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# DRACAENA IN WEST AFRICA

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## CONTENTS

INTRODUCTION AND ACKNOWLEDGEMENTS . . . . .	1
GENERAL PART:	
History of <i>Dracaena</i> in West Africa. . . . .	3
Phytogeography. . . . .	4
Habit and Growth. . . . .	5
Morphology. . . . .	7
Flowering . . . . .	8
Phylogeny . . . . .	10
TAXONOMIC TREATMENT:	
Genus diagnosis . . . . .	14
Key to the species in West Africa . . . . .	17
Species diagnoses . . . . .	19
APPENDIX:	
<i>Dracaena draco</i> (L.) L. . . . .	120
<i>Dracaena</i> sp. cf. <i>D. nyangensis</i> Pellegrin . . . . .	120
<i>Dracaena saposchnikowii</i> Regel . . . . .	121
Species excludenda . . . . .	121
Nomina rejicienda. . . . .	122
REGISTER . . . . .	124



PHOT. 1. *Dracaena arborea* (Willd.) Link fruiting at WAG (photograph J. W. MUGGE).

## INTRODUCTION AND ACKNOWLEDGEMENTS

The present publication is the third revision of *Dracaena* for West Africa (after those by HUTCHINSON and HEPPER) and is part of a monograph of the genus. It is based on almost all herbarium extant during the years the analyses were made. These analyses were supplemented by observations on living plants in the field and grown in the greenhouse at WAG for many successive years. Of the 23 taxa recognized, seventeen could be studied in this way.

As the genus has enjoyed wide interest in ornamental horticulture, particularly from the middle of the nineteenth century on, the amount of literature involved is vast and varies widely in character.

Nomenclature is hampered by the fact that about 2200 names are involved, approximately 1600 combinations in *Dracaena* alone, of which but one fifth was directly accessible through Index Kewensis. A conservative estimate of the number of distinct species in *Dracaena* approximates 60 and fortunately not all of these are burdened with excessive synonymy. A substantial number of these names does not refer to *Dracaena* species but has to be considered in the synonymy of the extremely variable *Cordyline fruticosa* (L.) A. Chev. Publication of that synonymy is postponed till a full monographical treatment of *Dracaena* is possible. The typification of this cloud of names, if warranted, is usually complicated by the inadequacy of descriptions and the absence of herbarium specimens. Often the described plants were very expensive specimens shown on exhibitions.

West Africa as delimited for this paper, does, contrary to the Flora of West Tropical Africa, not include West Cameroun and Fernando Póo.

Of the 23 species recognized, two are but provisorily dealt with as they are both represented by a single collection just within our area. Both will be treated more comprehensively for the Floras of Cameroun and Gabon. Of the remaining 21 species, eight are restricted to West Africa and three continental African species are revised for their entire area.

Compared to the second edition of the Flora of West Tropical Africa, 13 names have been retained with more or less modified delimitations, the names of 3 species and one variety had to be changed. One species appeared to be hitherto not recognized in West Africa, another Central African species is for the first time recorded in our area; 3 species are new to science, and another two may yet prove to be new.

All species are figured and provided with a map of their distribution, at least in West Africa, except one species only known by its type. A new diagnosis for the genus and a key to the species of West Africa are added. The species are annotated and phenological information is provided with the specimens cited.

I wish to express my gratitude to the following persons and institutions:

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with *Dracaena*, his successful efforts to enable me to study the African flora extensively in the field and his generous provisions to maintain an unmatched collection of living *Dracaenas* at WAG. His interest is further reflected by the photographs he provided for this publication.

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## GENERAL PART

### HISTORY OF DRACAENA IN WEST AFRICA

The trade activities on the coast of West Africa in the seventeenth century provided the opportunity for European traders to acquaint themselves with the flora of tropical Africa and to procure interesting plants for living plant collections coming in vogue in Europe. In this way COMMELIN obtained *Dracaena fragrans* for the Amsterdam garden from SIMON VAN BEAUMONT, a Dutch statesman who owned a famous plant collection at The Hague and who in his turn received this species from Guinea (WIJNANDS 1983).



PHOT. 2. COMMELIN, Rariorum Plantarum Horti Medici Amstelodamensis I (1697) fig. 49: *Aloe Arborescens Africana*, The earliest illustration of an introduction of *Dracaena fragrans* (L) Kew Gawler (photograph J. W. MUGGE).

During this period *Dracaenas* certainly were introduced from West Africa into South America, Brazil in particular, where they have formed a resource for repeated introductions of cultivated ornamental foliage plants into Europe and North America till the present times.

A brief outline of the taxonomic history of the genus has been presented in a previous paper (BOS 1980). Early taxonomic work was based largely on living plants cultivated in glasshouses. Sometimes flowers and fruits were unknown and usually herbarium specimens were not conserved, not even of sterile specimens. This was still the case when BAKER published his monograph of *Dracaena* in 1875. His descriptions were often at least partly based on living plants cultivated in botanical plant collections and commercial nurseries in London. Of several taxa he did not know the country of origin. At that time herbarium collections containing *Dracaena* material from West Africa were extremely rare. AFZELIUS

collected five different species of *Dracaena* in Sierra Leone during his residence in that country from 1792 to 1794. *Dracaena mannii* was collected in Senegambia in 1829 by PERROTTET and about ten years later by HEUDELLOT. Around 1860 BARTER, THOMSON and MANN were active in Nigeria. MANN collected eight different species which is an impressive number even by today's standards. Significant additions to our records of *Dracaena* in West Africa were not made before the last decade of the nineteenth century. The keen rivalry among the colonial powers of those days stimulated the activities of English, French and German collectors, but BAKER's treatment of *Dracaena* for the Flora of Tropical Africa of 1898 hardly profited by their results.

The first comprehensive treatment of *Dracaena* in West Africa was published in 1936 by HUTCHINSON in his Flora of West Tropical Africa. He recognized 17 species, uniting several previously recognized taxa and he proposed one new species.

HEPPER revised HUTCHINSON's treatment for the second edition of the Flora in 1968. He recognized 20 species, two varieties and recorded one additional imperfectly known species. The taxa united by HUTCHINSON were re-instated, two others were united, HUTCHINSON's new species was reduced to a Central African species and another new species was proposed. Although the number of herbarium samples collected during the past 15 years is considerable, the representation of *Dracaena* in herbaria remains erratic.

## LITERATURE

- BAKER, J. G., J. Linn. Soc. **14** (1875): 523.  
BOS, J. J., Misc. Pap. Landbouwhogeschool Wag. **19** (1980): 65 = *Belmontia* new ser. 11-56 (1980): 65.  
HEPPER, F. N., Fl. W. Trop. Afr. ed. 2, III-I (1968): 154  
HUTCHINSON, J., Fl. W. Trop. Afr. II (1936): 383.  
WUNANDS, D. O., The Botany of the Commelins, Balkema (1983).

## PHYTOGEOGRAPHY

As has been stated in the Introduction, West Africa in this treatment is delimited by the present territorial border between Nigeria and Cameroun, excluding the territories of West Cameroun and Fernando Póo which were included in the area of the Flora of West Tropical Africa.

Although this delimitation has been made for practical purposes, it very nearly reflects a natural division as is neatly demonstrated by the distribution of *Dracaena ovata* and *D. surculosa*; both do not occur east of this line. However other species do not heed it at all, as is well demonstrated by *Dracaena aubryana*, *D. camerooniana* and *D. cerasifera*.



To all appearances the extreme SE area of Nigeria seems to form part of the floral region of West Cameroun and should from a phytogeographical point of view better be excluded from West Africa proper. This is well illustrated by the occurrence of species from Central Africa that reach the northwestern limit of their area of distribution here.

Most species observe the Dahomey gap. This absence may be primarily dictated by the absence of a natural environment in that area, as required by the absent species. However, several species are strictly confined in their distribution to the forest region west of the gap.

### HABIT AND GROWTH

*Dracaenas* are reluctant to branch and so are often of monocaulescent habit. The development of shoots is subject to a certain rhythm. Initially growth is comparatively rapid; the shoots develop prophylls, i.e. leaves that do not have time as it were to develop fully. As soon as growth decreases in rate, fully developed leaves appear, more densely so when growth is arrested at the end of the cycle. This can be observed in most species. In extreme cases elongate shoots are clad in prophylls and terminated by a pseudowhorl of fully developed leaves.



PHOT. 3. *Dracaena surculosa* Lindley var. *maculata* Hook.f. (photograph J. W. MUGGE).

When growth is resumed in a next cycle, this same pattern may repeat itself, as is often the case in *D. surculosa*. However, resumption of growth usually does not give rise to a leafy shoot, but to an inflorescence. If a species, like

*D. surculosa*, is subject to a rather steeped growth rhythm and fast initial growth slows to a virtual standstill in each cycle, it will develop its inflorescence in the same rhythm and the peduncles, like the vegetative shoots, tend to be clad in prophylls. Where such a rhythm is much more moderate and growth at the end of a cycle does slow down rather than be arrested, the tendency to form prophylls and pseudowhorls of leaves is much reduced, but the occurrence of transitional leaves gradually merging into bracts on the peduncle is emphasized. This is usually well demonstrated in *D. arborea*. Variations in this rhythm can be observed among individual plants within the same species and possibly between successive generations of flowering within the same plant.

Inflorescences are strictly terminal and a stem terminated by an inflorescence is unable to continue growth in a monopodial manner. Usually further development after flowering is effected by branches developing from buds in the axils of leaves close to the base of the inflorescence. However most axillary buds retain their vitality for very long periods as is readily demonstrated by the rapid development of remedial stems from dormant buds in instances of more or less severe coppicing. This can easily be observed in rural cemeteries in West Africa where prior to the burial of a body, the surrounding of the grave has to be cleared of luxurious growth of particularly *D. arborea*. The remaining stumps readily sprout after rough pruning.

The circumstance that some species tend to branch far more readily than others, accounts for the occurrence in those species of what appears to be axillary inflorescences. In fact these may represent short branches with few leaves and prophylls, a rapid introduction to an inflorescence, or buds that seem to skip the vegetative cycle entirely and develop directly into an inflorescence as can be observed in well developed shrubs of *D. camerooniana*.

From these observations emerges the picture of a series of successive hapax-



PHOT. 4. *Dracaena draco* (L.) L. in Icod, Tenerife (photograph J. J. Bos).

antic generations forming the arborescent, shrubby and pseudo-monocaulous growth forms in *Dracaena*. This is most majestically demonstrated by the famous old specimen of *D. draco* in the Canary Islands, e.g. the largest surviving tree at Icod, Tenerife.

Such trees form a number of radiating branches after the initial flowering, the number of branches is rapidly reduced after successive instances of flowering and soon it is reduced to two or even one causing a predominantly dichotomous branching pattern in the crown.

In West-Africa several arborescent species follow this pattern but the number of branches is rarely more than three, two and one being most common. The monocaulous species like *D. adamii*, *D. aubryana*, *D. cristula* and several others strictly follow the model of CHAMBERLAIN (as defined by OLDEMAN, Architecture de la Forêt Guyanaise, O.R.S.T.O.M. (1972)). In CHAMBERLAIN-modeled *Dracaenas*, the single branch continues the subtending stem in such a way that old inflorescences seem to be lateral rather than terminal. The species developing more than one branch after flowering, should be considered as variations of this same model of CHAMBERLAIN.

In the case of shrubby, more readily branching species like *D. camerooniana* and *D. surculosa*, that produce a number of stems from their root-crown, another model is involved. Here the basic model is that of TOMLINSON, but after flowering growth is continued according to the model of CHAMBERLAIN, often with more than one branch and not necessarily branching from the uppermost axillary buds.

The larger species show a tendency to form aerial roots that arise from the base of the branches. This supports the view expressed before, to consider such plants as a succession of hapaxanthic generations.

## MORPHOLOGY

Leaves of *Dracaena* species are of a true monocotyledonous character and rather simple in structure. They consist of a blade with a very regular pattern of equidistant longitudinal strictly parallel nerves interconnected by a transverse pattern of wavy veins. A true midrib does not occur and where this seems to be present, a costa is formed by a median concentration of parallel nerves, impressed or discolored above and often quite prominent beneath. The generally oblong blade is usually more or less contracted towards the base, but it invariably flares out and it often forms a sheath at the point of attachment, leaving a crescent-shaped leafscar when shed. In many instances leaves are sessile because a petiole is lacking. In some species, i.e. *D. phrynioides*, *D. aubryana* and *D. praetermissa* a long petiole seems to be present. In these cases the proximal constriction of the blade is very severe over a comparatively long distance. The result is a pseudopetiole consisting exclusively of the massed parallel nerves that rather abruptly passes into the sheath at its base and into the blade at its top. In less severe cases this may give rise to a winged pseudopetiole where the concen-

tration of massed nerves is flanked by narrow strips of blade as is well demonstrated in *D. cristula*.

In the same way a very short petiole is produced in *D. surculosa* and *D. camerooniana*, while in *D. laxissima* the short triangular sheathing base passes abruptly into the elliptic blade, quite comparable to *D. cerasifera* and *D. mannii* where the constriction is less severe.

The nature of prophylls and bracts is similar: They represent the basal sheathing part of a leaf.

Inflorescences are essentially of a branched nature but the ultimate branches bearing the individual flowers are usually reduced, causing the flowers to be grouped in few to many-flowered clusters or glomerules. A notable exception is *D. laxissima*, the flowers being distributed singly on a repeatedly branched inflorescence. Here all branches are well developed and none reduced. The arrangement of the flowers in each cluster seems random and distinct patterns in the succession of flowering cannot be distinguished. Bracts accompanying the individual flowers are usually much reduced and are often referred to as bracteoles.

Unbranched inflorescences bearing a single terminal glomerule as in *D. surculosa* var. *maculata* can also be explained this way, as the terminal glomerule usually proves to consist of several closely packed clusters of flowers, representing as many reduced branches.

Only in exceptional cases proper bracteoles inserted at the point of attachment of individual flowers have been observed, but these may represent bracts of a higher order.

The pedicel of the flower is jointed. The part below the joint is considered by me as the ultimate branch of the inflorescence. The part above the joint may be variously shaped, from stalk-like to obconical, and it may also be absent. This upper part belongs to the flower and it represents the lowest internode of the receptacle. It is in consequence termed as such in this paper. It is extremely well developed in *D. surculosa* var. *maculata*. It is always measured from the joint to the base of the ovary, as it passes into the perianth tube without any interruption. Consequently the length of the perianth tube is measured from the base of the ovary to the throat, the point of departure of the free lobes. There is no interruption between the tube and the lobes either. The perianth essentially consists of two concentric whorls of 3 lobes each, these are completely fused in the tubular part, but the lobes form two valvate series in bud. The elements of the inner and outer whorl are identical, only exceptionally the outer lobes may have more nerves.

## FLOWERING

In most species prior to flowering abundant nectar is produced on the pedicels below the joint, but secretory bodies that produce this nectar are not visible. Within 24 hours prior to anthesis the buds rapidly increase in size and attain



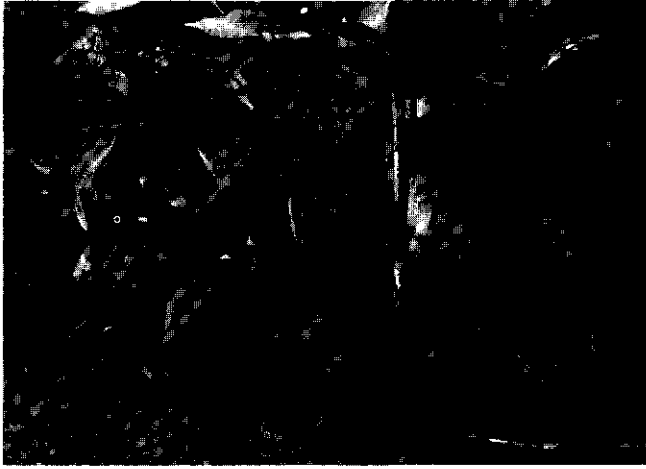
PHOT. 5. *Dracaena laxissima* Engl., open flowers at 10 p.m. (photograph H. C. D. DE WIT).

a length of more than twice the size of buds not yet ready to flower. Anthesis follows in the evening, but under shady circumstances with low light intensity, flowering may occur during the day. In opening the lobes of the perianth curl backwards, the stamens remaining straight and pointing outwards, forming a ring of anthers with the style rigidly in a central position. A very heavy sweet odour is produced during the later hours of the evening. Field observation of pollination by insects are not known to me, but certain species of Hawk moths are likely to be pollinators. When a specimen of *D. arborea* was in flower in the glasshouse at WAG, it was illuminated by a floodlight at night. At about ten o'clock in the evening several specimens of Hawk moths were observed hovering above the inflorescence outside the glass roof. They were, undoubtedly, attracted by the heavy odour produced by the flowers, the odour easily passing through the rather leaky roof of the old glasshouse. As related species have been observed by me, engaged in pollinating flowers of *Crinum jagus* (Thomps.) Dandy in Ivory Coast (BRANDJES & BOS, New Phytol. 84 (1948): 139) at about the same time in the evening, they may well play a role in pollinating *Dracaenas*. The flowers do not last more than one night and they fade around dawn. This explains the comparative rarity of fully expanded flowers in herbarium specimens.

## PHYLOGENY

*Dracaena* is considered by me as a comparatively ancient group in *Liliaceae*, related to *Asparagus* and other few-ovulate taxa. *Dracaena* and allies produce rather voluminous, often dirty white seeds with bony albumen. The persistent notion that *Cordyline* should be considered as a close relative is ill founded. Apart from differences in the nervature of the leaves and the nature of the inflorescence, important differences are found in flowers and fruits. The perianth of *Cordyline* consists of two concentric unequal whorls of lobes with predominantly blueish colours – *Dracaena* has equal white whorls – and the pluriovulate ovary becomes a leathery capsule containing a number of sharply angular black seeds. This shows in my opinion affinities with rather remote groups in *Liliaceae*, where capsules containing numerous black seeds are common. On the other hand the relationship with *Sansevieria* has been denied repeatedly and this cannot be justified. In fact a thorough analysis of *Sansevieria* is quite likely to prove the impossibility to retain *Dracaena* and *Sansevieria* as separate genera.

Notwithstanding the fact that the species in *Sansevieria* are generally readily recognized and cannot be confused with the various species in *Dracaena*, there do not seem to be dependable characters to support generic segregation. Rhizomatic creeping or buried stems occur in several *Dracaena* species, e.g. *D. braunii* Engl. and *D. praetermissa* Bos. The leafshape of *Sansevieria* is common in *Dracaena*, while the coriaceous or succulent character of many *Sansevieria*-leaves is found also in *D. schizantha* Baker from Ethiopia. Erect *Sansevierias* forming a short, sometimes branching stem occur in East Africa, while the nature of the inflorescences, flowers and fruits is similar to such an extent that if detached,



PHOT. 6. *Dracaena braunii* Engl. (photograph H. C. D. DE WIT).

they cannot be readily identified as to which genus they belong.

The most serious attempt towards an infrageneric taxonomy in *Dracaena* was proposed by BAKER in his monograph of 1875. He arranged the species known to him in races, 'stirps', each with a species as type. His classification is not very convincing. *Dracaena mannii* e.g. is placed with *D. arborea* in the stirps of *D. draco*, while *D. perrottetii*, a synonym of *D. mannii*, is referred to the stirps of *D. fragrans*. Another stirps consisting of *D. bicolor*, *D. ovata* and *D. phrynioides* seems to aim at variability rather than affinities; the grouping together of *D. camerooniana* and *D. surculosa* is perfectly reasonable, however.

Narrower concepts of the genus as proposed by PLANCHON in 1850 and BROWN in 1914 restricted *Dracaena* to the type and few closely related species.

Although I do not share these views, it cannot be denied that closer affinities exist between some species, but in absence of a complete review of the whole genus it is premature to attempt an infrageneric arrangement at this moment. As far as the West African species are concerned, however, certain observations on relationships can be made. Close affinities exist between *D. adamii* and *D. scabra*, and between *D. fragrans* and *D. deisteliana*. Similarly *D. phrynioides* and *D. praetermissa* form a pair with somewhat lesser affiliation towards *D. aubryana*. *D. mannii* and *D. cerasifera* may form part of an alliance round the Madagascan *D. reflexa* Lam.

*D. surculosa*, the only species in which varieties are recognized, is similarly allied with *D. camerooniana* and *D. ovata*. Whether this alliance should include *D. laxissima* remains to be seen, as the structure of inflorescence and flowers in *D. laxissima* seems to contradict such an affinity. Although *D. arborea* shows a close resemblance to *D. fragrans*, I doubt whether this reflects particularly close ties between these two species, while *D. congoensis* does not seem to be very far removed from *D. fragrans*, notwithstanding its less obvious similarity.

*D. bicolor*, *D. calocephala* and *D. talbotii* share strongly bracteate inflorescences but whether this reflects a closer affinity among them is by no means clear to me. *D. cristula*, *D. goldieana* and *D. mildbraedii* each seem to be rather isolated.

In view of what has been observed on the architecture of *Dracaena* and in accordance with my view that *Dracaena* represents a comparatively ancient taxon, its species present a rather diverse picture. Some species should be considered as relict groups, while others may be considered comparatively advanced. Translated into OLDEMAN's tree models, I consider multibranched variants of the model of CHAMBERLAIN as primitive and a development by reduction of the number of branches to the true model of CHAMBERLAIN as comparatively advanced. Compared to these the model of TOMLINSON is even more advanced, even if the individual branches follow subsequently the model of CHAMBERLAIN. Along these lines the primitive multi-branches model of CHAMBERLAIN is represented by *D. draco*. The photograph of the tree in Icod, Tenerife, illustrates this well.



PHOT. 7. *Dracaena arborea* (Willd.) Link  
in Liberia (photograph H. C. D. DE WIT).

In West Africa the architecture of *D. arborea*, *D. fragrans* and *D. mannii* follows this model, but with considerably fewer branches in each instance. Species like *D. adami*, *D. cristula* but also *D. aubryana* follow the model of CHAMBERLAIN far more strictly, as a single branch develops below the inflorescence and takes over the function of the original stem in such a way, that the plant appears to be monopodial with the persistent old inflorescence pushed aside into an apparently axillary position. These species are therefore considered to be somewhat



more advanced than the arborescent species mentioned before. The model of TOMLINSON is represented by *D. camerooniana* and *D. surculosa*. In both these species a seedling develops a straight unbranched stem that may eventually produce an inflorescence. Periodically, in pace with the rhythmic growth pattern of the plant successively taller new bamboo-like shoots, here termed 'canes', are produced by the root-crown. In particular the larger of these canes have a tendency to branch and these branches follow the pattern of CHAMBERLAIN in a loose manner, resulting in branched shrubs, reminiscent of certain bamboo-species. In my opinion, these represent the most advanced development in *Dra-caena* in West Africa.

# TAXONOMIC TREATMENT

## GENUS DIAGNOSIS

### **Dracaena L.**

Linnaeus, Syst. Nat. ed. 12, II (1767): 246/Mant. Pl. I (1767): 63; Jussieu, Gen. Pl. II (1789): 40; Baker, J. Linn. Soc. 14 (1875): 523; Id. in Thiselton-Dyer, Fl. Tr. Afr. VII (1898): 436; Bentham in Bentham & Hooker f., Gen. III (1883): 779; Engler in Engler & Prantl, Nat. Pfl. II, 5 (1888): 73.

Type species: *Dracaena draco* (L.) L.

Homotypic synonym: *Draco* Kuntze, Rev. Gen. Pl. II (1891): 709.

