-24 per hand in rows. *Male bisexual flowers* numerous, the zone easily recognised by the gradually drying up spathes. *Tepals*, the 3 outer united at base 2-2.5 cm long with 2 additional linear lobes 1.5-2.5 cm long, the 2 inner united, with a median furrow, 1-1.2 cm long, with a median mucro, white, becoming shrivelled, black and persistent in fruit. *Stamen* in female flowers varying from 5 fully formed stamen to 5 filiform staminodes, persistent in fruit; in male bisexual flowers, of 5 fertile stamens, white, 3-3.5 cm long, the filaments 2 cm long, the anthers 1.5-2.0 cm long. *Ovary* 3-5 cm long, 5-angled, the placenta axile, with 3 linear rows of numerous ovules. *Style*, in female flowers 2-3 cm long, persistent in fruit; in male flowers quite small ca 1 cm; *stigma* in female flowers large, trilobed; in male bisexual flowers inconspicuous. *Fruits* ovoid to oblong-ovoid (or odd-shaped due to pressure while developing within the spathe), 13-24 fingers per hand, green, turning yellow to irregularly brown.

ish yellow at maturity and ultimately black, uniformly plump and smooth when fresh, becoming uneven on drying, 6.5-12 cm long, 1.0-3.5 cm across; pulp scanty, faintly pinkish-white. *Seeds* black, 9-40 per fruit, globose to assymetrically subglobose, smooth to very faintly granular, large, ca 1 cm across, with a deeply depressed hilum. *Em-*



Ensete glaucum (Roxb.) Cheesm.

Figs. 1-12: 1. Habit. 2-5. Young and old inflorescences. 6 & 7. Female and male flowers with spathes. 8. Flowers. 9 & 10. Fresh and dry fruits. 11. L. S. and T. S. of old and young fruits. 12. Seeds, arrow points to the depressed hilum. (5, 10 & 12 from Hajra 45683, rest from A. S. Rao 45684).

bryo minute; endosperm white, powdery. (Figs. 1-12).

Frequent, on gentle west facing hill slope, beside stream, near large boulders, amidst *Terminalia*, *Bauhinia*, *Ficus* and *Sterculia* and with other wild *Musa* species. Flowering and Fruiting, June-August. The mature infructescence is heavily infested with black ants. While in the ovary the numerous ovules are in a neat row and embedded in the fleshy pulp, during development into fruit the large seeds become irregular, masking the original p'acentation. The local Khasi (Bhoi) name is 'Kyiet myntan'. Enquiries showed that the vernacular names (*Ram Kal*, *Adumatong*) given by Simmonds

referred only to small seed-bearing true bananas and not to *Ensete*.

Occasionally cultivated for its impressive inflorescence, and the soft rind within the pseudostem which is used as a vegetable. Seedlings introduced into the experimental Gardens at Shil'ong and at Barapani are doing well.

MEGHALAYA: Khasi Hills, Burnihat, Citrus Research Station, cultd. *Hajra* 45685. Nongpoh, A. S. Rao 45686. Umd'har, *Hajra* 45683 cultd.; A. S. Rao 45684. This and 45686 are both naturally occurring plants.

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CONTRIBUTION TO THE FLORA OF MADHYA PRADESH —NEW RECORDS OF SPECIES

The paper deals with 5 species which are reported for the first time from Madhya Pradesh. Notes on their flowering and fruiting time, ecology and distribution are also given.

Being central in position, the flora of Madhya Pradesh presents some very interesting features. The forests of Madhya Pradesh are not extensively explored. Under the project "Flora of Bilaspur, M.P." the author, between 1970 and 1973, took three seasonal collection-cum-exploration tours to Bilaspur district—one during September-October, 1970; second in February, 1972 and the third in the month of July-August, 1973. During these tours about 2000 field numbers of plants were collected, which after critical identification, yielded about 900 species belonging to 525 genera under 120 families. These specimens are preserved in the herbarium of Central Circle, Botanical Survey of India, Allahabad (BSA). Besides these

collections, a large number of plant species collected earlier from Bilaspur and other districts of Madhya Pradesh are also preserved there. A review of the literature shows that a few species, hitherto unreported from Madhya Pradesh, are found to occur in this area. Hence their presence in Madhya Pradesh, an entirely distinct phytogeographical region, is of interest, as it extends considerably their known range of distribution in India. In two earlier communications the author (Murti 1975) reported four new records of species from Madhya Pradesh viz., *Chirita bifolia* D. Don, *Styldium kunthii* Wall. ex Nees, *Althea ludwigii* L. and *Lepidagathis purpuricaulis* Wall. ex Nees. In the present paper a few more new records of species are reported.

Following is the account of new records of species from Madhya Pradesh. The species are arranged alphabetically. The important diagnostic features are appended with the species enumerated. The distributional notes are from *Hook. f. Fl. Brit. Ind.*