Heterotypic synonyms: *Pleomele* Salisb.; Salisbury, Prodr. (1796): 245 p.p., emend. Brown, Kew Bull. 1914: 275. Type species: *Pleomele fragrans* (L.) Salisb. (= *Dracaena fragrans* (L.) Ker Gawler).

*Nemampsis* Raf.; Rafinesque, Fl. Tellur. IV (1836): 16. Type species: *Nemampsis terniflora* Raf. (= *Dracaena surculosa* Lindley).

*Cordyline* Auctt. non Comm. ex A. L. Juss. (nom. cons.); Planchon, Fl. Serres VI (1851): 109. Type species: *Cordyline reflexa* (Lam.) Planchon (= *Dracaena reflexa* Lam.).

**Description:** Trees, shrubs, sometimes scandent, unbranched suffrutices or rhizogephytes, less than 10 cm to over 40 m high, entirely glabrous. *Roots* usually bright orange in colour, sometimes tuberous. Stems with secondary wood in arborescent species; bark smooth, green or yellowish, usually showing long persisting conspicuous leafscars, generally turning grey when old; some species contain ruby red resin, conspicuous in wounds and on scar tissue. *Foliage* distributed in more less distinct spirals on stems and branches, alternate and distichous in some species, or congested terminally into pseudowhorls or tufts; triangular sheathing prophylls either green or white and strawy, often present on the base of young vigorous or cane-like shoots; transitional leaves intermediate in shape and size between fully developed leaves and floral bracts often present on the base of the peduncle. *Leaves* rather leathery, smooth, glossy, pale to dark green, usually distinctly paler beneath, concolorous or variegated, especially above, variegation consisting of various patterns of longitudinal or transverse stripes or bands, or of separate to merging dots, white, cream, yellow or grey, purplish tinges occur in some species on the lower surface and bracts; shapes and sizes very variable, sometimes well over 1 m long, always simple, entire, usually with smooth edges, mucronate; proximal part of the lamina in some species gradually or abruptly narrowed into a pseudopetiole, usually represented by a more or less winged or grooved costa, base more or less sheathing, partly enveloping or clasping the stem, white, yellowish or brown to orange; nerves strictly parallel, usually  $\frac{1}{2}$ –1 mm apart, much more densely concentrated down the middle of the upper surface, forming a more or less distinct midrib, showing

a distinctly prominent paler costa beneath, disappearing distally near the tip; secondary veins usually not distinct in fresh leaves, generally distributed in wavy irregular transverse patterns. *Inflorescences* terminal, sometimes apparently axillary when terminating or representing dwarf shoots, continuous to the supporting stem or more or less abruptly reflexed, borne erect or distinctly pendulous, similar in diameter to the supporting stem or abruptly constricted and slender; simple, congested, elongate or branched, very modest to over  $1\frac{1}{2}$  m long, green, orange to yellow-brown or purplish in colour, smooth or scabrid, with or without triangular to orbiculate, mucronate, sometimes long-cuspidate bracts, excluding clear syrupy nectar prior to and during anthesis. *Flowers* distributed singly, in pairs, or in few to many flowered glomerules, more or less aggregate in some species; bracts and bracteoles may be present, sometimes tightly enveloping the flowers for a few cm to very small and obsolescent, green, strongly purple tinged, brown or white and rather diaphanous. *Pedicels* usually consisting of a very short or long, persistent basal part, turning into a peglike indurated structure on old inflorescences, terminated by a distinct joint, and a stalklike, obconical or disclike more or less indurated receptacle forming the base of the flower below the ovary. *Perianth* less than 1 cm to over 5 cm long, buds often doubling their length within 24 hours prior to anthesis, nocturnal, flowering for several hours only, white, greenish, often with purple tinges, the lobes with purple midribs and tips, margins diaphanous, some turning yellow when wilting, drying very dark brown to black, extremely fragrant; consisting of a tubular fused basal part and 6 free lobes in 2 whorls of 3, gracefully recurved at anthesis, each lobe showing a distinct costa, rarely accompanied by 1–2 pairs of parallel nerves, flattened, with a rounded minutely pustulose cucullate tip. *Stamens* inserted at the throat or slightly higher, each one in front of a perianth lobe, its vascular bundle joined with the costa of the lobe in the perianth tube; filaments inflated, usually over the entire length or in the upper part only, tip subulate, either straight with an incurved tip or rather s-shaped like a swan-neck; anthers basal-versatile, the thecae extending downwards well below the connective, opening laterotorse. *Ovary* ovoid, cylindrical or rather bottle-shaped, smooth, 3-locular, each locule filled by a single ovoid ovule, hemitropic to the central placenta, micropyle directed downwards; style terminal, terete, slender, stretching with the perianth prior to anthesis, as long as or somewhat longer than the perianth, causing the style to develop a single spiral twist towards the top when remaining confined in tardy opening buds; stigma capitate, usually distinctly 3-lobed, pustulose on the upper surface. *Fruits* fleshy, up to 3 seeded, exocarp smooth and leathery, usually bright green when young turning bright yellow or orange-scarlet when ripe, fruitpulp somewhat paler, embedding the comparatively large seeds; globular, depressed globose to ellipsoid, sometimes distinctly lobed to horned, less than  $\frac{1}{2}$  cm to over  $2\frac{1}{2}$  cm in diameter; the indurated receptacle usually persistent, attached to the fruit. Seeds globose, discoid, or of various irregular shapes, usually distinctly flattened against adjacent seeds when present, white or brownish in colour, consisting of opaque bony endosperm and a cylindrical germ perpendicular to the testa, indicated by a small lens-shaped spot

on the otherwise concolorous testa. *Seedlings* usually produce a limited number of prophylls of increasing sizes prior to fully developed leaves, in some species initial development lateral to the seed resembles an onion.

**Distribution:** Macaronesia, Africa south of the Sahara, Madagascar and the Mascarenes, South Arabia and Socotra, South-east Asia including Northern Australia, Hawaii, Central America and Cuba. The majority of the species of this mainly tropical genus is African. A somewhat lesser centre of distribution occurs in South-east Asia, while the remaining areas mentioned harbour a very limited number of species. a few species are widely cultivated as ornamental foliage plants.

**Notes:** *Dracaena draco* (L.) L. is based on *Asparagus draco* L. (Sp. Pl. ed. 2 (1762): 451). Although LINNAEUS was certainly aware of the existence of the Macaronesian Dragontree, as it was the first plant treated by CLUSIUS (Rar. Hist. I (1756): 12), he postponed its classification until he received first hand observations from LOEFLING, who saw a flowering tree in Portugal. LOEFLING noted the resemblance of its flowers to those of *Asparagus*, but the obvious dif-



PHOT. 8. *Dracaena draco* (L.) L. in Clusius, Rar. Hist. I (1756): 12 (photograph J. W. MUGGE).

ferences in habit probably moved LINNAEUS to admit its combination in *Asparagus* with a question mark. When LINNAEUS decided five years later to form a new genus around the Dragontree, he credited its name, *Dracaena*, to VANDELLI. VANDELLI was the author of an extensive treatment on *Dracaena* that appeared a year later (Dissertatio de Arbore Draconis seu Dracaena in Roemer, Scriptorum (1796): 39, original extremely rare of 1768). KUNTZE has pointed out that it is erroneous to consider VANDELLI as the author of *Dracaena* as VANDELLI called the Dragontree *Draco yucciformis* adding *Dracaena* as a synonym.

## KEY TO THE SPECIES IN WEST AFRICA

As most species are rather variable and as this variability is often demonstrated within a single plant, specimens frequently contain elements of aberrant proportions, i.e. dwarf leaves, underdeveloped inflorescences etc. Particularly tricky are transitional leaves between the fully developed leaves and the inflorescence-bracts, not always present and generally of aberrant shape, being usually comparatively broader and shorter.

Because of their strategic position, transitional leaves tend to be rather over-emphasized in fertile herbarium specimens.

Although these circumstances have been taken into account in the synthesis of this key, one should be aware that characters used should reflect the general situation in the specimen rather than the accidental aberrations.

- 1 a Leaves variegated . . . . . 2
- b Leaves not variegated . . . . . 5
- 2 a Variegation consisting of an irregular transverse pattern . . . . . **D. goldieana**
- b Variegation otherwise . . . . . 3
- 3 a Variegation consisting of longitudinal bands, stripes or lines . . . . . **D. fragrans**  
(a cultivated clone of white variegated *D. sanderiana* occurs in gardens in West Africa and is distinguished from *D. fragrans* by its narrow ovate leaves tapering into slender pseudopetioles, usually less than 40 cm long; it is not known to flower)
- b Variegation consisting of dots, rings or fused patterns of these . . . . . 4
- 4 a Individual dots or rings circular, white, yellowish-cream or light green.  
   . . . . . **D. surculosa**
- b Individual dots distinctly elliptic in outline, strictly transversely oriented,  
   vivid light yellow-green . . . . . **D. phrynioides**
- 5 a Leaves differentiated into a narrow strap-shaped pseudopetiole and a  
   broadly ovate to orbicular blade, forming a single terminal pseudowhorl  
   on a single unbranched stem, inflorescence subcapitate . . . . . **D. cristula**
- b Otherwise, characters not combined as above . . . . . 6
- 6 a Leaves and bracts pronouncedly cuspidate by tightly inrolled leafmargins,  
   such cusps to 4 cm long, leaves up to  $\frac{1}{2}$  m long, inflorescence a short densely  
   bracteate spike . . . . . **D. calocephala**
- b Leaves not cuspidate by inrolled margins, other characters not combined 7
- 7 a Flowers distributed singly throughout the inflorescence; leaves elliptic,  
   somewhat asymmetrical, inflorescence usually pendulous with perpendicular  
   branches, flowers pendulous on slender pedicels. . . . . **D. laxissima**
- b Flowers always together in pairs, clusters or glomerules, other characters  
   not combined . . . . . 8
- 8 a Leaves sharply differentiated into an ovate to obovate blade and a pseudo-  
   petiole with a sheathing base and a terete shaft, approximately as long as  
   the blade . . . . . 9
- b Otherwise, if the leaves are differentiated into a blade and petiole, either

- not sharply so and the blade gradually narrowing into the petiole, or if abruptly differentiated, the petiole not exceeding a few cm in length and at least several to many times shorter than the blade . . . . . 11
- 9 a Inflorescence an erect or inclined club-shaped capitulum, peduncle smooth, fruits with cleft horns, seeds molar-shaped . . . . . **D. phrynioides**  
 b Inflorescence a raceme or spike, other characters not combined . . . . . 10
- 10a Leaves showing several pairs of sharply impressed nerves above, scabrid inflorescence very delicate, hidden by the leaves, fruits horned, seeds rhomboid . . . . . **D. praetermissa**  
 b Leaves lacking impressed nerve pairs, inflorescence smooth, stout and rigidly erect, sometimes with few erect branches, fruits spindle shaped or with spindle shaped lobes containing similar shaped seeds . . . . . **D. aubryana**  
 (If the specimens show an extremely strong and prominent reticulate nervature, compare with the description of *D. sp. cf. D. nyangensis* in the appendix).
- 11a Inflorescence and peduncle rough scabrid, like sandpaper . . . . . 12  
 b Inflorescence and peduncle quite smooth . . . . . 13
- 12a Inflorescence branched, fresh leaves are not paler along the midrib above . . . . . **D. scabra**  
 b Inflorescence not branched, fresh leaves distinctly paler green along the midrib above . . . . . **D. adamii**
- 13a Flowers within one inflorescence arranged in more than one multiflowered glomerule, such glomerules quite globose in outline . . . . . 14  
 b Flowers not arranged in well separated multiflowered glomerules that are globose in outline . . . . . 16
- 14a Leaves narrowed into a distinctly petiolar base . . . . . **D. congoensis**  
 b Leaves without a pseudopetiole . . . . . 15
- 15a Leaves not exceeding 40 cm . . . . . **D. deisteliana**  
 b Leaves exceeding 40 cm considerably . . . . . **D. fragrans**
- 16a Inflorescence densely bracteate, bracts accompanying individual flowers at least half as long as those flowers . . . . . 17  
 b Inflorescence if bracteate not densely so, bracts smaller . . . . . 19
- 17a Leaves narrowed into a winged petiole towards the base, the widest part of the blade over 5 cm wide. . . . . **D. bicolor**  
 b Leaves lacking pseudopetioles, margins mostly parallel, the blade not over 3 cm wide. . . . . 18
- 18a Leaves up to 25 cm long . . . . . **D. mildbraedii**  
 b Leaves over 25 cm long. . . . . **D. talbotii**
- 19a Inflorescence branched . . . . . 20  
 b Inflorescence not branched . . . . . 23
- 20a Branches of the inflorescence few, leaves obovate with a short distinct pseudopetiole . . . . . **D. camerooniana**  
 b Branches of the inflorescence ample, leaves oblanceolate, sword- or dagger-shaped, lacking a distinct pseudopetiole . . . . . 21
- 21a Leaves generally well exceeding 40 cm in length . . . . . **D. arborea**

- b Leaves generally not exceeding 40 cm in length . . . . . 22
- 22a Leaves arranged in pseudowhorls, majority of the flowers in pairs, pedicels slender, exceeding  $\frac{1}{2}$  cm below the joint . . . . . **D. cerasifera**
- b Leaves not arranged in pseudowhorls, majority of the flowers not in pairs, pedicels stout, usually less than  $\frac{1}{2}$  cm below the joint but up to 1 cm in fruit . . . . . **D. mannii**
- 23a Inflorescence short, flowers subcapitate, peduncle not over 5 cm . . . . . 24
- b Inflorescence elongate, flowers in one or more clusters, if subcapitate then the peduncle well exceeding 5 cm . . . . . 25
- 24a Leaves usually not in pseudowhorls, less than 15 cm long. **D. camerooniana**
- b Leaves in pseudowhorls, generally over 15 cm long . . . . . **D. ovata**
- 25a Inflorescence reflexed, pendulous, pseudopetioles over 1 cm long, if shorter than leaves with a few pairs of distinctly impressed nerves aside of the midrib above. . . . . **D. camerooniana**
- b Inflorescences not reflexed, not pendulous, pseudopetioles less than 1 cm long, only the midrib impressed above. . . . . **D. surculosa**

### SPECIES DIAGNOSES

#### **Dracaena adamii Hepper**

**Fig. 1; Phot. 9; Map 1**

Hepper, Kew Bull. 22 (1968): 449, excluding *Adam 21103, 21220 & 21407*, and *Mann 8* (see notes); Id. in Hutchinson & Dalziel, Fl. W. Tr. Afr. ed. 2, III-I (1968): 157 (excluding the *Dracaena densifolia* Baker element, *Adam 21103 & 21220, Mann 8* and the specimen *cult. Berg-garten, Herrenhausen*, from the same collection).

Type: Liberia, Nimba, *Adam 21512* (K holo, P iso).

**Diagnostic characters:** Single stemmed unbranched shrub, oblanceolate leaves  $\frac{1}{2}$ – $1\frac{1}{2}$  m long, about 10 cm wide, inflorescence purple, unbranched, scabrid, bearing several superposed bracteate clusters of 3– $3\frac{1}{2}$  cm long flowers, perianth tube slightly longer than the free lobes, fruits depressed globose, 1–2 cm diam.

**Description:** Monocaulous shrubs, occasionally forked, up to  $1\frac{1}{2}$  m tall. *Stems* erect, to 3 cm in diameter, showing annular leafscars, densely leafy towards the top, new erect shoots may arise from the rootcrown. *Leaves* narrowly ovate to oblanceolate, in young plants rather spatulate, (50–)65–100(–150) cm  $\times$  (6–)7 $\frac{1}{2}$ –10 $\frac{1}{2}$ (–14) cm, the widest part at about two-thirds to three quarters of the entire length, tip acuminate, rarely undamaged with a subulate mucro up to 7 mm long, gradually cuneate towards the base, (1–)1 $\frac{1}{2}$ –2 $\frac{1}{2}$ (–3 $\frac{1}{2}$ ) cm wide at its narrowest part few cm above the sheathing base, clasping the stem for slightly more than its circumference, fresh leaves concolorous, shiny bright to dark green above, costa distinctly paler, parallel nervature invisible, in herbarium the costa somewhat sunken and parallel nervature distinct, sometimes with

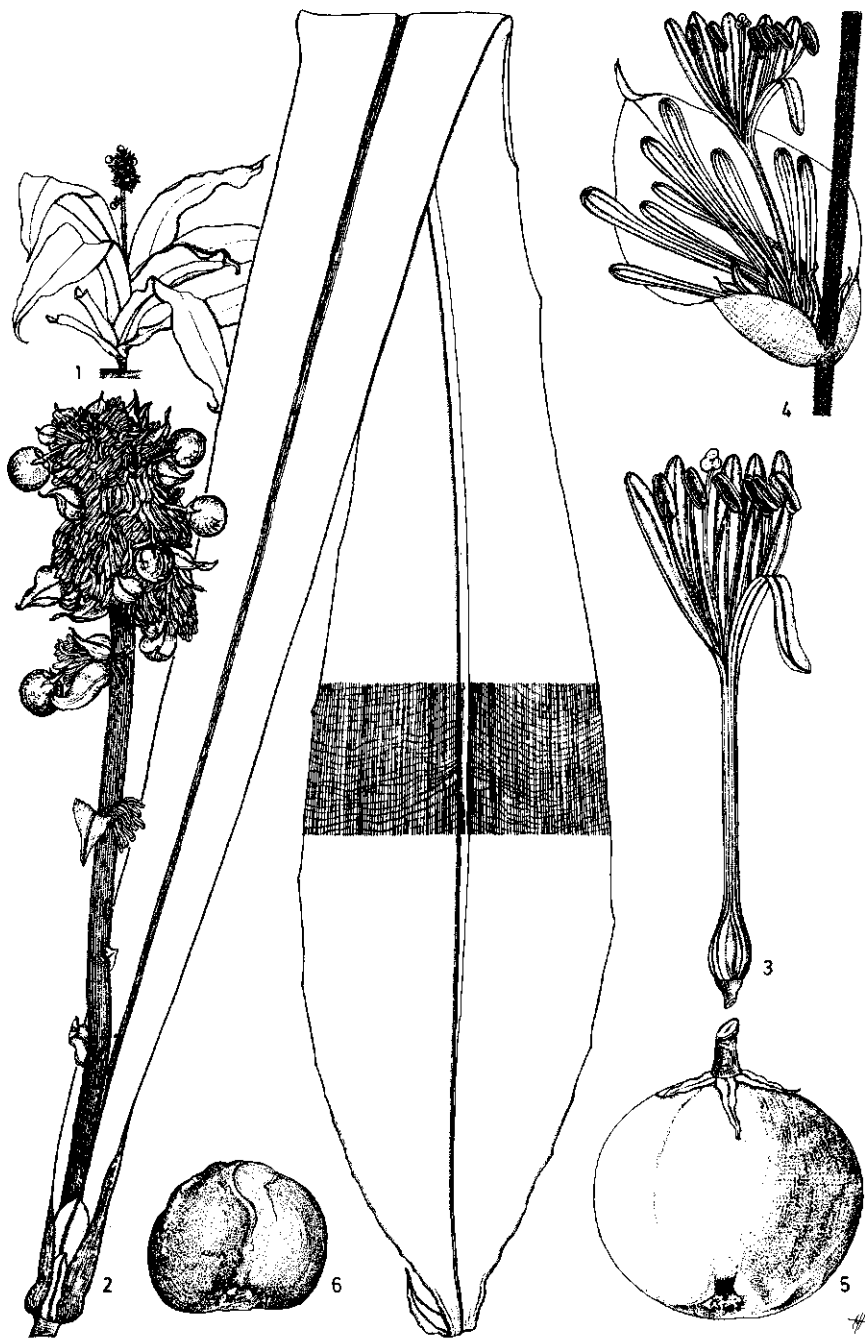


FIG. 1. *Dracaena adamii* Hepper: 1. Habit, much reduced; 2. infructescence,  $\frac{1}{3} \times$ ; 3. flower,  $2 \times$ ; 4. flowercluster,  $1\frac{1}{3} \times$ ; 5. fruit,  $2 \times$ ; 6. seed,  $2 \times$ . (1. living plant in conservatory WAG; 2. *Bos* 10358; 3 & 4 *Adam* 21512; 5 & 6. *Breteler* 7378 spir. coll.).

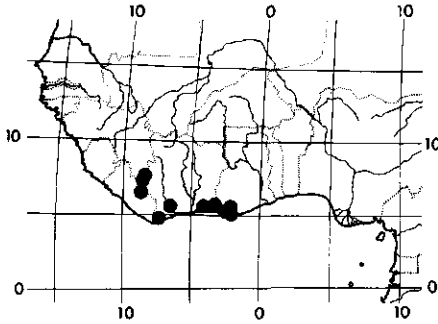


irregular transverse venation as well, leaves distinctly paler beneath, costa pale and prominent, disappearing at about (15-)10(-5) cm below the leaftip, nervature and venation similar as above, spatulate juvenile leaves with a narrow elliptic blade 10 cm  $\times$  1½ cm in the three-fifth distal part and a narrow petiolar part ¼ cm wide in the proximal two-fifth of its entire length. *Inflorescence* erect, purple when fresh, drying black, roughly scabrid, (25-)30-45(-65) cm long,



PHOT. 9. *Dracaena adamii* Hepper, scabrid peduncle (photograph H. C. D. DE WIT).

not branched, with long cuspidate transitional leaves at its base merging into bracts subtending several superposed glomerules of numerous (at least more than 10) flowers, glomerulae somewhat aggregate in the terminal one, that always contains the greatest number of flowers, individual flowers accompanied by a bract, the outer may have a bracteole as well, (8-)10-15(-20) mm long, hiding the pedicel, pedicel base indurated into a 4-8(-12) mm long persistent peg. *Flowers* white, 30-35(-37) mm long, dehiscent from the pedicelbase by a 1-2 mm long receptacle, perianth tube 17-19 mm long, lobes slightly shorter, 15-17 mm  $\times$  2-2½ mm, showing a single median vein, filaments inflated, about ½ mm in diam. with a straight subulate tip, (2-)3-4 mm shorter than the corresponding perianth lobe, anthers 2½-3 mm  $\times$  1 mm, ovary ovoid, 2½-3(-4) mm  $\times$  1½-2 mm, style about ¼ mm in diam., reaching the top of the perianth or up to a few mm exserted, stigma about 1 mm in diam. *Fruits* orange, globular or depressed globose, (10-)12-16(-18) mm long, (9-)11-18(-22) mm in diam.,



MAP 1. *Dracaena adamii* Hepper

indurated persistent receptacle (1)–2–4 mm long. Seeds pale brown, flattened-ovoid, 8–13 mm × 6–11 mm × 4–8 mm.

Distribution: Liberia, Ivory Coast, Ghana.

Notes: In his protologue of *Dracaena adamii* HEPPER cited 8 elements on which this species is based. Apart from the holotype *Adam 21512*, only two other specimens *Adam 21367* and *Enti & Hall GC 36297* are retained here.

*Mann 8* from Fernando Po was correctly removed from *Dracaena densifolia* Baker by HEPPER. He stated that this material must have been obtained from a living plant *no. 8 in the Wardian case* sent by MANN to Kew. This plant was subsequently placed in the Berg-garten, Herrenhausen, where a voucher was taken from it and sent to THISELTON-DYER for identification. I have no reason to doubt HEPPER's statement regarding *Mann 8* but the flowers of the *Herrenhausen*-plant are twice the size accepted in *Dracaena adamii*, while the perianth tube is several times longer than the lobes and not subequal to them.

These characters are matched in a living specimen cultivated in the glasshouse at WAG sub nr. 634, originating from Cameroun and possibly representing a new species which I will treat in a forthcoming revision of central african *Dracaenas*.

The remaining specimens *Adam 21103*, *21220* & *21407* cannot be accepted because of several characters, especially differences in size and shape of leaves and bracts and the possession of congested non-scabrid inflorescences. They represent a new species proposed in the present paper as *Dracaena calocephala*.

#### Specimens examined:

LIBERIA: Yekepa (fl. March), *Adam 21367* (K); S. Nimba (fl. June), *Adam 21512* (Type: K holo, P iso); mt. Bele (fr. July), *Adam 28604* (MO); 18 mi. N. Tapeta (fl. b. Febr.), *Voorhoeve 181* (WAG).

IVORY COAST: Adiopodoumé ?cult. (fr. July), *Bos 10358* (WAG); 10 km N. Tabou (inf.), *Bos 10359* (WAG), (seedl.) *10360* (WAG); 13 km NNW Tabou (fr. April), *Breteler 7378* (WAG); Soubré (fl. Febr.), de Namur 276 (ABI); Ayamé-Ganviéssou (fr. May), Miège s.n. (G).

GHANA: Ankasa F.R. (fl. Jan.), *Enti & Hall GC 36297* (GC, K); Neung F.R. (fr. May), *Enti 1326* (MO); Ndumfri F.R. (fr. April), *Hall & Enti GC 38361* (GC).

**Dracaena arborea (Willd.) Link****Fig. 2, 3; Map 2**

Link, En. Pl. 2, 1 (1821): 341; Sprengel, Syst. Veg. II (1825): 92; Schultes f. in Roemer & Schultes, Syst. Veg. VII (1829): 342; Loudon, Hort. Britt. I (1830): 130; Steudel, Nom. Bot. I (1840): 528; Kunth, En. Pl. V (1850): 9; Planchon, Fl. Serres VI (1851): 136 (in quest. syn. to *Cordyline fragrans* (L.) Planchon); Koch, Berl. Allg. Gartenz. (1858): 253, 261; Regel, Gartenflora 8 (1859): 329; Koch, Wochenschr. IV (1861): 395 (p.p., quo ad nomen); Regel, Gartenflora 13 (1864): 197; Koch, Wochenschr. X (1867): 237 (p.p., quo ad nomen); Regel, Gartenflora 20 (1871): 134; Id., Act. Hort. Petrop. I (1871): 136 = Rev. (1871): 36; Id. ex André, Ill. Hort. 19 (1872): 137; Baker, J. Bot. XII (1874): 164; Id., J. Linn. Soc. 14 (1875): 528; Nicholson, Ill. Dict. Gard. I (1885): 490; Engler, Nat. Pfl. II-5 (1888): 75; Purpus, Gartenfl. 38 (1889): 535; Vilmorin's Blumeng. I (1895): 1064; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 439; Engler in Engler & Drude, Veg. Erde IX-II (1908): 290; Råde, Gartenwelt 12 (1908): 231; Wiegand in Bailey, St. Cycl. Hort. I (1914): 1070; Engler, Bot. Jahrb. 59, beibl. 131 (1924): 20; Irvine, Pl. G. Coast (1930): 166; Krause in Engler, Nat. Pfl. ed. 2, 15 a (1930): 359; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384; Dalziel, Us. Pl. W. Trop. Afr. (1937): 493; Chittenden, Dict. Gard. II (1951): 710; Roberty, Pet. Fl. (1954): 338; Pareys Blumeng. ed. 2, I (1958): 309; Irvine, W. Pl. Ghana (1961): 769; Keay, Onochie & Stanfield, Nig. Trees II (1964): 440 (excluding *Onochie 34342* = *Dracaena fragrans* (L.) Ker Gawler); Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 156 (excluding *Deighton 4001* and *Onyeachusim & Latilo FHI 54266*, both *Dracaena fragrans* (L.) Ker Gawler); Bailey & Bailey, Hortus Third (1976): 398; Jaeger & Adam, Boissiera 33 (1981): 180 (exsicc. n. v.).

Basionym: *Alettris arborea* Willd.; Willdenow, En. Hort. Berol. (1809): 381.

Type: a living plant in the Botanical Garden in Berlin in 1809.

Neotype: Nigeria, Nun R., *Mann 454* (K holo, A, P, S iso).

Homotypic synonyms: *Cordyline arborea* (Willd.) Goeppert; Goeppert, Nova Acta (1854): 55.

*Draco arborea* (Willd.) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710; Baillon, Hist. Pl. (1894): 488.

*Pleomele arborea* (Willd.) N.E.Br.; Brown, Kew Bull. 1914: 277.

*Dracaena knerkiana* K. Koch; Koch, Wochenschr. IV (1861): 394; Id., loc. X (1867): 235; Regel, Gartenflora 20 (1871): 134, et Id., Act. Hort. Petrop. I (1871): 136 = Rev. (1871): 36 (sphalm. *D. knerckiana*, in syn.); Baker, J. Bot. XII (1974): 164, et Id., J. Linn. Soc. 14 (1975): 528 (sphalm. *D. knerckiana*, in syn.); Deutsche Gartn. Zeit. 1895: 329 (sphalm. *D. knerki*, nomen); Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 439 (in syn.); Möller's D. Gartn. Zeit. 1903: 225 (sphalm. *D. kerkiana*); Wiegand in Bailey, St. Cycl. Hort. I (1914): 1070 (sphalm. *D. knerkii* Hort. as a hort. form in *D. fragrans* (L.) Ker Gawler); Pareys Blumeng. ed. 2 (1958): 310 and Bailey & Bailey, Hortus Third (1976): 398, both list a cv. *knerkii* in *Dracaena fragrans* (L.) Ker Gawler.

*Dracaena arborea vera* Hort. Berol. was the garden name of a non-flowering plant of unknown origin that served in part for the discription of *D. knerkiana* K. Koch.



FIG. 2. *Dracaena arborea* (Willd.) Link: 1. Habit, much reduced; 2. transition leaves on peduncle,  $\frac{2}{3} \times$ ; 3. part of inflorescence,  $\frac{2}{3} \times$ . (1. after PHOT. 7; 2 & 3. Goll 22).

Heterotypic synonyms: *Dracaena excelsa* Ten.; Tenore, Ind. Sem. Neap. (1839): adn. nr. 8; Kunth, En. Pl. V (1850): 9; Planchon, Fl. Serres VI (1851): 139 (sp. non satis notae sub *Cordyline*); Koch, Berl. Allg. Gartenz. (1858): 253, 261; Regel, Gartenflora 8 (1859): 330 (sp. non. satis notae); Koch, Wochenschr. IV (1861): 396 (in syn.); Regel, Act. Hort. Petrop. I (1871): 139 = Rev. (1871): 39 (in syn.); Baker, J. Linn. Soc. 14 (1875): 528 (in syn.). Type: the protologue, i.e. Tenore, Ind. Sem. Neap. (1839): adn. nr. 8 (see note).

*Aletris fragrans* Hort. Cels. nom. inval. was the garden name of a plant TENORE received from Paris and served for the description of his *Dracaena excelsa*.

*Dracaena arborea* (Willd.) Link var. *baumannii* Engl; Engler, Bot. Jahrb. 59, beibl. 131 (1924): 20. Type: Togo, Misahöhe, *Baumann 330* (B holo †). Neotype: Sierra Leone, Regent, *Morton SL 122* (WAG holo, GC, K, SL iso).

Diagnostic characters: Trees to 20 m tall, often planted in fences and on burial sites, sword-shaped leaves  $\frac{1}{2}$ – $1\frac{1}{2}$  m long, about 5 cm wide, inflorescence a large pendulous panicle to  $1\frac{1}{2}$  m or even more long, peduncle yellow and smooth, flowers in groups of 3–5 accompanied by small triangular brown bracts, the groups crowded towards the ends of branches, perianth lobes  $1\frac{1}{2}$ –2 times as long as the tube, fruits depressed globose,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm in diameter, perched on  $\pm$  7 mm long persistent slender pedicels.

Description: *Trees* up to 20 m tall, trunk to 20–30 cm in diameter, often planted in boundaries or as ornamental, regularly coppiced, frequently producing areal roots, young stems yellow-brown, showing shallowly crescent-shaped long persistent leafscars, old trunks grey. *Leaves* narrowly oblanceolate to sword-shaped, (40–)50–120(–150) cm  $\times$  (4–)4 $\frac{1}{2}$ –6(–10) cm, tapering to both ends, the widest part distinctly above the middle, tip acute, with a short acicular mucro not exceeding 3 mm, base narrow-cuneate, (1–)1 $\frac{1}{2}$ (–3) cm wide shortly above the abruptly flaring foot, clasping the stem for more than three quarters of its circumference, fresh leaves concolorous, shiny bright to dark green above, costa not visible, parallel nervature and sometimes irregular transverse venation visible in herbarium, leaves distinctly paler beneath, the costa prominent for about three quarters of its length, transitional leaves at the base of the inflorescence may have aberrant dimensions, being shorter, comparatively wider and less constricted towards their base. *Inflorescence* reflexed, yellow when fresh, very smooth, consisting of a pendulous, much branched panicle to 150(–200) cm long, bracteate, bracts forming a gradual or fairly rapidly declining range from transitional leaves to tiny triangular scales accompanying the individual flowers, these arranged in groups of 3(–5) each, sometimes the groups crowded and forming a multiflowered short raceme, flowers subtended by bright brown triangular 3–5 mm long bracts, pedicels jointed, (3–)7(–13) mm long below the joint, long persistent as a slender conspicuous peg. *Flowers* white, (17–)18–20(–22) mm long, receptacle extended for about 2–3 mm below the ovary into a somewhat indurated cone, perianth tube 5–8 mm long, lobes up to twice as long, 10–13 mm, up to 3 mm wide, showing a single median vein,



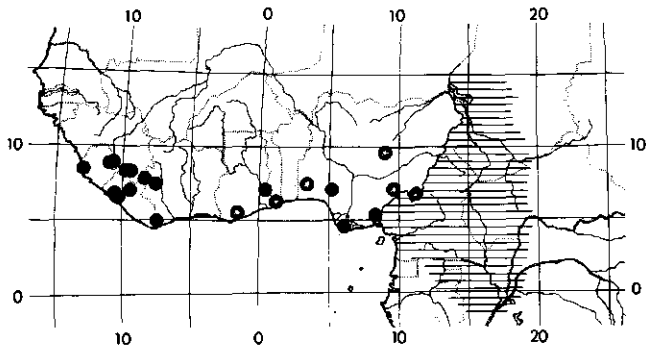
FIG. 3. *Dracaena arborea* (Willd.) Link: 1. Inflorescence,  $\frac{4}{3} \times$ ; 2. leaf,  $\frac{4}{3} \times$ ; 3. fruit,  $\frac{2}{3} \times$ ; 4. seed,  $\frac{2}{3} \times$ . (1 & 2. Bayo in Brenan 8717; 3, & 4. J. Jansen 2049 spir. coll.).

sometimes up to 3-nerved in the outer whorl, with diaphanous margins, stamens inserted up to 1 mm above the throat, filaments inflated up to 1 mm diameter, tip straight, subulate, 2–4 mm shorter than the corresponding perianth lobe, anthers 2–2½ mm × 1 mm, ovary cylindrical to bottle-shaped, up to 3 mm × 2 mm, style up to ¼ mm in diam., reaching the top of the perianth, rarely slightly exerted, stigma about 1 mm in diam. *Fruits* bright orange, depressed globose and more or less distinctly lobed when more than 1-seeded, 12–24 mm long, 12–27 mm in diam., the persistent receptacle 3–6 mm long. *Seeds* bony white to pale brown, globular, 10–16(18) mm × 9–13(–16) mm × 7–11(–15) mm.

Distribution: West and Central Africa, South to Angola.

MAP 2. *Dracaena arborea* (Willd.) Link.

● Based on sterile collections only.



Notes: The present treatment is restricted to material from West Africa, excluding material from the Republic of Cameroun and beyond, which will be dealt with in a subsequent publication.

WILLDENOW based his *Aletris arborea* upon living plants in the glasshouse of the Berlin Garden. These plants were obtained from English gardens, where they were introduced in 1800 (LOUDON); they remained vegetative for several decennia in Berlin. After LINK had rightfully transferred *Aletris arborea* to *Dracaena*, subsequent authors agreed, insofar they were familiar with them, to the identity of these plants with the exception of KOCH. KOCH provided them with the superfluous name *Dracaena knerkiana* and misapplied Willdenow's name to another taxon long cultivated in Berlin under the garden's name *D. fruticosa*. REGEL redressed KOCH's mistake by referring *D. knerkiana* to the synonymy of *D. arborea* (Willd.) Link and providing KOCH's taxon with the name *D. kochiana*, commenting on the likeness of non-flowering *D. fragrans* and *D. arborea*, that cannot be distinguished in an unambiguous way. Of the material involved up to this stage, no conserved specimens remain today. When BAKER treated *D. arborea* (Willd.) Link for the first time, he cited a single specimen, *Mann 454* from Nigeria, which represents *D. arborea* as it is understood currently.

In absence of any type material for either *D. arborea* (Willd.) Link or *D. knerkiana* K. Koch, I have chosen *Mann 454* as neotype for both names in an effort

to eliminate revival of the confusion of KOCH's day.

TENORE described *D. excelsa* from a living plant he had received from Hort. Cels. in Paris as *D. fragrans*. He infers its affinities to both *D. fragrans* (L.) Ker Gawler and *D. arborea* (Willd.) Link, but tends to find it more like *D. arborea* on account of its stem bearing leaves for half its length. I cannot support this argument. However, TENORE's plant was flowering at the time, and as in *D. fragrans* the flowers are borne characteristically in almost spherical glomerules, Tenore would have noticed the similarity. Contrary to less plausible suggestions by KOCH and REGEL, I support BAKER in referring *D. excelsa* Tenore to the synonymy of *D. arborea* (Willd.) Link, while in absence of any conserved material it must be typified by its protologue.

The variety *baumannii* proposed by ENGLER in *D. arborea* cannot be upheld as its characters fit comfortably within the limits set for the species, without occupying any extreme position. As fertile material from Togo is not available, I have chosen *Morton SL 122* from Sierra Leone as neotype, the original holotype being destroyed in the Berlin disaster and in absence of any duplicates. MORTON's specimen fits almost exactly the measurements given in ENGLER's protologue.

*D. arborea* as delimited here cannot be distinguished from arborescent specimens of *D. fragrans* if completely vegetative. However, inflorescences, even old ones, are diagnostic in several characters. The persistent basal part of the pedicel is very short to virtually absent in *D. fragrans*, but is quite conspicuous and about 7 mm long in *D. arborea*. The minute bracts accompanying the flowers are white in *D. fragrans* and bright brown, and somewhat larger, in *D. arborea*. The disposition of the flowers is characteristically in well separated spherical multiflowered glomerules in *D. fragrans* and in racemose more or less separate groups of 3–5 flowers each in *D. arborea*. As compared to other arborescent species outside our area it does resemble the East-African *D. steudneri* Engl. in habit, but that species is readily recognized by its panicles that are characteristically borne erect.

#### Specimens examined:

Collections marked with an asterisk\* have not been confirmed, lacking sufficient diagnostic characters.

SIERRA LEONE: sine loc. (fr.), *Afzelius s.n.* (H, LD, S, UPS); \*Kono distr., *Burbidge 483* (K); Regent (fl. b. Nov.), *Morton SL 122* (GC, K, WAG); Tingi nts. (fr., fl. Dec.), *Morton & Gledhill SL 2931 & SL 3022* (K, WAG).

Liberia: mt. Coffee rd (fr. Oct.), *Bos 2294* (K, WAG); Monrovia (inf.), *Bos 2950* (WAG), (fr. Febr.), *Goll 22* (WAG); Firestone Plantations (fr. Febr.), *J. Jansen 1566* (WAG); Voinjama (fr. July), *J. Jansen 2049* (WAG); Gbarnga (fl. Sept.), *Linder 654* (A, K); Paynesville (fl. Aug.), *Voorhoeve 395* (HBG, WAG).

GUINÉE: mt. Nimba (inf.), *J. J. de Wilde 881* (WAG); Sérédou (fr. Dec.), *Roberty 16138* (G, K); \*mt. Nimba, *Schnell 419* (P).

IVORY COAST: \*mt. Tonkoui, *Bamps 1910* (BR); Man (fr. July), *Bos 10370* (WAG); Grabo (fl. Aug.), *Guilleaume 1564* (ABI); \*mt. Tonkoui, *van der Burg 1079* (WAG).

GHANA: \*Kumassi, *Cummins 167* (K); Hohoe distr. (inf.), *St. Clair-Thompson 3611* (FHO).

TOGO: \*Lomé, *Brunel 3889* (B); \*Tomegbé-Badou, *Ern 2845* (B); \*Tomegbé-Kpete Mafo, *Hakki c.s. 661* (B).



NIGERIA: Idanre (fr. Jan.), *Bayo* in *Brenan 8717* (BM, FHO, K, P); \*Mbamnga, *Chapman cf. 2519* (photo WAG); \*Shere hills, *J. B. Hall 2196* (IFE); Nun R. (inf.), *Mann 454* (Neotype: K holo, A, P, S iso); Oban (fl.), *Talbot 740 = 212* (BM, K); \*Eket, *Talbot 3034* (BM); \*Ta Donga, *Vermeer 30* (UCI); \*Ado Rock, *Wit c.s. 2343* (WAG).

***Dracaena aubryana* Brongn. ex C. J. Morren Fig. 4; Phot. 10; Map 3**

Morren, Belg. hort X (1860): 348; Koch, *Wochenschr.* III (1860): 356; Morren, *Bull. Fed. Soc.* 1860 (1861): 302; Koch, *Wochenschr.* IV (1861): 398; Regel, *Gartenflora* 10 (1861): 332; Jacob Makoy *Cat.* 1861: 9 (teste Morren & de Vos, 1887); Morren, *Bull. Fed. Soc.* 1861 (1862): 294; Brongniart, *Fl. Serres XV* (1862–63): 47, t. 1522–1523; Koch, *Wochenschr.* X (1867): 239; Morren & de Vos, *Bull. Fed. Soc.* 1883–1885 (1887): 82; Wittmack, *Gartenflora* 42 (1893): 305, 316, 407; Möller's *D. Gartn. Zeit.* 1893: 201; Durand & Schinz, *Consp. Fl. Afr.* (1893): 326 (excluding *Mann 1038 = D. braunii* Engl.); Wittmack, *Gartenflora* 43 (1894): 105; Hua, *Contr. Fl. Congo fr., Lil.* (1897): 8 = *Bull. Soc. Hist. Nat. Autun X* (1897): 662–669.

Type: *Culta Hort. Par.* 1859, *Wentzel in Herb. Martius* (BR lecto).

Heterotypic synonyms: *Dracaena thalioides* Makoy ex C. J. Morren (nom. inval.); Anonymous & Morren, *Belg. Hort.* VIII (1858): 333, 356, 357 (nom. nud.); Morren, *Belg. Hort.* X (1860): t. 24 (nomen).

*Dracaena thalioides* Makoy ex Regel; Regel, *Gartenflora* 20 (1871): 147; Id., *Act. Hort. Petrop.* I (1871): 147 = *Rev.* (1871): 47; Id. ex André, *Ill. Hort.* 19 (1872): 139; Baker, *J. Bot.* XII (1874): 166 et Id., *J. Linn. Soc.* 14 (1875): 534 (both excluding *Mann 1038 = D. braunii* Engl.); Möller's *D. Gartn. Zeit.* 1893: 201; ?Watson, *Gard. Chron.* 1894-I: 137; Watson, *Gard. & For.* VII (1894): 54; Baker in *Thiselton-Dyer, Fl. Trop. Afr.* VII (1898): 445 (excluding *Mann 1038 = D. braunii* Engl.); *Gard. Chron.* 1898-I: 140; De Wildeman & Durand, *Contr. Fl. Congo I* (1899): 59; De Wildeman, *Reliq. Dewevr.* (1901): 242 (misapplied: *Dewevre 160 = D. acaulis* Bak.); Id., *Pl. Laur.* (1903): 19; Id., *Miss. Laur.* I (1905): 44; Id., *Ann. Mus. Congo ser. V, I-3* (1906): 229; Durand & Durand, *Syll. Fl. Congo* (1909): 567 (excluding *Dewevre 169 = D. acaulis* Bak.); De Wildeman, *Pl. Beq.* I (1921): 39; Pareys *Blumeng.* ed. 2, I (1958): 310; Hepper in *Hutchinson & Dalziel, Fl. W. Trop. Afr.* ed. 2, III-I (1968): 156; Bailey & Bailey, *Hortus Third* (1976): 298. Type: *Belg. Hort.* X (1860): t. 24. Homotypic synonyms: *Draco thalioides* (Makoy ex Regel) Kuntze; Kuntze, *Rev. Gen. Pl.* II (1891): 710. *Pleomele thalioides* (Makoy ex Regel) N.E.Br.; Brown, *Kew Bull.* 1914: 279; Neal, *Gard. Hawaii* (1965): 206; St. John, *Summ. Fl. Pl. Hawaii* (1973): 84.

*Dracaena humilis* Baker; Baker, *J. Bot.* XII (1874): 166; Id., *J. Linn. Soc.* 14 (1875): 534; Durand & Schinz, *Consp. Fl. Afr.* (1893): 328; Vilmorin's *Blumeng.* I (1895): 1067; Hua, *Contr. Fl. Congo fr., Lil.* (1897): 8 = *Bull. Soc. Hist. Nat. Autun X* (1897): 662–669; Baker in *Thiselton-Dyer, Fl. Trop. Afr.* VII (1898): 444; Chevalier, *Bot.* I (1920): 646 (p.p. quo ad nomen, *Chevalier 19741 = D. praetermissa* Bos, Id., loc. cit. sub *D. poggei* toto); Irvine, *Pl. Gold Coast* (1930): 167 (misapplied: *Irvine 491 = D. phrynioides* Hook.); *Hutchinson & Dalziel, Fl. W. Trop. Afr.* II (1936): 384 (p.p., excluding *Irvine*

491 = *D. phrynioides* Hook.); Dalziel, Us. Pl. W. Trop. Afr. (1937): 494 (misapplied as in Irvine); Roberty, Pet. Fl. (1954): 338 (in syn. sub *D. ovata* Ker Gawler); Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 156; Mouton, Adansonia ser. 1, 15 (1976): 410. Type: Sierra Leone, Bagroo R., Mann 898 (K holo, A, P iso). Homotypic synonyms: *Draco humilis* (Baker) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710. *Pleomele humilis* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena monostachya* Baker var. *monostachya*; Baker, Trans. Linn. Soc. ser. II-1 (1878): 252; Durand & Schinz, Consp. Fl. Afr. (1893): 328; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 447; Rendle, Cat. Afr. Pl. Welw. II-1 (1899): 48; Dandy in Exell, Cat. Vasc. Pl. S. Tomé (1944): 347. Type: Principe, Welwitsch 3744 (BM holo, K, LISU iso, MO, WAG photo). Homotypic synonym: *Pleomele monostachya* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena monostachya* Baker var. *angolensis* Baker; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 447; Dandy in Exell, Cat. Vasc. Pl. S. Tomé (1944): 347. Type: Golungo Alto, Welwitsch 3745 (BM lecto); Welwitsch 3746 (BM para), 3747 (BM, K para).

*Dracaena tholloniana* Hua; Hua, Contr. Fl. Congo fr., Lil. (1897): 10 = Bull. Soc. Hist. Nat. Autun X (1897): 662–669; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 445; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 59. Type: Gabon, Ndjolé, Thollon 91 (P holo, K drawing). Homotypic synonym: *Pleomele tholloniana* (Hua) N.E.Br. Brown, Kew Bull. 1914: 279.

*Dracaena kindtiana* De Wild.; De Wildeman, Ann. Mus. Congo ser. V, II (1907): 119, t. 65 & 66; Durand & Durand, Syll. Fl. Congo (1909): 565; De Wildeman, Bull. Jard. Bot. Brux. V (1916): 166; Horticulture (Boston) 28 (1918): 131 (n.v. teste Index Lond.); De Wildeman, Pl. Beq. I (1921): 38; Robijns, Fl. Parc Nat. Alb. III (1955): 372; Killick, Fl. Pl. Afr. 33 (1959): t. 1309. Type: De Wildeman, Ann. Mus. Congo ser. V, II (1907): t. 65 (published photograph: lecto, t. 66 = detail of t. 65). Homotypic synonym: *Pleomele kindtiana* (De Wild.) N.E.Br.; Brown, Kew Bull. 1914: 278.

Diagnostic characters: Unbranched low shrubs, bearing distichously to spirally arranged leaves, usually about  $\frac{1}{2}$  m long, distinctly divided into an oblong blade, corrugated lengthwise and concolorous, and a spoke-like pseudopetiole about as long as the blade, inflorescence terminal, erect, rarely branched, usually 15–50 cm long, bearing numerous 1–3-flowered knobs in the upper part, pedicels short with a joint at the top, perianth tube distinctly shorter than the lobes, fruits deeply lobed, each of the 1–3 lobes ovoid and about 1–2 cm long.

Description: *Shrubs* or suffrutices up to  $2\frac{1}{2}$  m tall, usually unbranched, layering stems may produce several erect side-shoots, rarely divided into 3 stems at the base, stem short, erect, usually not exceeding 50 cm in W. Africa, distinctly cicatriced but often hidden by prophylls 7–12(–15) mm long, roots rarely inflated, dull orange in colour. *Leaves* distichous, the two rows often twisted into a spiral due to torsion of the stem, (15–)30–60(–150) cm long, distinctly differen-

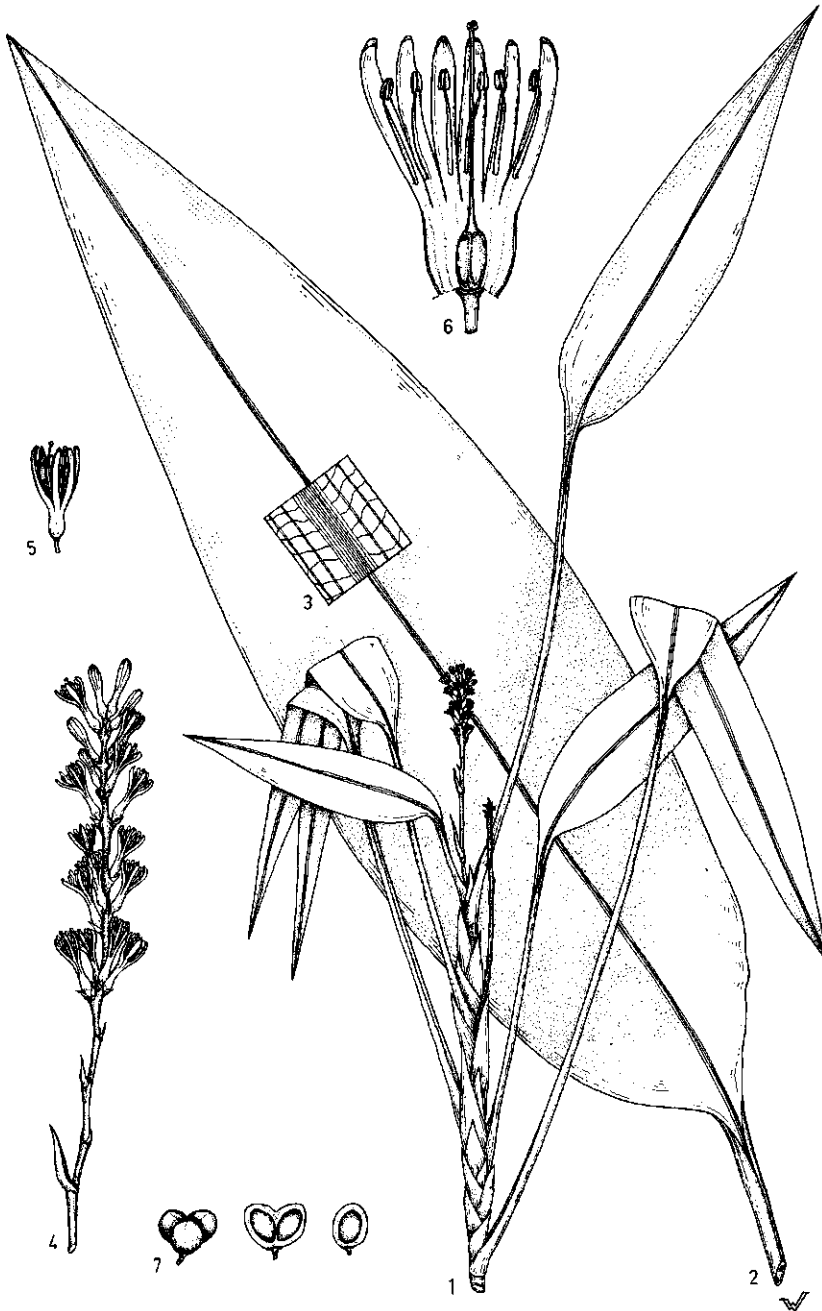
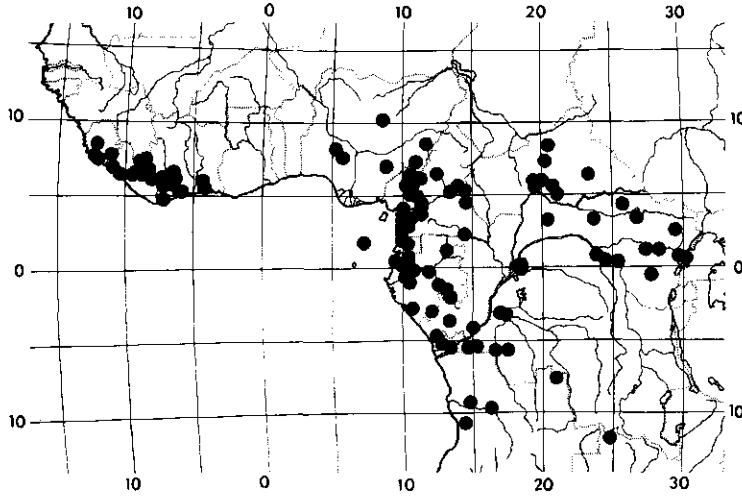


FIG. 4. *Dracaena aubryana* Brongn. ex C. J. Morren: 1. Habit,  $\frac{2}{3} \times$ ; 2. leafblade,  $\frac{2}{3} \times$ ; 3. inset: leaf detail,  $2 \times$ ; 4. inflorescence,  $\frac{2}{3} \times$ ; 5. flower,  $\frac{2}{3} \times$ ; 6. flower laid open,  $2 \times$ ; 7. fruits, outside & sections,  $\frac{2}{3} \times$ . (1. Adam 16621; 2-4. Breteler 6000; 5 & 6. Mann 898; 7. Aké Assi 7297).

tiated into a distal lamina and a proximal pseudopetiole, lamina ovate to oblong-ovate or narrowly so, (10-)25-40(-60) cm  $\times$  ( $\frac{1}{2}$ -)5-10(-15) cm, tip acute, acuminate or cuspidate, with a subulate mucro usually up to 5 mm (exceptionally to 18 mm) long, base rounded to abruptly cuneate or even truncate into the pseudopetiole, often assymetrical, midrib usually not evident, sometimes somewhat prominent near the base beneath, primary nervature strictly parallel, prominent in herbarium, secondary venation irregularly transverse, not always visible, lamina lengthwise corrugated, shiny bright to dark green above, lacking dots and concolorous (but variegated with cream-coloured bands in one single collection from Rio Muni), distinctly paler beneath, pseudopetiole of the same colour, 5-30(-100) cm long, furrowed along its upper surface, sheathing at the base for up to 7(-10) cm. *Inflorescence* terminal, erect, (9-)15-50(-70) cm, in W. Africa usually shorter than the leaves but often rising beyond the leaves elsewhere, larger inflorescences sometimes with one to several branches up to 10(-20) cm. long, borne erect at the base of the flowering part, i.e. the upper half or one third of its length, flowers borne on distinct knobs, 1-3(-7) together, each knob with a single triangular bract, 3-10 mm long and one to several diminutive bracteoles occasionally up to 5 mm long. *Flowers* white or greenish-white, often with a purple-red band or line through the centre of each lobe, (10-)15-30(-55) mm long, the receptacle below the ovary obconical and up to 3 mm long, with a distinct joint to the short, up to 2 mm long pedicel, perianth lobes slightly longer than to up to more than twice as long as the tube, up to 2(- $\frac{2}{2}$ ) mm wide when fully expanded, those of the outer whorl with 3, those of the inner with 1 nerve, margins diaphanous, stamens inserted at the throat or to about 2 mm above it, about 2 mm shorter than the corresponding perianth lobes, filaments terete, inflated, with subulate tips, anthers 2-2 $\frac{1}{2}$ (-5) mm  $\times$   $\frac{1}{2}$ - $\frac{3}{4}$  mm, ovary cylindrical, flat-topped, up to 3 mm  $\times$  1 $\frac{1}{2}$  mm, style terete, terminal, reaching the top of the perianth or up to 5 mm exerted, stigma usually shallowly 3-lobed. *Fruits* bright orange with a smooth shiny skin and slightly duller pulp, deeply 1-3 lobed, lobes ovoid, diverging, 8-18 mm  $\times$  5-9 mm  $\times$  4-6 mm, containing each a single seeds. *Seeds* dirty white, similar in shape to the fruit-lobes, 6-14 mm  $\times$  5-7 mm  $\times$  3-6 mm when mature, flattened where pressed against adjacent seeds in 2-3 seeded fruits.

Distribution: *D. aubryana* is restricted to deep shady localities in fairly undisturbed forests. It occurs from Sierra Leone to Ivory Coast, was never collected in Ghana, Togo and Benin and is distributed in central Africa from Nigeria to Uganda, Zambia and Angola.

Notes: This treatment of *D. aubryana* is not restricted to W. Africa but covers the entire area of the species. *Dracaena aubryana* Brongn. ex C. J. Morren represents a variable species, characterized by the differentiation of its leaves into an expanded lamina and a long spoke-like pseudopetiole. In west Africa it shares this character with two other species, *D. phrynioides* Hook. and *D. praetermissa* Bos. *D. phrynioides* differs from it by its clubshaped inflorescence, different fruit-



MAP 3. *Dracaena aubryana* Brongn. ex C. J. Morren

shape and the very characteristic pale dots on the leaves. *D. praetermissa* has a much more delicate inflorescence, horned fruits and some sharply impressed nerve pairs.

*Dracaena aubryana* was initially discovered in Gabon by AUBRY LE COMTE, paymaster in the French navy, who sent living plants to Paris. When these plants flowered, they were described and provided with the epithet *aubryana* in honour of their discoverer by BRONGNIART, who did not publish his diagnosis. The horticultural firm of JACOB MAKOY in Liège obtained living stock from the Jardin des Plantes in Paris, raised specimen plants from it and proceeded to exhibit these plants under the name of *D. thalioides* on several occasions in 1858, as ornamental foliage plants. In 1860 they presented flowering material of these plants to MORREN in Brussels, who noted this to be conspecific with *D. aubryana*. MORREN received the BRONGNIART manuscript from DECAISNE in Paris and effectively published it in la Belgique Horticole, fulfilling the last requirement for validation of the name *Dracaena aubryana*. He specifically credited the name to BRONGNIART, cited his description verbatim, did not add any character and illustrated his article with a plate representing the flowering plant of Messrs. MAKOY. Unfortunately the caption of the plate reads *Dracaena thalioides* Hort. MAKOY, but MORREN points out in his article that this is nothing more than a trade name employed at some exhibitions. Under these circumstances flowering material from the plants in Paris, that was available to BRONGNIART, is preferable to the Liège material for typification of the name *Dracaena aubryana*. The flowering plant of MAKOY did not form part of the basis for the diagnosis of BRONGNIART. For these reasons *D. aubryana* is here lectotypified by a collection by WENZEL from the Paris garden, identified by BRONGNIART in 1859, stating its origin from Gabon and Aubry as its discoverer.

KOCH and REGEL both dealt extensively with *Dracaena* and both of them, as well as horticultural circles in Belgium (MORREN & DE VOS) accepted the name *D. aubryana* for this species. In 1871 however, REGEL changed his opinion and validated the name *Dracaena thalioides* based on MORREN's publication of the plate, disregarding MORREN's text, while he treated *D. aubryana* as a synonym based on an illustrated article by BRONGNIART in 1862. Although this erroneous point of view was widely contested (WITTMACK, MÖLLER, DURAND & SCHINZ, HUA), it was upheld by BAKER in both his monograph and in the Flora of Tropical Africa, which has resulted in the employment of the epithet *thalioides* for this species up to the present paper.

*Dracaena humilis* Baker was proposed for plants of modest proportions predominant in the Western African part of the distribution of *D. aubryana*. Apparently BAKER was not sufficiently familiar with representatives of this species from Nigeria eastwards, that usually have a stouter habit represented by typical *D. aubryana*. He recognized *Dracaena thalioides* and cited two collections for it: Mann 1936, a *D. aubryana* of the stouter proportions, and Mann 1039, which represents another species, *D. braunii* Engl. considerably smaller than his own *D. humilis*, which consequently would have extended the range of variability of *D. thalioides* sufficiently to comfortably accommodate *D. humilis*. Another peculiarity constitutes the fact that a Gabonese collection, Soyaux 96 originally cited by BAKER under *D. humilis*, was transferred by HUA to *D. aubryana*. However, BAKER retrieved it from what he considered to be *D. thalioides* and cited it once more under *D. humilis* in the Flora of Tropical Africa.

IRVINE misidentified his single collection of *D. phrynioides* Hook. as *D. humilis*. This was not detected by HUTCHINSON in the Flora of West Tropical Africa, and as DALZIEL bases his comments on *D. humilis* exclusively on this single Ghanaian collection, his remarks should probably refer to *D. phrynioides* instead.

*Dracaena kindtiana* was proposed by DE WILDEMAN as a species very close to *D. thalioides* and with a measure of reserve, as he considered the latter species as very polymorph and not yet sufficiently known. *D. kindtiana* fits comfortably within the circumscription of *D. aubryana* as proposed by me.

*Dracaena monostachya* Baker was originally proposed for plants from Principe and Angola, but in the Flora of Tropical Africa the author preferred to give the continental African plants separate status on varietal level. In treating the typical variety for Principe, DANDY even expressed the opinion that the var. *angolense* Baker could possibly represent another species. I cannot justify either taxon on infraspecific level in *D. aubryana*.

*Dracaena tholloniana* was proposed by HUA because of differences in leaf-shape and much smaller flowers than in typical *D. aubryana*. However, these characters do fit within the considerable range of variation of *D. aubryana* as it is treated here, albeit that the flowers of *D. tholloniana* represent the smallest sizes found in this species.



PHOT. 10. *Dracaena aubryana* Brongn. ex C. J. Morren (photograph H. C. D. DE WIT).

### Specimens examined:

SIERRA LEONE: Roruks, *Deighton* 3264 (K); Kenema F.R. (fr. March), *Deighton* 4121 (K); Bagroo R. (fl., y.fr.), *Mann* 898 (A, K, P).

LIBERIA: Blazie, *Adam* 16253 (P); Kitoma (fl. Dec.–March), *Adam* 16591 (P), (y.fr. Dec.–March), *16591bis* (P), (fl. March), *16621* (P), *28958* (MO); Yekepa (y.fr. March), *Adam* 21052-1 (MO), (y.fl. March), *21178* (MO); Grassfield (fr. June), *Adam* 21484 (K); Tchien, *Adam* 25931 (MO); 20 mi. E. Monrovia (fr. Febr.), *Baldwin* 11082 (K); Jaurazon (fr. March), *Baldwin* 11449 (K); Ganta (fl. Febr.), *Baldwin* 14048 (K); Tapita (fl. Jan), *Bos* 2655 (K, WAG); Dukwia R. (fr. Febr.), *Cooper* 168 (K); Duport (fr. Febr.), *de Gier* 296 (WAG); sin. loc. (fr. March), *Harley* 821 (P); km 32 Bomi Hills-Mano R. (fl., fr. Febr.), *Jansen* 1517 (WAG); mt. Nimba, *Schnell* 557 (P); Krahn Bassa for. (fr. Jan.), *van Harten* 294 (WAG).

IVORY COAST: Mamba R., *Aké Assi* c.s. 549 (ABI); Adiopodoumé (fr. Jan.), *Aké Assi* 7297 (K); km 5–9 E. Tienkula (fr. March), *Bernardi* 8377 (P); 20 km SE Taï, *Bos* 10335 (WAG); 15 km E Tabou, *Bos* 10364 (WAG); 10 km N Sassandra, *Bos* 10368 (WAG); km 56 Sassandra-Gagnoa (fl. Oct), *Breteler* 6000 (WAG); Guedo, Agniely R. (fl. Febr.), *Chevalier* 17030 (P); Taï for. (fl., y.fr. Jan.), *de Koning* 5198 (WAG); Gagnoa-Yabayo, Davo R., *de Namur* 489 (ABI); 56 km N Sassandra (fl.b., y.fr. Jan), *Leeuwenberg* 2464 (K, WAG); Zagne-Guiglo (fr. Febr.), *Tehe Henry* 409 (ABI); 10 km W. Kpata Aidou (fr. May), *van der Burg* 203 (WAG); 19 km SW Kpata Aidou (fr. May), *van der Burg* 224 (WAG); 2 km NE Basobli, *van der Burg* 1625 (WAG).

NIGERIA: Kurmin Dodo, *Chapman* 3674 (K); Mambilla plateau (y.fr. March), *Chapman* 3785 (K); Gangoro F.R. (fl. March), *Chapman* 4244 (K); Omuaran (y. fr. March), *Daramola & Binuyo FHI* 61885 (K); Gashaka F.R., *Hall* 1586 (IFE); Esic F.R. (fl. Jan.), *Latilo FHI* 18218 (K); Serti (fl.b. Dec.), *Latilo & Daramola FHI* 28950 (K), (fl. Febr.), 34450 (K); Omuo bush (fr. March), *Olorunfemi & Fagbemi (FHI)* 70693 FHI, K, WAG); Ilesha-Enim Ode (fl.b., fr. May), *Sanford* 6797 (IFE); Mayo Selbe, *Tuley* 2131 (K).

CAMEROON: 90 km SW Banyo (fr. June), *Biholong* 230 (P); 13 km SE Kribi (fl. Dec.), *Bos* 3454 (WAG), (fr. March), 4022 (WAG); 9 km N Kribi (fl. Dec.), *Bos* 3510 (WAG); 12 km NE Kribi (y.fr. Jan.), *Bos* 3640 (WAG); 9 km S Kribi (fl., y.fr. Jan.), *Bos* 3697 (WAG); 24 km NE Kribi (fr. Febr.), *Bos* 3915 (WAG); 17 km N Kribi (fr. March), *Bos* 4051 (WAG); 10 km N Kribi (fr. March), *Bos* 4092 (WAG); 20 km NE Kribi, *Bos* 4681 (WAG), 5816 (WAG); 8 km S Kribi, *Bos* 5036 (WAG); 16 km NE Kribi (fr. Sept.), *Bos* 5375 (WAG); SE Kribi, *Bos* 5640 (WAG); 12½ km SE Kribi (fl. Dec.), *Bos* 5826 (WAG); Lokoundje R. (fl.b., fr. Dec.), *Bos* 5990 (WAG); Ebea falls (fl.b. Dec.), *Bos* 6024 (WAG); mt. Elephant (fr. March), *Bos* 6550 (WAG); Niète R., *Bos* 7180 (WAG); 40 km S Kribi, *Bos* 7336 (WAG); 17 km NE Deng Deng (fl. Jan.), *Breteler* 994 (BR, K, LISC, M, P, WAG); 13 km NW Betare Oya (y.fr. Febr.), *Breteler* 1083 (BR, K, P, WAG); Ekekometak (fr. March), *Dang* 613 (P/YA); 22 km E Kribi (fr. March), *J. J. de Wilde* 8050-A (WAG); Nkolbisson (fl.b. Nov.), *W. J. de Wilde* 1127 (WAG), (fl. Jan.), 1661 (B, K, MO, P, PRE, WAG), (y.fr. Febr.), 1931 (WAG); 10 km NE Bangwa (fr. April), *W. J. de Wilde* 2383 (P, WAG); Nkambe (fl. Febr.), *Hepper* 1875 (B, K, P); Gounso (y.fr. Febr.), *Jacques Félix* 3184 (P); 30 km N Eseka (fl. Jan.), *Leeuwenberg* 7461 (K, LISC, MO, PRE, WAG); km 55 Meiganga-Garoua Boulai (fl. Febr.), *Leeuwenberg* 7691 (WAG); 3 km N Founban, *Leeuwenberg* 8878 (WAG); km 45 Wum-Bafut (fl. Febr.), *Leeuwenberg* 9344 (WAG); 4 km N Bankim, *Leeuwenberg* 10149 & 10150 (WAG); Djombi, *Letouzey* 2435 (P); 17 km NE Deng Deng (fl. Jan.), *Letouzey* 3327 (P); km 40 Douala-Edea (fl. Jan.), *Letouzey* 4029 (P); Boubara (fr. April), *Letouzey* 4710 (BR, K, P); Nki falls (y. fr. Febr.), *Letouzey* 11951 (P, WAG); 10 km SSE Eseka (fl. Dec.), *Letouzey* 12532 (P, WAG, YA); Ngola (fl. Jan.), *Letouzey* 12590 (P, WAG, YA); 5 km N Nkambe, *Letouzey* 13221 (P, WAG, YA); Jua, Bamenda (fr. April), *Maitland* 1714 (K); Ngoro (fr. March), *Raynal* 10568 (P); Obola, *Sanford* 6128 (IFE, K); km 80 Betare Oya-Garoua Boulai (fl. March), *Sanford* 6177 (IFE, K); Nkol Bidjouka (fr. Febr.), *Satabié & Letouzey* 422 (YA/P); Ebodié (fl. b. Dec.), *Satabié* 470 (P); 23 km NW Bafia (fl.b. Jan.), *Satabié* 578 (WAG, YA), (fl. Jan.), 579 (WAG, YA); Bipindi (fl.b.), *Zenker* 1192 (BM, E, G, GOET, K, M, MO, P, S, WU, Z), (fl.), 2313 (BM, BR, E, G, GOET, K, M, P, S, WU, Z), (fr.), 4361 (BM, E, G, K, MO, WU), (fr.), 4362a (BM, K, WU).

REPUBLIC OF SAO TOMÉ AND PRINCIPE: Principe, *J. J. de Wilde* c.s. *WALG* 382 (WAG), (fl.b. Febr.), *WALG* 384 (WAG), *Newton* 13 (COI), *Rose* 389 (P), (fr. Sept.), *Welwitsch* 3744 (BM, K, LISU, MO-photo, WAG-photo).



EQUATORIAL GUINEA: Rio Muni, *Sanford 5818* (IFE, K), 6093 (IFE, K).

GABON: 42 km SE Lambarene (fr. Sept.), *Breteler 5687* (WAG); km 6 Moanda-Franceville, *Breteler 6242* (WAG); Tchimbele falls, *Breteler & de Wilde 62* (WAG); 22 km NE Asok, *Breteler & de Wilde 238* (WAG); Sibang Arboretum, Libreville (y.fr. Sept.), *Breteler & de Wilde 397* (WAG); Babel Nord (fl. Sept.), *Breteler & de Wilde 602* (WAG); Cape Esterias, *Breteler & de Wilde 820* (WAG); Lambarene (fl. July), *Fleury in Chevalier 26104* (P), *Chevalier 26111* (p); Libreville (fr. Oct.), *Chevalier 27141* (P); Jambi (fl.b., fr.), *Griffion du Bellay ?187* (K, P); Belinga (fr. Oct.), *Hallé 2829* (P), (fr. Dec.), 3589 (P); Boué (fr. July), *Hallé & le Thomas 237* (P); Libreville (fr. Aug.), *Klaine 2266* (A mixt., MO mixt., P mixt.), (fr. Sept.), 2464 (A, MO, P), (y.fr. June-Aug.), 3556 (P, WAG); Ogoué R. (fl.), *Leroy s.n.* (P); Monzalaba R. & Nyanga (fl. Aug.), *le Testu 1356* (A, B, BM, K, MO, P); Koula-Moutou (fl. July), *le Testu 8184* (BM); Gabon R. (fl.b. July), *Mann 1036* (A, K, P); Munda (fl. July), *Souaux 96* (K, P, Z); Ndjolé (fl. Jan.), *Thollon 91* (P, K-drawing); Cape Esterias (fr. Sept.), *Villiers 273* (P).

REPUBLIC OF CONGO: Gompaka-Brazzaville, *Chevalier 27728* (P); km 13 Sibiti-Komono (fr. Sept.), *de Néré 1928* (IEC, WAG); Louvandzi-Ndindi, *Sita 3673* (P).

CENTRAL AFRICAN REPUBLIC: Ungoura plateau (fl. Sept.), *Chevalier 6106* (P); Boro R., *Chevalier 7095* (P); Bamingui R., *Chevalier 7283* (K, P); Mbélé, Gounda R., *Chevalier 7295* (P); Dekoua, *Chevalier 10628* (P); Yalinga (fl. Jan.), *le Testu 3597* (BM, P, WAG); 15 km NW Bessou (fl. Febr.), *Tisserant 222* (P); Mbokou R. (fl. Jan.), *Tisserant 806* (P); 20 km E nouvel Alindao (fl. Jan.), *Tisserant 1417* (P); Bambari (fl. Jan.), *Tisserant 2780* (P).

UGANDA: Busamba, *Thomas 2784* (K).

ZAÏRE: Avakubi, *Bequaert 1970* (BR, US); Penge (fl.b. Jan.), *Bequaert 2178* (BR), (fl. Febr.), *s.n.* (BR); Lesse (fr. March), *Bequaert 3199* (BR); Kisangani (fl.b. Febr.), *Bequaert 6905* (BR); sine loc. (fl.), *Bequaert s.n.* (BR); 15 km NE Kisangani (fr. May), *Bokdam 4543* (Wag); Gimbi (y.fr. Sept.), *Compere 388* (BR); Gatanga (fl. Jan.), *de Graer 480* (BR); Mvuazi (fl. July), *Devred 292* (BR), Id. Sangi for. (fl.b., fr. July), 1198 (BR, K), (fl.b. fr. Aug.), 1373 (BR, K); Gbo-Sassa (y.fr. March), *Evrard 552* (BR); Bosambala (fl.b. April), *Evrard 668* (BR); Gbo-Sassa (y.fr. June), *Evrard 1249* (BR); Ligasa-Mangala (fl. March), *Evrard 2264* (BR); Yongo (fl.b. Nov.), *Evrard 5177* (BR); Kivango R., Gentil s.n. (BR); Tukpwo (fl. Jan.), *Gérard 4784* (BR, GENT); Yangambi (fl.b. Jan.), *Germain 106* (BR); Itia (fr. March), *Germain 287* (BR, WAG); Ligasa (fl. March), *Germain 8514* (BR, WAG); Eala (fl.b.), *Goossens s.n.* (BR); Zenze, *E. Laurent 88* (BR); Mbandaka (fl.), *M. Laurent 200bis* (BR); Eala (fl. Sept.), *M. Laurent 2005* (BR); sine loc. (fl.), *M. Laurant s.n.* (BR); Yaekela-Yangole (y.fr. March), *M. Laurent 3417* (BR, K, MO); 20 km W Yangambi, *M. Laurent 11950* (BR); Yangambi-Isangi, *M. Laurent 13609* (BR); Bokala (fr. May), *Nélis s.n.* (BR); Injolo (fl. March), *Seret 302* (BR); Duru R. (fl. Febr.), *Seret 500* (BR); Bas Congo (fl.), *Seret 1247* (BR); sine loc. (fr.), *Smith S 21* (BM p.p. infl. only); Kulu R. (fl.b. March), *Van den Brande 500* (BR); sine loc., *Van der Gucht 149* (BR); Kibambe, *Vanderyst 4133* (BR); Kigundji-Kimbau, *Vanderyst 16475* (BR); Kipasa nr. Kisantu (fl.b. Aug.), *Vanderyst 33398* (BR); Kizu (fl. Aug.), *Wellens 408* (BR).

ANGOLA: Fundao (fl. July), *Exell & Mendoca 3165* (BM, SRGH) & 3166 (BM); Cabinda, Buo Zau (fl. Aug.), *Gossweiler 6566* (COI, K, LISU); Duque de Braganza, *Gossweiler 8769* (K); Dundo (fl. June), *Gossweiler 14037* (BM, K); Quisculo, Golungo Alto (?) *Welwitsch 3744* (BM, K), 3745 (BM), 3746 (BM) & 3747 (BM, K).

ZAMBIA: Mwinilunga (fr. Oct.), *Drummond & Williamson 9468* (SRGH).

Cultivated: Cultra BH 73: 729, *Lee 141* (BH), *Moore jr. dd. 16 IV 1975* (BH), *Vivaldi s.n.* (BH); Cultra BR ex Zaïre, *Comte de Briey s.n.* (BR), ? ex Zaïre, *dd. 18 IV 1911* (BR), *M. Laurent s.n.* (BR); Cultra DSM ex ?, *Wingfield 2311 & 2311A* (EA, n.v.); Cultra Florida sin. orig. *Read 1127* (A, BH); Cultra Hort. Gembloux ex Zaïre, *dd. X 1899* (BR); Cultra HBG sin. orig., *dd. 22 IV 1955* (HBG); Cultra K ex Gabon, *dd. 11 I 1920* (K), ex W. Trop. Afr., *dd. 1 XII 1906* (K), sin. orig., *dd. I 1893* (K), *dd. 29 XI 1895* (K), 654/63 (K), *Maack 130* (BH); Cultra Hort. Laeken sin. orig., *dd. 1909* (BR); Cultra LISJC sin. orig., *Liberato 564* (LISJC); Cultra Longwood Gardens 58425 sin. orig., *Wikoff 1352* (BH); Cultra M sin. orig., *Herb. Kummer 2682* (M); Cultra Miami sin. orig., *Moore jr. 7068* (BH); Cultra P ex Gabon, *Wentzel in Herb. Martius s.n. dd. 1859* (BR Lectotype), sin. orig., *dd. 2 I 1860* (P), sine *dd.* (P), *dd. 1925* (P), *dd. 1926* (P); Cultra PRE ex Uganda, *Erens 1722* (K, PRE), 28491 ex Zaïre, *Pole Evans & Erens s.n.* (PRE); Cultra Stn Louis MO ex ?Zaïre, *212/06/79* (MO); Cultra WAG ex Cameroun, *Bos 7457* (WAG), 10264 (WAG), 10279 (WAG), 10333 (WAG), 10388 (WAG), 10402 (WAG), Cultra WAG ex Principe, *Bos 10423* (WAG).

*Agric. Univ. Wageningen Papers 84-1* (1984)

**Dracaena bicolor** Hook.

Fig. 5; Map 4

Hooker, Bot. Mag. (1861): t. 5248; Koch, Wochenschr. IV (1861): 398; Lemaire, Ill. Hort. 8 (1861): 38; Koch, Wochenschr. X (1867): 239; Regel, Gartenflora 20 (1871): 144; Id., Act. Hort. Petrop. I (1871): 145 = Rev. (1871): 45; Id. ex André, Ill. Hort. 19 (1872): 139; Baker, J. Bot. XII (1874): 167; Id., J. Linn. Soc. 14 (1875): 537; Durand & Schinz, Consp. Fl. Afr. V (1893): 326; Vilmorin's Blumeng. I (1895): 1068; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 449; Engler in Engler & Drude, Veg. Erde IX-II (1908): 292; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384; Chittenden, Dict. Gard. II (1951): 710; Hepper, Kew Bull. 22 (1968): 450; Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-1 (1968): 157.

Type: *Culta* Hort. Kew. ex Mann s.n., Fernando Po, *dd. II 1861* (K lecto).

Homotypic synonyms: *Draco bicolor* (Hook.) Kuntze; Kuntze, Rev. Gen. Pl. II (1981): 710. *Pleomele bicolor* (Hook.) N.E.Br.; Brown, Kew Bull. 1914: 277.

Heterotypic synonyms: *Dracaena cylindrica* Hook.f.; Hooker f. Bot. Mag. (1870): t. 5846; Gard. Chron. 1870: 1535; Regel, Gartenflora 19 (1870): 313; André, Ill. Hort. 18 (1871): 22; Baker, J. Bot. XII (1874): 167; Id., J. Linn. Soc. 14 (1875): 536; Bentham in Bentham & Hooker f., Gen. III (1883): 779; Nicholson, Ill. Dict. Gard. I (1885): 490; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 448; Engler in Engler & Drude, Veg. Erde IX-II (1908): 292; Wiegand in Bailey, St. Cycl. Hort. I (1914): 1070; Holland, Kew Bull. add. ser. IX (1922): 702; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 386 (excluding *Lyon 2873*, *Dodd 397* & *Talbot 2402*, see note); Dalziel, Us. Pl. W. Trop. Afr. (1937): 493; Chittenden, Dict. Gard. II (1951): 710; Roberty, Pet. Fl. (1954): 338; Irvine W. Pl. Ghana (1961): 770 (misapplied name, all cited material is *D. congoensis* Hua); Hepper, Kew Bull. 22 (1968): 450 (in syn.). Type: *Culta Hort. Kew. ex Edinburgh ex Thomson* (K lecto, see note).

Homotypic synonyms: *Draco cylindrica* (Hook.f.) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710. *Pleomele cylindrica* (Hook.f.) N.E.Br.; Brown, Kew Bull. 1914: 278.

**Diagnostic characters:** Unbranched shrubs, stems straight and leafy, leaves generally oblanceolate, exceptionally up to  $\frac{1}{2}$  m long, 5–10 cm wide, the proximal part narrowed into an up to 1 cm wide, winged false petiole, dried leaves show a characteristic goose-flesh like texture due to uneven shrinkage of the tissues, inflorescence terminal, subcapitate to thyrsoid, densely packed with clusters of flowers subtended by predominantly purple, 2–5 cm long bracts, perianth not quite 3 cm long, the tube distinctly longer than the lobes, fruits globose, about 1 cm in diameter.

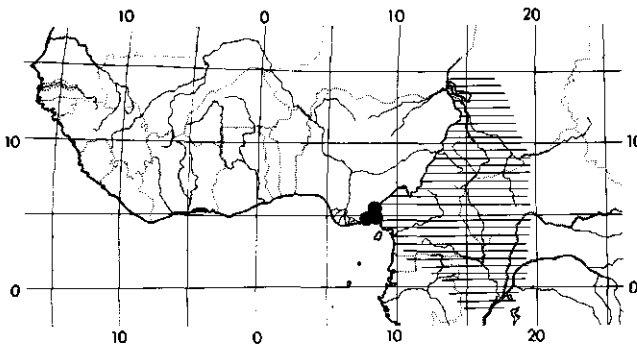
**Description:** Monocaulous *shrubs*, probably occasionally forked, exceptionally exceeding 2 m in height. *Stems* erect, usually about 1 cm in diameter, the leaves rather evenly distributed but apparently more congested towards the top. *Leaves* concolorous, generally oblanceolate, 10–35(–55) cm long, (2½)–4–10(–12) cm wide in the distal, obovate part, tip acuminate, subulate mu-



FIG. 5. *Dracaena bicolor* Hook.: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. part of infructescence,  $\frac{1}{3} \times$ . (1. Talbot 2404; 2. Opara 1165).

cro up to 5 mm long, the proximal part narrowing into a winged pseudopetiole  $1\frac{1}{2}$ –10(–16) cm long, (2–)4–8(–11) mm wide at its narrowest part directly above the ( $\frac{1}{2}$ –)1–2(–2 $\frac{1}{2}$ ) cm long sheath, clasping the stem for rather more than its circumference, in herbarium costa absent on the upper surface but indicated by an indented band in the lower part, prominent beneath but often disappearing near the tip, primary parallel nervature distinct in herbarium, apparently not able to shrink as much in drying as adjacent tissues, rendering the blade a characteristic gooseflesh-like appearance, secondary venation irregular and transverse, not always distinct. *Inflorescence* terminal, erect, subcapitate to thyrsoid, 4–12 cm long, with several transitional leaves of intermediate shapes and sizes at its base between the leaves and the triangular 2–4(–5) cm long, often purple tinged, floral bracts subtending the closely packed clusters of a limited number of flowers each, individual flowers tightly enveloped by about 2 cm long bracts and bracteoles, pedicels jointed, persistent basal part 2–3 mm long. *Flowers* white, somewhat purple tinged, 25–28 mm long, receptacle indurated, about 1 mm long, perianth-tube 15–16 mm long, lobes distinctly shorter, 9–11 mm long and slightly over 2 mm wide, showing a single median vein, filaments inflated, up to 1 mm in diameter, tip sharply pointed erect or hooklike, about 2 mm shorter than the corresponding perianth lobe, anthers 2 $\frac{1}{2}$  mm  $\times$  1 mm, ovary narrowly ovoid, 3 mm  $\times$  1–1 $\frac{1}{2}$  mm, style about  $\frac{1}{4}$  mm in diameter, reaching the top of the perianth or up to 1 mm exserted, stigma distinctly 3-lobed, 1 mm in diameter. *Fruits* presumably orange but drying black, globose, 9–12 mm in diameter, persistent indurated receptacle  $1\frac{1}{2}$ –2 mm.

**Distribution:** In W Africa restricted to extreme SE Nigeria, Fernando Póo and extending into Cameroun.



MAP 4. *Dracaena bicolor* Hook.

**Notes:** The present treatment is restricted to western Africa and does not yet deal with Camerounese material of *D. preussii* Engl. considered to be conspecific with *D. bicolor* Hook.

The protologue of *D. bicolor* was clearly based on the living flowering plant that was figured with it. HOOKER states that it flowered in Kew Gardens in Feb-

ruari 1861 and that MANN had sent it from Fernando Póo in 1860.

There are two sheets in the Kew Herbarium, each with an inflorescence in a rather young stage of flowering. As there is no indication that the flowering plant figured produced more than one inflorescence, I prefer to select the sheet bearing the more advanced stage of flowering as lectotype, rather than referring to them collectively as holotype.

Quite comparable, the protologue of *D. cylindrica* Hook.f. was also based on a living flowering plant in Kew gardens. HOOKER f. states that MANN discovered this species in Old Calabar, but that it was subsequently found by the Rev. THOMSON. THOMSON sent living plants of it to Edinburgh, whence it came to Kew. HOOKER f. acknowledges the Edinburgh garden for his fine flowering specimen. Although I fully endorse HEPPER's conclusion that *D. cylindrica* is conspecific with *D. bicolor*, I do not agree with his typification of *D. cylindrica*. *Mann 2328* was collected in Nigeria in 1863 and as such it does not form part of the type material. Neither does in my opinion *Thomson 17*, which I consider to be a voucher for the plants THOMSON originally sent to Edinburgh. There are, however, two sheets derived from the living plant in the Kew herbarium. One consists of flowers only and is annotated: 'Ex Edinburgh ex Thomson' and *Type of Bot. Mag. 5846*, while the other has two leaves, is dated IV 1870, and has written ? *ex Old Calabar* and *fl. white in a Banksia-like spike, 5 ft. high* on it, accompanied by an analysis of the flowers. These two specimens undoubtedly belong to the typematerial and are, notwithstanding the differences in annotation, to be considered as duplicates. I therefore formally reject *Mann 2328* in favour of the cultivated Kew specimen as lectotype for *Dracaena cylindrica* Hook. f.

*Dracaena bicolor* has been reported from Ghana on several occasions. HUTCHINSON considered *Lyon 2873* from Ghana to belong to *D. cylindrica*, but it is referred here to *D. congoensis* Hua, a species hitherto not recognized in West Africa. IRVINE bases his erroneous interpretation of *D. bicolor* exclusively on Ghanaian material of *D. congoensis* as well. HEPPER's record is a single anonymous collection in March 1905 from a plant cultivated at Kew. Apart from the identification as *D. cylindrica* it is annotated in the same handwriting; *Gold Coast* and *252-00*, the number possibly indicating an accession in 1900. The specimen matches *Mann 2328* perfectly. In absence of any authentic material of *D. bicolor* from Ghana and in view of the apparent restriction of this species in West Africa to the extreme south-eastern part of Nigeria, I am not convinced that it occurs in Ghana.

As regards the other two specimens cited by HUTCHINSON and rejected by me, *Dodd 397* represents once more *D. congoensis* Hua, while *Talbot 2402* is the single westafrican collection so far of a species I have collected in Cameroun on several occasions, which is yet to be analysed and may turn out to belong to *Dracaena nyangensis* Pellegrin.

#### Specimens examined:

NIGERIA: Old Calabar R. (fl. Febr.), *Mann 2328* (A, K, P); Oban F.R. (fl. b. Jan.), *Onochie FHI*

36231 (FHI, K); Calabar (fr. March), *Opapa 1165* (K); Oban (fl.), *Talbot 1322* (K), 2404 (BM, K, Z); Eket (fl.), *Talbot s.n.* (BM); Old Calabar R. (fl.), *Thomson 17* (E, K).

Cultivated: Hort. Kew. (fl.) ex Mann, Fernando Póo *dd. II 1861* (K lectotype); Hort. Kew. (fl.), ex Edinburgh ex Thomson = Hort. Kew. (lvs), *dd. IV 1870* (K); Hort. Kew. (fl.), 252-00 (K).

***Dracaena calocephala* Bos sp. nov.**

**Fig. 6; Map 5**

Hepper, Kew Bull. 22 (1968): 449 (*D. adamii* p.p., quo ad *Adam 21103, 21220 & 21407*); Id. in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 157 (*D. adamii* p.p., quo ad *Adam 21103 & 21220*); Id., loc.: 159 (*D. sp. toto, errore Linder 10424 = Baldwin 10424*).

Type: Liberia, Grassfield, *Adam 21103* (MO holo, P, UPS iso, K, WAG photo).

*Dracaena calocephala* a *Dracaena adamii* differt foliis minoribus, inflorescentia subcapitata, pedunculo laevi; a *Dracaena bicolori* forma foliorum aberranti, bracteis cuspidatis et ab ambobus speciebus floribus fere duplo longioribus, quorum tubo fere triplo longiori quam lobis.

Diagnostic characters: Shrubs with presumably unbranched erect stems from short, slender, branched rhizomes, leaves narrowly obovate to oblong, up to  $\frac{1}{2}$  m long and about 5 cm wide, distinctly cuspidate by laterally inrolled acuminate tips, inflorescence subcapitate, depressed globose in outline, with several cuspidate bracts, longer than the closely packed about 5 cm long flowers, perianth tube about 3 times as long as the lobes, fruits depressed globose,  $1\frac{1}{2}$ –2 cm in diameter.

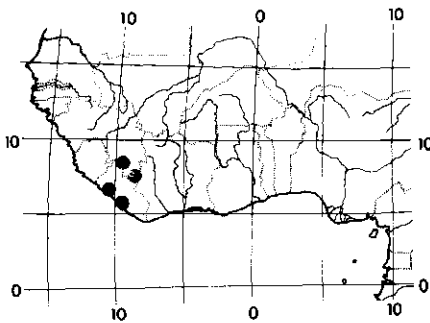
Description: Shrubby plants, presumably of modest proportions. Rhizomatic stems horizontal, short, slender, covered by 1–2 cm long prophylls, branched, giving rise to erect stems hidden from view by the evenly distributed leaves, or almost acaulescent and subrosulate. Leaves apparently concolorous, rather thickly coriaceous and remaining smooth in herbarium, narrowly obovate to oblong in outline, (18–)20–45(–51) cm  $\times$  (3–)4– $5\frac{1}{2}$ (– $6\frac{1}{2}$ ) cm, acuminate with inrolled margins, forming a  $2\frac{1}{2}$ –4 cm long cusp, absent or indistinct in juvenile leaves, including the (3–)5–10 mm long subulate mucro, gradually tapering towards the base, forming an indistinct false petiole,  $\frac{1}{2}$ – $1\frac{1}{2}$  cm wide at its narrowest part above the open (2–)3–4(–5) cm long sheath, clasping the stem for distinctly more than its circumference at its base, midrib above obscurely indicated by a slight groove among the parallel nerves, secondary venation not always visible but distinctly ascending towards the margins, sometimes distinctly purple tinged beneath with a prominent costa that disappears at about three quarters of its length towards the tip. Inflorescence terminal, globose in outline, 5–7 cm long, 6–8 cm in diameter with 1–3 transitional leaves 6–10 cm long at its base, axis simple, smooth, bearing several closely packed sessile clusters of at least 12–15 flowers each, subtended by almost orbicular, strongly cuspidate bracts, 3–6(–8) cm long, 3–4 cm wide with a strongly involute acuminate tip forming an up



FIG. 6. *Dracaena calopcephala* Bos: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. inflorescence, detail,  $\frac{4}{3} \times$ ; 3. part of infructescence,  $\frac{2}{3} \times$ . (1. Adam 16577; 2. Adam 21103; 3. Adam 21407).

to 4 cm long cusp including the 5–10 mm long subulate mucro, sessile flowers closely enveloped by 2–3 cm long bracts and bracteoles that may be purple tinged when fresh. *Flowers* presumably white, very dark coloured in herbarium, 49–51 mm long, stalklike receptacle 5 mm long, perianth tube 32–33 mm long, the lobes 10–13 × 3 mm, showing a single median vein, stamens inserted at throat level, filaments inflated, slightly over  $\frac{1}{2}$  mm in diameter, tip straight, about 2–3 mm shorter than the corresponding perianth lobe, anthers 3 mm × 1 mm, normal developed ovaries not yet observed (see note), style reaching the top of the perianth, stigma 3-lobed, about 1 mm in diameter. *Fruits* presumably orange, depressed globose, about  $1\frac{1}{2}$  cm long and  $1\frac{1}{2}$ –2 cm in diameter, strongly apiculate in the single specimen available. *Seeds* not yet observed.

**Distribution:** Restricted to Liberia and adjacent territories in Guinea.



MAP 5. *Dracaena calocephala* Bos

**Notes:** The entire available material on which *D. calocephala* is based consists of 8 collections with few duplicates. All the flowers of this material that were analysed invariably contained anomalous ovaries. These ovaries were narrowly conical, up to 8 mm long, containing a single, cavernous locule with 3 flat disclike ovules. I suspect this to be a deformation of what I expect to be an ovary conform the other species, i.e. more or less ovoid, about 3–4 mm long, with 3 locules, each filled by a single ovule.

HEPPER apparently did not recognize several distinguishing characters of *D. calocephala* when he cited *Adam 21103, 21220 & 21407* in the protologue of *D. adamii*. Due to the congested character of the inflorescence the non-scabrid nature of its axis is usually well concealed. The isotype of *D. calocephala* in Paris has a budding inflorescence and it therefore does not sufficiently demonstrate the fact that its peduncle does not elongate as it does in *D. adamii*. However, HEPPER expressed his surprise on the label of *Adam 21407*, that this specimen was still subcapitate while fruiting and he did not cite it again in his Flora-treatment. Dissimilarity with the type of *D. adamii* was anonymously noted on the MO sheet of *Adam 21103*, the holotype of *D. calocephala*. The rather striking differences in flowers between *D. adamii* and *D. calocephala* were certainly obscured by the fact that the *Herrenhausen-Mann 8* element, originally included



in *D. adamii* as well, has even larger flowers than *D. calocephala*, but its leaves are more like those of *D. adamii*. Once the identity of *D. calocephala* was established, the remaining 3 unidentified specimens of Fl. W. Trop. Afr. were readily recognized as belonging to this species.

**Specimens examined:**

GUINEA: Macenta (fl. Febr.), *Adam 3723* (MO).

LIBERIA: Saniquellie (fl. Febr.), *Adam 16577* (MO); Grassfield (fl. March), *Adam 21103* (Type: MO holo, P, UPS iso, K, WAG photo); mt. Bele (fl. March), *Adam 21220* (MO, P, K photo); mt. Tokadeh (fr. June), *Adam 21407* (P, K photo); Mecca, *Baldwin 10424* (K); Duo (fl. March), *Baldwin 11356* (K); Bumbuma-Moala (fl. b. Nov.), *Linder 1337* (K).

***Dracaena camerooniana* Baker**

**Fig. 7, 8; Map 6**

Baker, J. Bot. XII (1874): 166; Id., J. Linn. Soc. 14 (1875): 538; Bentham in Bentham & Hooker f., Gen. III (1883): 779; Engler in Engler & Prantl, Nat. Pfl. Fam. II, 5 (1888): 75; Durand & Schinz, Consp. Fl. Afr. V (1893): 326; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 442; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 60; Pobéguin, Ess. Fl. Guin. Fr. (1906): 255 (*D. indet. n. 613*); Engler in Engler & Drude, Veg. Erde IX-II (1908): 292; Chevalier, Bot. I (1920): 646 (excluding 22282 = *D. ovata* Ker Gawler, 22915 & 22921 = *D. congoensis* Hua, 23015 = *D. surculosa* Lindley var. *surculosa*); Krause in Engler & Prantl, Nat. Pfl. Fam. ed. 2, 15a (1930): 359; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 306 (excluding *Chevalier 23015* & *Talbot 1421* = *D. surculosa* Lindley var. *surculosa*); Id., Bot. S. Afr. (1946): 535; Roberty, Pet. Fl. (1954): 338; Troupin, Bull. Jard. Bot. Etat, Brux. 25 (1955): 235; Id., Expl. Parc Nat. Garamba 4 (1956): 193; Irvine, W. Pl. Ghana (1961): 770; White, For. Fl. N. Rhod. (1962): 16; Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 157 (excluding *Leeuwenberg 2362* = *D. surculosa* Lindley var. *surculosa*); Mouton, Adansonia ser. 1, 15 (1976): 410; Bos, Misc. Pap. Landbouwhogeschool Wag. 19 (1980): 66 = *Belmontia*, new ser. 11-56 (1980): 66; de Koning, For. Banco II (1983): 452.

Type: Cameroun, mt. Cameroun, *Mann 1204* (K holo, A, P iso).

Homotypic synonyms: *Draco cameruniana* (Baker) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710; Baillon, Hist. Pl. (1894): 488. *Pleomele camerooniana* (Baker) N.E.Br.; Brown, Kew bull. 1914: 277.

Heterotypic synonyms: *Dracaena interrupta* Baker non Haw. ex Loudon (nom. illeg.); Baker, Trans. Linn. Soc. ser. II-I (1878): 252; Durand & Schinz, Consp. Fl. Afr. V (1893): 328; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 443; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 60; von Rosen, Wiss. Erg. Schw. Rhod.-Kongo Exp. 1911-1912, I Bot. Unt. (1916): 229. Type: Angola, Pungo Adongo, *Welwitsch 3738* (BM holo, B, COI, G, K, P iso, MO, WAG photo). Homotypic synonym: *Pleomele interrupta* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 278

*Dracaena lecomtei* Hua; Hua, Contr. Fl. Congo fr., Lil. (1897): 15 = Bull. Soc. Hist. Nat. Autun X (1897): 662-669; Baker in Thiselton-Dyer, Fl. Trop.

Afr. VII (1898): 449; Aké Assi, Contr. Et. Fl. Côte d'Ivoire II (1963): 235 (excluding Miège & Aké Assi 2247, Chevalier 15203, 15487, 19051 & 23015 = *D. surculosa* Lindley var. *surculosa*). Type: Gabon, Mayumbe, Lecomte E 20 (P holo, K drawing). Homotypic synonym: *Pleomele lecomtei* (Hua) N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena mayumbensis* Hua; Hua, Contr. Fl. Congo fr., Lil. (1897): 14 = Bull. Soc. Hist. Nat. Autun X (1897): 666; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 443; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 60; Aké Assi, Contr. Et. Fl. Côte d'Ivoire II (1963): 235. Type: Gabon, Mayumbe, Thollon 1222 (P holo, K drawing). Homotypic synonym: *Pleomele mayumbensis* (Hua) N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena silvatica* Hua; Hua, Contr. Fl. Congo fr., Lil. (1897): 13 = Bull. Soc. Hist. Nat. Autun X (1897): 665; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 442; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 60. Type: Congo Rep., Brazzaville, Thollon 4074 (P holo, K drawing). Homotypic synonym: *Pleomele silvatica* (Hua) N.E.Br.; Brown, Kew Bull. 1914: 279.

*Dracaena capitulifera* De Wild. & T. Durand; De Wildeman & Durand, Ann. Mus. Congo I-1 (1899): 59; Id., Reliq. Dewevr. II (1901): 241; De Wildeman, Miss. Laur. I (1905): 41; Id., Et. Fl. Bas- et Moyen Congo I-III (1906): 226; Durand & Durand, Syll. Fl. Congo (1909): 565; De Wildeman, Et. Fl. Bas- et Moyen Congo III (1910): 171; Id., Pl. Thonn. Cong. ser. II (1911): 288; Id., Bull. Jard. Bot. Brux. V (1916): 165; Bos, Misc. Pap. Landbouwhogeschool Wag. 19 (1980): 66 = *Belmontia*, new ser. 11-56 (1980): 66. Type: Zaire, Bołobo, Dewèvre 701 (BR holo).

*Dracaena gentilii* De Wild. non Draps-Dom; De Wildeman, Et. Fl. Bas- et Moyen Congo I-III (1906): 228; Durand & Durand, Syll. Fl. Congo (1909): 565. Type: Zaire, Luebo-Luluabourg, Gentil 54 (BR holo).

*Dracaena ueleensis* De Wild.; De Wildeman, Et. Fl. Bas- et Moyen Congo II (1907): 20, t. 8, 9; Durand & Durand, Syll. Fl. Congo (1909): 567. Type: Zaire, Suronga, Seret 397 (BR holo).

*Dracaena frommii* Engl. & K. Krause; Engler & Krause in Engler Bot. Jahrb. 45 (1910): 151; Volkens, Mitt. Deutschen Schutzgeb. 25 (1912) III: 236. Type: Tanzania, Kitungulu, Münzner in Exped. Fromm 245 (B holo).

*Dracaena odum* Engl. & K. Krause; Engler & Krause in Engler Bot. Jahrb. 45 (1910): 152. Type: Cameroun, Campo, Tessmann 455c (B holo).

*Dracaena dundusanensis* De Wild.; De Wildeman, Bull. Jard. Bot. Brux. V (1915): 5; Id., loc. (1916): 165; Id., Pl. Beq. I (1921): 38. type: Zaire, Dundusana, De Giorgi 1069 (BR lecto), Mortejan 43 & 713 (BR para).

*Dracaena sciaphila* Louis & Mullenders; a manuscript name without any status on Louis 14223 (BR).

Diagnostic characters: Branched shrubs producing canelike shoots, entirely leafy or clad in caducous prophylls with distant pseudowhorls of leaves, leaves distinctly obovate, not elliptic, not exceeding 35 cm in length, pseudopetiole usually over 1 cm long, inflorescences terminal or lateral, short, erect and



FIG. 7. *Dracaena camerooniana* Baker: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. inset: leaf detail,  $2 \times$ ; 3. flower laid open,  $3 \times$ ; 4. fruit,  $\frac{2}{3} \times$ ; 5. fruit, cross-section,  $1 \times$ . (1-3. *Bos 3452* + spir. coll.; 4 & 5. *Leeuwenberg 11264* spir. coll.).

subumbellate to racemose and pendulous, simple or branched and up to  $\frac{1}{2}$  m long, flowers in 2–20 flowered glomerules,  $\frac{3}{4}$ – $4\frac{1}{2}$  cm long, perianth tube as long as to twice as long as the lobes, fruits globose to lobed, up to 2 cm in diameter.

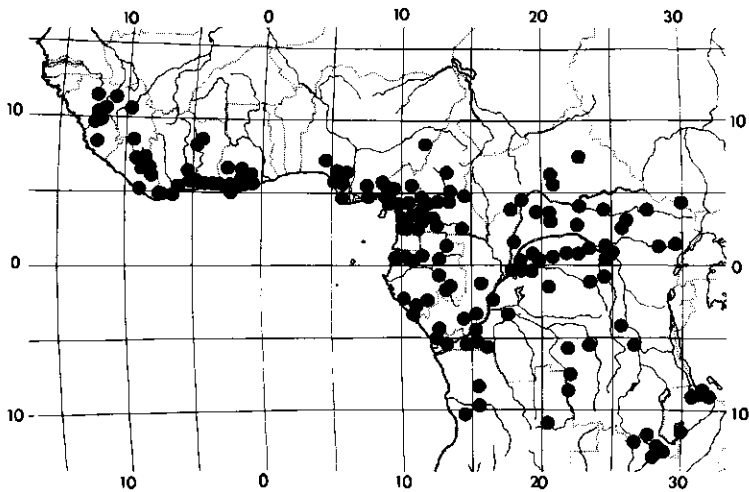
**Description:** Simple shrublets to large much branched *shrubs* (0.3–)0.5–3.5–(–8) m tall. Roots pale brown to bright orange red, occasionally somewhat tuberous; rootcrown well developed, periodically giving rise to erect cane-like stems clad in white to pale green prophylls, terminating in a pseudo-whorl of leaves, growth may continue monopodially in a similar fashion unless an inflorescence is produced, branches usually appear at right angles from or near the pseudowhorls, piercing the sheathing base of the supporting leaf as they develop; plants growing in periodically inundated stations are distinctly less branched, produce more stems bearing developed leaves over their entire length, often lacking prophylls. Young *stems* usually shiny pale to dark green with prominent leafscars, old stems turn grey; prophylls triangular and up to 7(–10) cm long, rarely more, tightly sheathing the stem, usually clasping it for more than its circumference, rather flimsy in texture, early caducous as a rule. *Leaves* obovate ( $1\frac{1}{2}$ –)5–33 cm  $\times$  ( $\frac{1}{2}$ –)1– $8\frac{1}{2}$  cm, the widest part distinctly, i.e. 5–50(–60) mm above the middle, very rarely elliptic leaves or leaves with the widest part up to  $\frac{1}{2}$  cm below the middle may be present as well, leaf tip acuminate, rarely cuspidate, with a subulate mucro  $\frac{1}{2}$ –3 mm long, often absent in herbarium, leaf base attenuate to cuneate, narrowed into a pseudopetiole ( $\frac{1}{2}$ –)1–4 cm long,  $1\frac{1}{2}$ –10 mm wide, its base abruptly amplexicaul, clasping the stem for more than half up to more than its complete circumference; texture leathery, rarely more papery, bright green above, not variegated, parallel nerves usually indistinct when fresh, in some plants a few pairs of nerves,  $\frac{1}{2}$ –1 cm apart, may be sharply impressed, distinctly paler beneath and the costa visible for about half its length; herbarium specimens show distinct parallel nerves and sometimes secondary venation as well, more or less transverse, ascending, descending or curved and rather wavy; pseudowhorls of leaves frequently have a single leaf of diminutive proportions in the central, terminal position. *Inflorescences* green to purple-maroon in colour, terminal on stems and branches, or apparently lateral where they terminate leafless dwarf branches, usually pendulous, abruptly reflexed at their base but merely deflexed on drooping branches pointing downwards; erect, very short subumbellate inflorescences prevail in very small shrubs and particularly in plants subject to periodical inundation showing differences in habit as noted above; variable in size, (1–)7–50 cm long, peduncle  $\frac{1}{2}$ – $16\frac{1}{2}$  cm, clad in 3–15 narrowly sheathing triangular up to 15(–20) mm long prophylls, the axis bearing a number of 2–20 flowered glomerules, branched when the lower glomerules are distinctly, up to 6 cm long, stalked, terminal glomerules not necessarily richest in number of flowers, often apparently so where apical glomerules are crowded and more or less fused, shorter inflorescences tend to have fewer glomerules, exceptionally even a single one on those shorter than 5 cm; bracts subtending the glomerules decreasing in size towards the apex of the inflorescence, up to 4–15 mm  $\times$  3–8 mm, triangular, generally similar to



FIG. 8. *Dracaena camerooniana* Baker: 1. Flowering shoot,  $\frac{2}{3} \times$ ; 2. base of shoot,  $\frac{2}{3} \times$ ; 3. lateral inflorescence,  $\frac{2}{3} \times$ ; 4. part of flower cluster,  $\frac{2}{3} \times$ . (1 & 3. *de Wilde* 8256A; 2. *Bos* 3893; 4. living material of conservatory WAG n. 918).

the propyls in texture, bracts accompanying individual flowers much smaller, rapidly decreasing in size towards the centre of the glomerule where they are absent, such bracts are often referred to as bracteoles in literature but proper bracteoles inserted on individual pedicels seem to be lacking; pedicels jointed, the persistent basal part usually about 3 mm long. *Flowers* white, or suffused with purple especially at the tips of the lobes and along their centre, margins diaphanous, very variable in size even within one individual plant, (7½-)16-35(-45) mm long including the indurated more or less obconical up to few mm long receptacle, perianth tube as long as to up to twice as long as the lobes, up to about 2 mm wide, the lobes about 2 mm wide, showing a single median vein; stamens inserted at the mouth of the tube, filaments inflated, up to 1 mm in diameter, tip 1-2 mm subulate and curved inwards, (6-)1½-0 mm shorter than the corresponding perianth lobe, anthers 2-2½(-3) mm × 1½ mm, ovary cylindrical to ovoid, 2-3(-4) mm × ¾ - 1½(-2) mm, style reaching the top of the perianth, usually exerting the stigma up to 3 mm by additional stretching after anthesis. *Fruits* orange scarlet with a rather leathery exocarp, globular to depressed globose, usually distinctly lobed when more than 1-seeded, (5-)7-18(-21) mm long, (5-)7-16(-18) mm × (5-)10-20(-22) mm in crossed diameters. *Seeds* hemispherical when single, flattened where pressed against adjacent seeds to almost lens-shaped, rather irregular 4½-11 mm × 5-12(-14) mm × 2-8(-9) mm. The first developed leaves of the *seedling* are usually elliptic.

**Distribution:** *D. camerooniana* is usually found in comparatively wet, shady localities in forests from Guinea to Ghana. It has not been reported from Togo and Benin. Its eastern distribution extends from Nigeria to Angola, covering the entire Congo basin to the border of Uganda, and reaches the territories of Tanzania and Zambia.



MAP 6. *Dracaena camerooniana* Baker

Notes: This treatment of *D. camerooniana* is not restricted to W Africa but covers the entire area of the species. As circumscribed above, it represents a variable species closely related to *D. surculosa* Lindley and *D. ovata* Ker Gawler. It differs from *D. surculosa* by its essentially obovate leaves, longer petioles and usually reflexed inflorescences, whereas *D. ovata* invariably combines subumbellate inflorescences with distinctly larger leaves and fruits, a combination of characters not found in *D. camerooniana*.

Although the majority of the synonyms cited are based on various combinations of characters well within the limits set for this species, two extremes diverge rather widely from the type.

The first is often a dwarf plant like the type of *D. silvatica* Hua, usually not over 1 m tall, rarely branched and with rather small inflorescences that are not abruptly reflexed. The dimensions of its flowers and fruits range near the lower limits set by the botanical description above. I have observed populations of these plants in southern Cameroun sharing their habitat with populations of shrubs similar to the type of *D. camerooniana*. However the presence of a range of intermediates in herbarium collections prevents recognition even at an infraspecific level.

The second extreme is represented by the type of *D. capitulifera* De Wild. & T. Durand. This is very constant in its characters with very few intermediates towards the remainder of *D. camerooniana*. It concerns sparsely branched plants with leaves along the entire length of the stem and very few prophylls; all potential prophylls seem to develop into normal leaves. Its inflorescences are subumbellate with flowers in the range of the upper limit of the sizes given above. From personal observation and fieldnotes on herbarium labels it appears that these plants are restricted to habitats that are periodically inundated, being submerged to a depth of 1 m or more. They are reluctant to flower as has been observed in the field as well as in the glasshouse in Wageningen over a period of years. In fact they would constitute to all appearances a species distinct from *D. camerooniana*. However, a collection by J. J. DE WILDE (8256A) from Cameroun, on a rather steep bank of Mvila River, that descends into a periodically inundated level, consists of branches of the two extremes from the same shrub. Moreover, plants of typical *D. capitulifera* habit brought by BRETÉLER from Ivory coast, were propagated by cuttings in Wageningen and grown under normal, i.e. not submerged, conditions. Of this clone one plant subsequently developed shoots like those of typical *D. camerooniana*, culminating in an elongate reflexed inflorescence with flowers of medium length, conserved as *Bos 10407*.

These circumstances prevent separate recognition of the two phenotypes in any taxonomic rank.

#### Selected specimens:

GUINEA: Macenta (fl. Aug.), *Adam 5968* (MO); Timbo (inf.), *Chevalier 12439* (P); Fouta Djallon (fl. March), *Chevalier 12557* (P), (fl. April), *12658* (P), *13616* (P); Kouria (fl.), *Chevalier 14967* (P, K); Kouroussa (fl. Dec.), *Pobéquin 613* (P); Bafing R. (fr.), *Pobéquin 1429* (P); Fouta Djallon (fl. Jan.), *Pobéquin 1922* (P).

SIERRA LEONE: Scarcies R. (inf.), *Scott Elliot 4551* (A, BM, K); Talla Hills (fr. Febr.), *Scott Elliot 5009* (A, BM, K); Yonibana (fl. b. Oct.), *Thomas 4169* (K).

LIBERIA: Saniquelli (fr. Febr.), *Adam 16654* (MO); Yekepa (fr. Dec.), *Adam 25282* (MO), (fr. Oct.), *26275 & 29737* (MO); Zwedru (fr.), *Baldwin 7012* (K); Ganta (fr. March), *Harley 456* (B); Sinoe (fr. Jan.), *J. Jansen 1108* (WAG); Gbanga (fl. Sept.), *Linder 765* (A, K, MO).

IVORY COAST: San Pedro (fr. March), *Bamps 2578* (BR); 20 km N Dabou (fr. April), *Beentje 203* (WAG); Nganda-Nganda (fr. July), *Beentje 231* (WAG); 18 km N Ayamé (fr. April), *Beentje 412* (WAG); Adiopodoumé (fl. b., fr. June) *Bos 10337* (WAG); 10 km N Tabou (inf.), *Bos 10361* (WAG); Adiopodoumé (fl. June), *Breteler 5202* (WAG); Sassandra-San Pedro (fr. Nov.), *Breteler 6020* (WAG); 13 km NW Tabou (fr. April), *Breteler 7362* (WAG); Cavally R. (fl. Aug.), *Chevalier 19806* (P, WAG); Banco for. (fr. July), *de Koning 1864* (WAG), (fl. b., fr. Nov.), *2606* (WAG), (fr. Nov.), *2610 & 4662* (WAG), (fl., fr. June), *5846* (WAG); Dabakala (fl., fr. Nov.), *Geerling & Bokdam 1536* (WAG); mt. Kopé (fl. June), *Hall & Abiw GC 45497* (GC); Beyo (y. fr. Dec.), *Leeuwenberg 2217* (K, WAG), (fr. March), *12047* (WAG); Morokro (fl., fr. Febr.), *Oldeman 984* (BR, K, WAG); 28 km E Gagnoa (fl. Sept.), *Thijssen 160* (WAG); 10 km N Sassandra (fr. May), *van der Burg 289* (WAG); 15 km NW Tabou (fl. b. Aug.), *van der Burg 818* (WAG); 2 km NE Basobli (fr. Sept.), *van der Burg 1023* (WAG).

GHANA: Enchi (fl. Dec.), *Adams 2128* (GC, K); Axim (y. fr. June), *Burton & Cameron s.n.* (K); Aiyola F.R. (fr. May), *Enti R 725* (MO), (fr. June), *R 748* (MO, PRE); Bobiri F.R. (fr. Dec.), *Hall & Swaine GC 43236* (GC); Bia Nat. Park (fr. Sept.), *Hall & Lock GC 46477* (GC); Asamankese (fl. Jan.), *Plumtre 76* (K); Dunkwa (fl. Nov.), *Roberty 12785* (G); Kumassi (fl. b. Dec.), *Vigne 4091* (K, P).

NIGERIA: Ngwoegwu for. (fl. b. June), *Ariwaodo UFH 173* (FHI); Okomu F.R. (fr. Dec.), *Brenan 8599* (K), (fl. b. Febr.), *9045* (B, K); Vogel peak (fl. May), *Daramola FHI 62736* (FHI, K, P, WAG); Usonigbe F.R. (fr. Oct.), *Daramola FHI 72332* (FHI, K, MO); Sapoba F.R. (fl. May), *Eymunjeze & Oguntayo FHI 70276* (FHI); Cross River F.R. (fr. Aug.), *Ekwumo c.s. FHI 67016* (FHI); Ugo (y. fr. May), *Ekwumo c.s. 76* (FHI); Sapoba F.R. (fr. Jan.), *Emwiogbon FHI 57949* (FHI); Usonigbe F.R. (fl. June), *Emwiogbon FHI 60034* (FHI); Sapoba F.R. (fr. Sept.), *Emwiogbon FHI 60660* (FHI); Ebue F.R. (fr. Oct.), *Emwiogbon FHI 61702* (FHI); Sapoba F.R. (fl. b. May), *Kennedy 1135* (K, WAG), *1783* (K); Ehor for. (fl. b. March), *Leeuwenberg 11258* (WAG); Sapoba F.R. (fl., fr. March), *Leeuwenberg 11264* (WAG); Usonigbe F.R. (fr. March), *Lowe 2043* (FHI, K, UCI), (fl. Sept.), *Onochie FHI 34299* (FHI), (fr. Nov.), *FHI 35693* (FHI); Sapoba F.R. (fr. March), *Sijuaide 510* (IFE); Oban (fl.), *Talbot 730* (BM, K); Degema distr. (fl.), *Talbot 3667* (BM); Cross River North F.R. (fl. b. May), *van Meer 1661* (FHI, WAG); Sobo Plain (fr. Nov.), *Wit & Gbile 974* (FHI).

CAMEROUN: Bipindi (fl. April), *Annet 411* (P); Song Bong (fr. Dec.), *Bamps 1374* (BR, WAG); Bitya (fl. Sept.), *Bates s.n.* (K); S Bakundu (fr. Febr.), *Binyuo & Daramola FHI 35552* (FHI, K, WAG); around Kribi (fl. b. Dec.), *Bos 3452*, (fl. Jan.), *3547*, (fl. b., y. fr. Jan.), *3660*, (-), *3893*, (y. fr. Febr.), *3895*, (fr. March), *4229*, (-), *4327*, (fr. April), *4340*, (fl. May), *4682-4698*, (fl., fr. June), *4801*, (fl. June), *4825*, (fr. June), *4858*, (-), *4905*, (y. fr. July), *4975*, (-), *5035* (all WAG + Dupl.); Ebea (-), *5303* (WAG); around Kribi (fr. Sept.), *5376*, (fl. b. Dec.), *5756*, (fr. Jan.) *6086 & 6181*, (fr. Febr.), *6405*, (-), *6612 & 6613*, (fl. May), *6980*, (fl. July), *7002* (all WAG + Dupl.); Campo (-), *Bos 7034* (WAG); km 60 Kribi-Edea (fl., y. fr. July), *Bos 7085* (WAG); 20 km S Deng Deng (fr. Jan.), *Breteler 922* (WAG); mt. Fèbé (y. fr. Oct.), *Breteler 1981* (K, P, WAG); Oveng (fr. March), *Breteler 2673* (P, WAG); 25 km W Bertoua (fr. May), *Breteler 2974* (P, WAG); Mungo-Mujuka (fl. June), *Fleury in Chevalier 33415* (P); N'Koemvone, Mvila R. (fl. b. Oct.), *J. de Wilde 7593* (WAG, YA), (fr. Jan.), *7891* (WAG, YA), (fr. March), *8123* (WAG, YA), (fl. b. May), *8256A* (WAG); Mbalmayo (fr. Febr.), *W. de Wilde 1851* (P, WAG); 15 km S Ebolowa (fl. Oct.), *W. de Wilde 1999* (WAG); Nachtigal (fl. b. June), *W. de Wilde 2657* (B, K, MO, P, PRE, WAG); Nyong R. SSW Eseka (fl. b. June), *W. de Wilde 2718* (WAG); Nachtigal (fl. July), *W. de Wilde 2781* (K, MO, P, PRE, WAG); Batanga (fl. b. Dec.-Jan.), *Dinklage 994* (HBG); Kumba (fl.), *Ejiofor FHI 14032* (K); Ngom (fr. Sept.), *Koufani 186* (WAG); Nachtigal (fl. June), *Leeuwenberg 5995* (WAG); 25 km NE Douala (fr. Aug.), *Leeuwenberg 6322* (K, MO, P, PRE, WAG); km 58 Douale-Loum (fr. Nov.), *Leeuwenberg 8750* (WAG); Foumban (fr. Dec.), *Leeuwenberg 8885* (WAG); 3 km E Yingui (-), *Leeuwenberg 9125*; Yingui-Yabassi (-), *Leeuwenberg 9151* (WAG); km 30 Kumba-Victoria (-), *Leeuwenberg 10611* (WAG); km 18 Yaounde-Mbalmayo (-), *Leeuwenberg 11576* (WAG); Mimbele (fr. March),



*Letouzey 1538* (P); Nika, *Letouzey 2835* (P); Nkomo (fr. Febr.), *Letouzey 4208* (P); Ngoura (fl. May), *Letouzey 4934* (P); 25 km NW Bagodo (fl. July), *Letouzey 7445* (BR, COI, K, P, WAG); mt. Ngwon, *Letouzey 9376* (P); mt. Mfiki (fr. Nov.), *Letouzey 9546* (P); 25 km ENE Bafia (fl. b. Nov.), *Letouzey 9621* (P); 35 km SE Ebolowa (fl. Febr.), *Letouzey 9992* (BR, COI, P); 25 km ONO Mikel (fr. Febr.), *Letouzey & Villiers 10423* (P, WAG); 65 km NNE Mouloundou (fr. March), *Letouzey & Villiers 10573* (BR, K, P); Ebogo (fl. b. June), *Letouzey 11274* (K, P, WAG); Ngolla (fr. Dec.), *Letouzey 11703* (P, WAG, YA); 27 km SSE Ngolla (fr. Febr.), *Letouzey 11921* (P, WAG, YA); Mbandjok (fr. Dec.), *Letouzey 12324* (P, WAG, YA); 35 km W Mamfè (fl. May), *Letouzey 13531* (K, P, WAG, YA); 10 km N Nguti (fl. b. June), *Letouzey 13844* (P, YA); 40 km N Kumba (fr. Aug.), *Letouzey 14337* (P, WAG, YA); 25 km WSW Kumba (fl. April), *Letouzey 14603* (P, YA); Ekondo Nene & Loe (y. fr. April), *Letouzey 15073* (P, WAG, YA); mt. Cameroun (fl. Jan.), *Mann 1204* (Type: K holo, A, P iso); mt. Elumden (fl. Aug.), *Mpom Benoit 505* (P); Barombi (fl. July), *Preuss 146* (K); Njabilobé (fl. Febr.), *J. & A. Raynal 13473* (P); Betai (fl. July), *Tessmann 455* (B); Victoria (fl. b. June), *Winkler & Stövel 71a* (Z); Bipindi (fl. April), *Zenker 219* (A, B, BR, C, G, LD, MO, P, US, WAG), (fl.), *2309* (BM, E, G, K, P, WU, Z), *3809* (BM, BR, GOET, K, M, MO, US, WU).

CENTRAL AFRICAN REPUBLIC: Bangui (fl. Sept.), *Breyne 1524* (BR); Songo falls (fl. Aug.), *Chevalier 5291* (P); Bangui (fr. ?Oct.), *Chevalier 10925* (P), (fl. b., fr. Oct.), *10927* (P, K); Yalinga (fl. Nov.), *Le Testu 3466* (BN, P); Ugo, Bambari (fl. Sept.), *Tisserant 646* (P), (fl. Jan.), *646A* (P); 50 km N Bambari (fl. Sept.), *Tisserant 646bis* (BM); Boukoko (fr. Nov.), *Tisserant Equipe 1922* (BM, P), (fr. Sept.), *2247* (BM, P, WAG).

REPUBLIC OF CONGO: Col du Bamba (fl. b. Jan.), *Attims 46* (P); Bangou for., *Bouquet 481* (P); Impfondo (fl. Febr.), *de Néré 923* (P); 15 km from Brazzaville (fl. Aug.), *de Néré 1716* (IEC, P); Edou (fl. July), *Descoings 7697* (IEC, WAG); Meya (fr. April), *Farron 4028* (P); Bangou for. (fl. Febr.), *Sita 193* (IEC); junction Lua R.-Congo R. (fl. Febr.), *Sita 923* (IEC); Grotte de Meya (fr. Aug.), *Sita 1476* (P); Brazzaville (fr. May), *Sita 1601* (p), *Thollon 4074* (P, K drawing).

GABON: Gamba, *Breteler & van Raalte 5661* (WAG); Lastoursville, *Breteler 6609* (WAG); Moanda-Bakoumba, *Breteler 6765* (WAG); M'Passa (fl. b. Nov.), *Breteler 7609* (WAG); Libreville-Cap Esterias, *Breteler & de Wilde 1* (WAG); Okano R. (fl., fr. Sept.), *Breteler & de Wilde 496* (WAG); Bélinga (y. fr. Sept.), *Breteler & de Wilde 581* (WAG); Makokou (fl. July), *Florence 1522* (WAG); Abanga (fr. June), *Hallé 2339* (P); Bélinga (fl., fr. Dec.), *Hallé 3385* (P); mts. Cristal (fr. Febr.), *Hallé & Villiers 5289* (P), *5311* (P); Libreville (fl.), *Klaine 118* (P), (fl., fr. Dec.), *466* (P, K), (inf.), *802* (P); Mayombe (fl. b. Febr.), *Lecomte E 20* (P, K drawing); Makokou, *Leeuwenberg 11393* (WAG), *11460* (WAG); 11 km SSW Makokou, *Leeuwenberg 11513* (WAG); Cap Whisky (fr. Nov.), *Leeuwenberg 12487* (WAG); Nyanga (fl.), *Le Testu 2001* (A, BM, K, P); Lastoursville (fl. Febr.), *Le Testu 7898* (BM, MO, P, WAG); Mbolenzore (fl. May), *Le Testu 9144* (BM, P, WAG); haute Ngouni (fr. July), *Le Testu s.n.* (BM); Franceville (fl. b. Jan.), *Sita 539* (IEC, P); Sibange farm (fl. Jan.), *Soyaux 61* (GOET, K, Z); Mayombe (fl. b. Nov.), *Thollon 1222* (P, K, drawing).

CABINDA: Panga Mango (fl. Jan.), *Gossweiler 6179* (COI, LISU); Chilungo (fl., fr. Febr.), *Gossweiler 8217* (COI, K, LISU).

ANGOLA: Nhia R. (fl. Aug.), *Boss TM 36725* (PRE); Camabatela (fl. Jan.), *Gossweiler 7380* (LISU); Lunda (fr. April), *Gossweiler 11194* (COI); Camabatela (fl., fr. Febr.), *Texeira c.s. 12049* (LISC); Pungo Adongo (fl. March), *Welwitsch 3748* (B, BM, COI, G, K, MO, P, WAG).

ZAIRE: Kinshasa (fl. b.), *Achten 310A* (BR), (fl. b. Sept.), *310B* (BR); Dolo, *Bavichi 489* (BR); Penge (fl., fr. Febr.), *Bequaert 2252* (BR, K); Kinshasa (fl., fr. April), *Bequaert 7459* (BR, K); 10 km N Bengamisa (fr. Oct.), *Bokdam 3297* (WAG); Kisangani-Buta (fr. Nov.), *Bokdam 3666* (WAG); Kisangani-Bunia (fr. Dec.), *Bokdam 4355* (WAG); Bengamisa (fr. April), *Bokdam 4537* (WAG); Yalibutu (fr. Nov.), *Bolema 835* (BR); Mofinu (fl. April), *Breyne 558* (BR); Dundusana (fl. July), *De Giorgi 1069* (BR); Kombe for. (fr. July), *Delveaux 860* (BR, WAG); Garamba N.P. (fl. Oct.), *De Saeger 1423* (BR, WAG), (fl. Nov.), *1532* (BR, K, WAG); Mvuazi (fl. Oct.), *Devred 356* (BR, K, NBG); Bolobo (fl. b.), *Dewèvre 701* (BR); Upemba N.P. (fl. May), *De Witte 2571* (BR, EA, LISC, MO, SRGH, WAG), (fl. April), *6147* (BR, EA, K, WAG); Bas Uele (fl. b. Oct.), *De Wulf 190* (BR); Kiobo (fl. b. Jan.), *Donis 3* (BR); Luki (fr. July), *Donis 1851* (BR); Yangambi (fl. b. Sept.), *Donis 2784* (BR, WAG), (fr. Jan.), *3288* (BR, WAG); Luki (fl. ?March), *Dubois 440* (BR, EA, K); Bayasegeze (y. fr. June), *Evrard 1237* (BR); Bombusa (fl. b. July), *Evrard 1421* (BR); Yambuya (fr. Sept.),

*Evrard 2008* (BR); Aruwimi R. (fr. Jan.), *Evrard 2138* (BR, EA, WAG); Monkoro (fr. Oct.), *Evrard 2766* (BR, G); Ifale R. (fr. Oct.), *Evrard 2896* (BR); Lombiolo (fr. Nov), *Evrard 3020* (BR, Z); Loolo (fl. March), *Evrard 3632* (BR, K.); Balangala (fl.b. Sept.), *Evrard 4787* (BR); Baringa (fl.b., y. fr. Oct.), *Evrard 5093* (BR); Bokone (fr. Jan.), *Evrard 5625* (BR, G); Busanga (fr. Febr.), *Evrard 5677* (BR, EA); Ingende (fr. April), *Evrard 6128* (BR, K); Bokuma mission (y.fr. April), *Evrard 6133* (BR, SRGH); Luebo-Kananga (fl. March), *Genil 54* (BR); Bambésa (fr. Febr.), *Gérard 2140* (BR); Isangi (fr. Febr.), *Germain 180* (BR, WAG); Ikela (fr. June), *Germain 7436* (BR, WAG); Bongobo (fl.b. Oct.), *Gilbert 1875* (BR, WAG); Bengamisa (fr. May), *Gilbert 2353* (BR); Yangambi (fr.), *Gilbert 9205* (BR), *10204* (BR, EA, K, WAG); Djuma valley (fr. July), *Gillet 2919* (BR); Monsole (fl. July), *Goossens 4171* (BR); Kinshasa (fl. May), *Hombert 61* (BR, WAG); Lubumbashi (fr. July), *Hutchinson & Gillet 4115* (K, BM); Ikela (fr. Oct.), *Jespersen 27* (BR); Kirobala, *Laurent s.n.* (BR); Luvituku, *Laurent s.n.* (BR); Ubangi, *Laurent s.n.* (BR), (y.fr. Dec.), *Laurent s.n.* (BR); Eala-Bamania (fl. Nov.), *Lebrun 1283* (A, BR, G, K); Bambesa (fl.b. April), *Lebrun 2688* (BR, WAG); Keyberg, Lubumbashi (fl. April), *Lewalle 1779* (BR); Boteke (fl. Sept.), *Louis 83* (B, BR, K, P); Yangambi (fr. Jan.), *Louis 7533* (BR), (fl. Aug.), *10703* (BR, C, MO), *10987* (BM, BR), *11252* (BM, BR, K, P); Yafalolame (fr. Febr.), *Louis 14223* (BR, K); Dundusana (fl.), *Mortehan 43* (BR), (fl. Nov.), *713* (BR); Ikilemba R. (fl. Aug.), *Nannan 67* (BR); Kinkosie (fr. July), *Pauwels 3699* (BR, K, WAG); Kinshasa (fl.b. Febr.), *Pauwels 4890* (BR); S. Booke (fr. May), *Robin 111* (BR); Mbandaka (fl. Sept.), *Robijns 473* (BR, K, WAG); Banguerie, Bangala, *Sapin s.n.* (BR); Keyberg, Lubumbashi (fl. May), *Schmitz 645* (BR); Uele-Suronga (fl. Dec.), *Seret 397* (BR); Keyberg, Lubumbashi (fl. March), *Symoens 12345* (B, BR, K, WAG); Garamba N.P. (fl. Febr.), *Troupin 257* (BR, K, WAG); Benga (fr.), *Vanderyst 15836* (BR); Kisantu (fl.b. March), *Vanderyst 28934* (BR), (fl.b. Oct.), *35062 & 35067* (BR); Luki (fr. May), *Wagemans 548* (BR).

ZAMBIA: Solwezi (fr. Sept.), *Angus 409* (BM, BR, FHO, K, PRE); Abercorn (fl., fr. Sept.), *Bullock 1106* (BR, K), (fl. May), *3862* (BR, EA, K, MO); Mfulita R. (fl., fr. May), *Eyles 8217* (BM, K, SRGH); Ndola (fl. March), *Fanshawe 1021* (BR, FHO, K, SRGH), (fr. July), *1367* (BR, FHO, K); Culta Kitwe Nursery (seedl.), *Fanshawe 8207* (K), *8624* (K); Bwana Nkubwa, *Fries 439* (UPS); lake Chila (fr. Sept), *Lawton 990* (FHO); Kitwe (fl. April), *Mutimushi 3033* (K); Ballymain (fl. May), *Richards 1845* (BR, EA, K); Kambole esc. (fl. June), *Richards 15266* (K, SRGH); Kalale village (fl.b. April), *Sanane 87* (B,K); Chingola (fl.b. March), *Schmitz 3491* (BR, NBG); lake Chila (fl. April), *St. Clair-Thompson 1094* (K); Mwinilunga (fl.b., fr. Sept.), *White 3405* (BR, FHO, K, PRE).

TANZANIA: Kitungulu (fl. April), *Münzner in Fromm 245* (B).

Cultivated: Culta HBG (fl. March), *Anonymus s.n.* 2 collections, (fl. Febr.), *Anonymus s.n.* 1 collection (all HBG); Culta M (fl. April), *Heine s.n. (M)*; Culta WAG ex Cameroun (inf.), *Bos 7407* (WAG); Culta WAG ex Ivory Coast (fl. Oct.), *Bos 10407* (WAG).

## **Dracaena cerasifera** Hua

**Fig. 9, 10; Map 7**

Hua, *Contr. Fl. Congo fr.*, Lil. (1897): 11 = *Bull. Soc. Hist. Nat. Autun X* (1897): 663; Baker in Thiselton-Dyer, *Fl. Trop. Afr. VII* (1898): 442; Engler in Engler & Drude, *Veg. Erde IX-II* (1908): 292.

Type: Gabon, Ogooué R., *Leroy s.n.* (P holo).

Homotypic synonym: *Pleomele cerasifera* (Hua) N.E.Br.; Brown, *Kew Bull.* 1914: 277.

Heterotypic synonym: *Dracaena scoparia* A. Chev.; Chevalier, *Bot. I* (1920): 647; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr. II* (1936): 384; Aubréville, *Fl. For. Côte d'Iv. III* (1936): 277; Hutchinson, *Kew Bull.* 1939: 247; Aubréville, *Fl. For. Côte d'Iv. ed. 2, III* (1959): 320; Irvine, *W. Pl. Ghana* (1961): 771; Hepper in Hutchinson & Dalziel, *Fl. W. Trop. Afr. ed. 2, III-I* (1968): 157; Mouton, *Adansonia ser. 1, 15* (1976): 410, 412; de Koning, *For. Banco II* (1983): 456. Type: Ivory Coast, Alépé, *Chevalier 17484* (P holo, see note).

Diagnostic characters: Well developed shrubs, leaves narrowly obovate, sessile and usually not exceeding  $\frac{1}{2}$  m in length with a tendency to form pseudowhorls, inflorescences branched, borne erect on single stemmed young shrubs but usually pendulous on branched older shrubs, peduncle considerably thinner than the supporting branch, pedicels with a joint above the middle, the persistent basal filiform part usually exceeding 1 cm, most flowers in pairs, about  $2\frac{1}{2}$  cm long, perianth lobes distinctly longer than the tube, filaments inflated in their upper part only, fruits globose or slightly lobed, 1–3 cm in diameter with a persistent  $\frac{1}{2}$ –1 cm long receptacle.

Description: Slender single stemmed to rather well branched treelike *shrubs* up to 6(–8) m high. Subterranean roots orange, if present aerial roots of a neutral colour. Main trunk eventually rather smooth, grey with flaky bark, occasionally up to 50 cm in diameter, young stems and branches yellow-brown, usually distinctly cicatriced with crescent to deeply U-shaped leafscars, often hollow in herbarium due to shrinkage of pith, leafy towards the ends of branches with a tendency to form pseudowhorls. *Leaves* narrowly obovate to obovate, often about 10 times as long as long as wide or even more, or distinctly wider and to 5 or 4 times as long as wide, (5–)10–40(–53) cm  $\times$  ( $\frac{3}{4}$ –)1–6(–8) cm, the widest part somewhere between half and three quarters of the length, usually at about two thirds from the base, leaf tip narrowly acute to acuminate in wider leaves, if undamaged with a slender subulate mucro about 1(–4) mm long, leaf base narrowly cuneate, its narrowest part (2–)4–5(–10) mm wide just above the flaring crescent shaped point of attachment, clasping the stem for half its circumference; texture rather thickly papery to leathery, dark to medium green above, lacking a distinct midrib but often with a distinct depression down the centre when fresh, sometimes showing a midrib for a quarter to half of its length in herbarium, the parallel nerves usually discernable but secondary venation usually not distinct, leaves distinctly paler beneath, midrib rather prominent over its entire length, flanked by intermittently more and less prominent parallel nerves, weak en wavy generally transverse secondary venation occasionally visible, variegation does not seem to occur but young leaves may show extensive purple tinges lingering on the lower surfaces for some time. *Inflorescences* terminal, rarely lateral, i.e. terminating dwarf shoots, (17–)25–50(–75) cm long with up to 13(–17) usually simple branches up to 25(–35) cm long, usually pendulous and abruptly reflexed at the base of the peduncle, but borne erect in single stemmed young shrubs; peduncle smooth, slender, usually less than half as thick as the supporting stem, clad in 3–5(–12) small sheathing bracts, rarely over 1 cm long, continued in the form of bracts supporting the branches, distally decreasing in size, sometimes all bracts much larger and forming a decreasing series of transitional leaves; producing well defined clusters of 1–6 flowers each, but the majority of the flowers paired, each cluster provided with 2–3 tiny bracts not exceeding 3 mm in length; pedicels distinctly jointed, usually above the middle the persistent basal part very slender, (3–)5–20(–30) mm long, not or hardly stouter in fruit. *Flowers* greenish white, sometimes purple tinged (18–)20–28(–29) mm long, stalklike re-

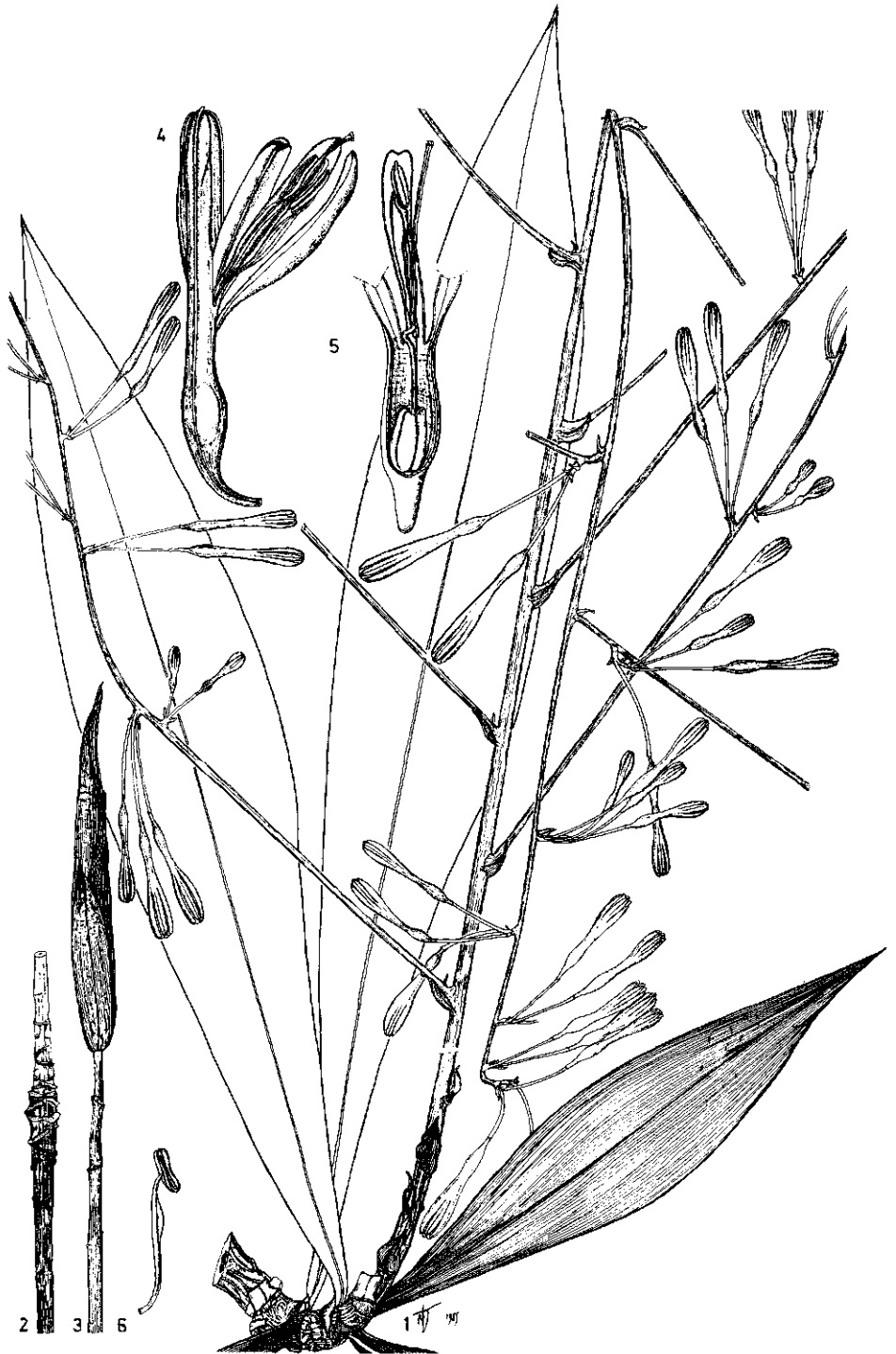
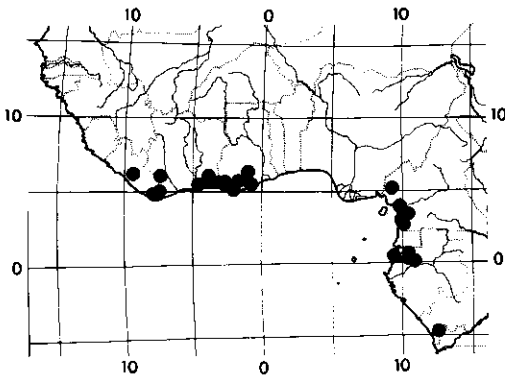


FIG. 9. *Dracaena cerasifera* Hua: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. branch,  $\frac{2}{3} \times$ ; 3. young shoot,  $\frac{2}{3} \times$ ; 4. flower,  $2 \times$ ; 5. flower in section,  $2 \times$ ; 6. stamen,  $2 \times$ . (1, 4-6. Thijssen 15; 2 & 3. de Koning 163).

ceptacle somewhat indurated, 2-4(-6) mm long at anthesis, perianth tube (5-)7-8(-10) mm long,  $2\frac{1}{2}$ -3 mm in diameter, the lobes distinctly longer than the tube, (9-)11-15(-17) mm  $\times$   $2\frac{1}{2}$ -3 mm, each with a single nerve down the centre, stamens inserted in the throat, filaments rather clubshaped, slender base, inflated part about twice as long and about 1 mm in diameter, abruptly narrowed into the slender filiform tip, 2-3 mm shorter than the corresponding perianth lobe, anther 2-3 mm  $\times$  1 mm, ovary cylindrical,  $2\frac{1}{2}$ -3 mm  $\times$  1 mm, style filiform not over  $\frac{1}{4}$  mm in diameter, reaching the top of the perianth or up to 1 mm exerted, stigma shallowly 3-lobed. *Fruits* bright orange, globose or depressed globose and more or less distinctly lobed, (14-)18-28(-32) mm long, including the accrescent, indurated, (3-)4-8(-12) mm long receptacle, (10-)12-30(-35) mm in diameter. *Seeds* pale brown with some paler veins and a rather wide pale area around the micropile, irregularly globose, rarely biglobose (not yet observed in W. Africa), somewhat flattened against each other, 8-15(-23 when biglobose) mm  $\times$  8-15 mm  $\times$  6-14 mm. *Seedlings* produce several rather sheathing prophylls followed by very thin proper leaves, rather narrow and about 15-20 times as long as wide.

**Distribution:** *D. cerasifera* seems to be confined to deep shady localities in fairly undisturbed rainforest from Liberia to Ghana. It has not been collected in Togo, Benin and Nigeria. In central Africa it has been found in Cameroun and Gabon, with a single collection from Cabinda.



MAP 7. *Dracaena cerasifera* Hua

**Notes:** *D. cerasifera* is treated here for its entire area, it is rather variable in a number of characters. In western Africa the leafshape is predominantly within the range of about ten times as long as wide, although comparatively wider leaves more often encountered in Cameroun and Gabon, do occur as well, particularly in Ghana.

It may cause surprise that specimens with erect inflorescences and specimens with more or less abruptly reflexed pendulous inflorescences both are accepted in one single species. However observations on living plants offer a fairly simple explanation. When a young shrub starts flowering it usually consists of a straight

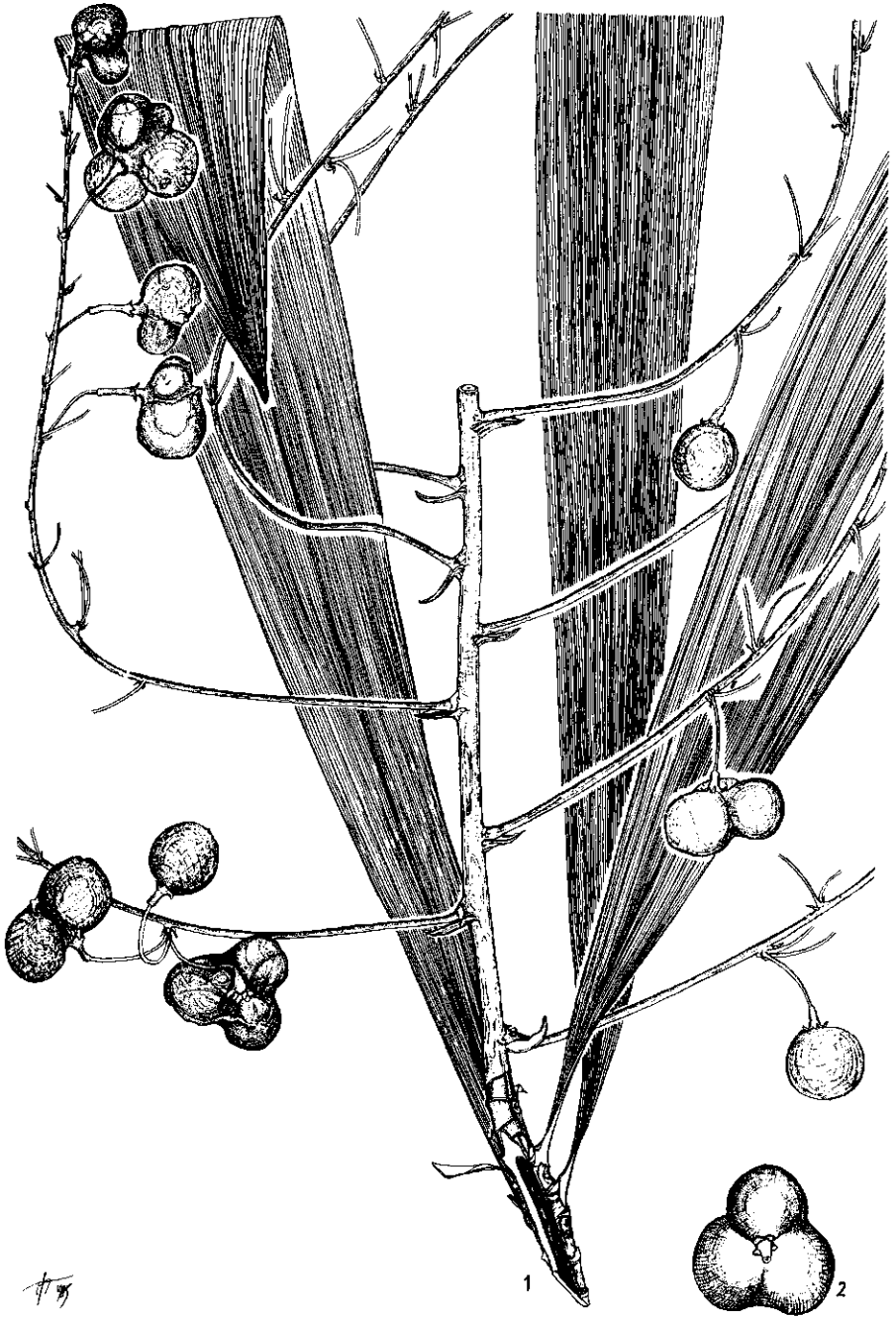


FIG. 10. *Dracaena cerasifera* Hua: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. fruit,  $\frac{2}{3} \times$ . (1 & 2. Beentje 410).

erect unbranched stem on which the delicate budding inflorescence develops terminally. The main axis continues the supporting vertical stem and the branches developing evenly to all sides keep it well balanced and vertical. By the time the comparatively heavy fruits develop, the infructescence is sufficiently indurated that an uneven distribution of fruits merely causes it to bend over.

Older shrubs produce inflorescences on the tips of spreading branches. In this position the tender developing inflorescence is not rigid enough to develop in the same more or less horizontal direction of the supporting branch. It soon droops into a pendulous position causing a sharp deflexion in the base of the slender peduncle that becomes rigid subsequently. Such observations are virtually impossible to be made on herbarium specimens as their original position in relation to the living plant cannot be reconstructed.

Differences in flower size must be credited to the measure of accelerated elongation of flowerbuds just before anthesis. However, this phenomenon is less striking than in other species, e.g. *D. mannii* Baker or *D. aubryana* Brongn. ex C. J. Morren.

The variability in fruit size is correlated to that of the seeds. There seems to be a general tendency for single seeded fruits to be comparatively larger in size of fruit as well as of seed. Some collections from Southern Cameroun revealed rather aberrant biglobose seeds in comparatively large fruits. They do not warrant separate status because other supporting characters are lacking.

HUTCHINSONS effort to validate *D. scoparia* A. Chev. in 1939 was superfluous as he neglected the fact that CHEVALIER added an observation to his original proposal of this name in 1920, which amounts to a description under the rule of ICBN. CHEVALIER applied this observation specifically to his collection 17484, which must therefore be considered as the holotype of *D. scoparia*. HUTCHINSONS designation of *Chevalier 16967* as the type for this species cannot be accepted.

#### Specimens examined:

LIBERIA: Jabroke (infl.), *Baldwin 6472* (K); Duo (fr. March), *Baldwin 11348* (K).

IVORY COAST: Grabo (fl. b. Febr.), *Aké Assi 9478* (K); Téké for. (fr. Febr.), *Bamps 2065* (BR), (fr. Jan.), *2312* (BR, WAG); 18 km NE Ayamé (fr. June), *Beentje 395, 409, 410, 411* (all WAG); 20 km N Dabou (fr. June), *Beentje 540* (WAG); Téké for. (fr. July), *Beentje 563* (WAG); Tienkoula (y.fr. Febr.), *Bernardi 8275* (P); Adiopodoumé (fr. June), *Bos 10342* (WAG), (infl.), *Breteler 5203* (WAG); km 17 Grabo-Taï (fr. April), *Breteler 7414* (WAG); 2 km S Maféré (fl. b., fr. April), *Breteler 7442* (WAG); Erymacougnié (fl. b. Jan), *Chevalier 16967* (P); Alépé (fr. Febr.-March), *Chevalier 17484* (P); Téké for. (fr. Jan.), *de Koning 163* (WAG); Banco for. (fl. Febr.), *de Koning 5300* (WAG); Adiopodoumé (fl., fr. Febr.), *de Koning 5332* (WAG); Grabo (fr.), *de Namur 1256* (ABI, WAG); Yapo for. (fl. Oct.), *de Wilde 3141* (WAG); Grabo-Fété (fl. July), *Guilleaume 845* (ABI); 2 km S Adzopé, *Leeuwenberg 10719, 10731* (WAG); Maféré (fr. March), *Leeuwenberg 12017* (WAG); 12 km NW Attinguè (fl. March), *Leeuwenberg 12091* (WAG); Anyama-Aouabo (fr. May), *Thijssen 13* (WAG), (fl. May), *15* (WAG); Téké for. (fr. May), *van der Burg 467* (WAG); Adiopodoumé (fl. Febr.), *van Doorn 37* (WAG), (fr. March) *80* (WAG); Anyama (fl. Aug.), *Versteegh & den Outer 707* (WAG).

GHANA: 2 mi. E Enchi (fl. Dec.), *Adams 2229* (K); Anka F.R. (fl. b. March), *Enti 42649* (MO); Fure F.R. (fr. April), *Hall & Enti 38346* (GC); Obi Shelterbelt F.R. (fl. b. Jan.), *Hall & Abiw 44735* (GC); Mamiri F.R. (fr. April), *Hall & Swaine 46663* (MO, US, WAG); sine loc. (fr.), *Irvine 1097* (K); Axim (fl., fr. Febr.), *Irvine 2181* (K, P); Tarkwa (fl. b. Febr.), *Kinloch 3230* (K); Dunkwa, *Roberty 12784* (G).

CAMEROUN: 11 km N Kribi (fl. Jan.), *Bos* 3565 (Wag); 16 km ENE Kribi, *Bos* 3662 (WAG); 15 km N Kribi, *Bos* 3729 (WAG), (fr. Jan.), 3731 (WAG); Douala, *Bos* 3881 (WAG), (fr. Febr.), 3881-A, 3881-B, 3882 (WAG); 17 km N Kribi (fr. Febr.), *Bos* 3931 (WAG); 15 km N Kribi (fr. Oct.), *Bos* 5456 (WAG); 2 km ESE Kribi (inf.), *Bos* 6183 (WAG); S. Badjob (fl. Dec.), *W. de Wilde* 1546-A (P, WAG), (fr. Dec.), 1546-B (B, EA, K, MO, P, PRE, WAG, Z); Song Mbong (fr. March), *Leeuwenberg* 5138 (C, EA, K, LISC, MO, PRE, WAG); Okoroba, *Letouzey* 13817 (P, WAG, YA).

GABON: Cap Sta Clara, *Breteler* 7663 (WAG); Mondah for., *Breteler* 7673; 22 km NE Asok, *Breteler & de Wilde* 239 (WAG); Komo R. (fl. b. Jan.), *Hallé & Villiers* 4336 (P); 8 km SSW Makokou, *Leeuwenberg* 11462 (WAG); Ogooué R. (fl., fr.), *Leroy* s.n. (P holotype).

ANGOLA: Cabinda, Belize (fl. March), *Gossweiler* 7933 (COI, LISU).

Cultivated: *Culta* WAG ex Ivory Coast (seedl.), *van Setten* 247 & 469 (WAG).

### ***Dracaena congoensis* Hua**

**Fig. 11; Map 8**

Hua, *Contr. Fl. Congo* fr., Lil. (1897): 16 = *Bull. Soc. Hist. Nat. Autun* X (1897): 668; *De Wildeman & Durand, Contr. Fl. Congo* I-1 (1899): 60; *Chevalier, Bot. I* (1920): 646 (sub *D. camerooniana* quo ad *Chevalier* 22915 & 22921); *Hutchinson* in *Hutchinson & Dalziel, Fl. W. Trop. Afr.* II (1936): 386 (sub *D. cylindrica* quo ad *Dodd* 397 & *Lyon* 2873, sub *D. fragrans* quo ad *Thomas* 2305 & *Johnson* 730); *Irvine, W. Pl. Ghana* (1961): 770 (sub *D. cylindrica* & *D. fragrans*); *Hepper* in *Hutchinson & Dalziel, Fl. W. Trop. Afr.* ed. 2, III-I (1968): 156 (sub *D. smithii* quo ad *Lyon* 2873) et 157 (sub *D. fragrans* quo ad *Johnson* 730, *Lyon* 2873 & *Thomas* 2305).

Type: Gabon, Mayumbe for., *Thollon* s.n. (P holo, K drawing).

Homotypic synonym: *Pleomele congoensis* (Hua) N.E.Br.; *Brown, Kew Bull.* 1914: 277.

Diagnostic characters: Usually unbranched shrublets, stems leafy or leaves pseudovercillate at the apex, leaves rarely more than  $\frac{1}{2}$  m long, differentiated into an ovate to obovate blade up to 10 cm wide and an 1–20 cm long winged false petiole with a sheathing base, inflorescence terminal, smooth, erect, usually 15–25 cm long with several well spaced multiflowered glomerules of flowers in the axils of concave cuspidate bracts, flowers about  $2\frac{1}{2}$  cm long, the tube one and half times longer than the perianth lobes, fruits globose, about  $1\text{--}1\frac{1}{2}$  cm in diameter.

Description: Usually low, monocaulescent, rarely branched *shrubs* up to 1.8 m high. *Stems* slender, leafy, or the leaves concentrated in pseudovercills towards the apex of the stem. *Leaves* concolorous, (8–)15–45(–70) cm long, differentiated into an ovate, elliptic, or obovate-oblongate lamina (2–)3–9(–10) cm wide, acuminate, rarely simply acute, with a subulate mucro up to 7 mm long, base tapering into a (1–)1 $\frac{1}{2}$ –18(–20) cm long winged pseudopetiole, (2–)4–10(–17) mm wide with an abruptly widened sheathing base ( $\frac{1}{2}$ –)1 $\frac{1}{2}$ –3(–4) cm long, clasping the stem for rather more than its circumference, midrib not discernable above, in fresh leaves indicated by a distinct furrow, beneath prominent for over three quarters of its length, disappearing a few cm below the tip, parallel nervature quite distinct in herbarium, secondary veins

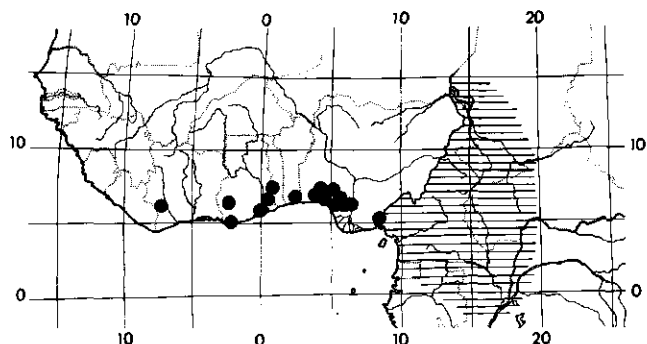




FIG. 11. *Dracaena deisteliana* Engl.: 1. flowering branch,  $\frac{2}{3} \times$ . (Bos 10415). *Dracaena congoensis* Hua: 2. flowering branch,  $\frac{2}{3} \times$ . (Gbile et al. FHI 20531).

rarely visible. *Inflorescence* terminal, erect, (8-)5-25(-33) cm long, peduncle smooth, bearing several concave, long cuspidate bracts, leaving distinct scars when shed, forming a rapidly decreasing range in sizes from the upper leaves towards the ca. 1 cm long bracts of the upper nodes, flowers arranged in 4-6(-8) multiflowered, sessile well separated glomerules, the lowest glomerule rarely shortly stalked with a stalk not exceeding 2 cm, the terminal 2 glomerules may approach each other very closely, at least the outer flowers of a glomerule accompanied by white scarious bracts, broadly triangular, up to 2 mm wide, some much narrower and up to 4(-6) mm long, basal part of the jointed pedicels persistent and peglike, 1-2(-3) mm long. *Flowers* white with reddish tinges, (19-)24-27(-28) mm long including the indurated stalklike ( $1\frac{1}{2}$ -)2- $3\frac{1}{2}$ (-4) mm long receptacle, perianth tube comparatively long, 10-15 mm, the lobes appreciably shorter, 7-10 mm  $\times$  2- $2\frac{1}{2}$  mm, each lobe with a single median vein, stamens inserted at throat level or slightly above it, filaments inflated,  $\frac{1}{2}$ - $\frac{3}{4}$  mm in diameter, inclined subulate tip usually 1-2 mm below the apex of the corresponding perianth lobe, anthers about 2 mm  $\times$  1 mm, style filiform, about  $\frac{1}{4}$  mm in diameter, stigma 3-lobed, ca. 1 mm in diameter, not or up to 3 mm exerted. *Fruits* yellow-orange, globose, (8-)10-14(-16) mm in diameter, with a persistent ( $2\frac{1}{2}$ -)3-4(-5) mm long stalklike receptacle. *Seeds* pale brown when conserved, discoid-ovoid, flattened against adjacent seeds, 7-8 mm  $\times$   $5\frac{1}{2}$ -7 mm  $\times$  4-5 mm.

**Distribution:** *D. congoensis* has been recorded once in western Ivory coast, its area extends from Ghana to Nigeria and into central Africa.



MAP 8. *Dracaena congoensis* Hua

**Notes:** *D. congoensis* was up till now not recognized in West Africa. Although this species has been collected there even at a fairly early date, the specimens invariably have been mistaken for other species. This is well demonstrated by the various places where specimens of *D. congoensis* have been cited in the two editions of the Flora of West Tropical Africa. Usually they were referred to what is here recognized as *D. bicolor* and *D. fragrans*.

From *D. bicolor* it differs in the much longer rather spicate inflorescences with well spaced glomerules accompanied by cuspidate bracts, while *D. fragrans* has a distinctly branched inflorescence lacking such bracts.

The number of herbarium specimens of this species is rather limited, possibly because *D. congoensis* is comparatively rare. However, its modest proportions and a possible reluctance to flower frequently, may have caused it to have been mistaken for juvenile specimens of other species not likely to be collected in such a state of development.

This latter supposition, if correct, would account for the presence of only a single collection from the Guiglo-Taï area in western Ivory coast, disjunct with the other localities from Ghana eastwards, and future collection of this species may be expected from Ivory Coast, filling this apparent gap in its area of distribution.

#### Specimens examined:

IVORY COAST: Zagné, *Aké Assi 9483* (K).

GHANA: Amedzofe waterfall (y.fr. Febr.), *Enti 42431* (MO); Awaso (fr. Nov.), *Hall GC 43635* (GC); sine loc. (inf.), *Irvine 1176* (K); Aburi Hills (fl. March), *Johnson 730* (K); New Jantin (fl. March), *Johnson 731* (K); Akwapim (fl. March), *Lock GC 43969* (GC, MO, WAG); Tano-Ofin F.R. (fl. Febr.), *Lyon 2873* (K).

TOGO: Fazao, *Brunel & Kaman 1143* (B).

BENIN: Porte Novo (fl. Febr.), *Chevalier 22915* (P); Pobé (fl. Febr.), *Chevalier 22921* (P).

NIGERIA: Owam F.R. (fl. Febr.), *Brenan c.s. 8988* (K); Okomu F.R. (fl. Febr.), *Brenan 8991* (B, BR, K, P, WAG); Peregum (fl. Jan.), *Dodd 397* (K); Oshun F.R. (fr. April), *Ejiofor FHI 26106* (FHI); Ikeji-Ipetu F.R. (fl. Febr.), *Gbile c.s. FHI 20531* (FHI, K); *Omo & Shasha F.R.* (inf.), *Jones & Onochie 17523* (BM); 6 km N Ehor, *Leeuwenberg 11256* (WAG); Owena (fr. Febr.), *Medler 253* (IFE); Omo F.R. (fr. Febr.), *Pilz 2317* (MO), (fr. March), *2345* (MO); Oban (fl.b.), *Talbot 2403* (BM); Ubuluku (fl.b. Febr.), *Thomas 2305* (K); Atrakaso (fl. Jan.), *Thomas D 58* (K); Akure F.R. (fl., fr. Febr.), *van Meer 620* (WAG); Ago-Owu F.R. (fl. Jan.), *Wit 1142* (K).

#### *Dracaena cristula* W. Bull

Fig. 12; Phot. 11; Map 9

Bull, Gard. Chron, 1878-II: 554; Id., Catalogue 1879: 5.

Type: Liberia, Paynesville, *Voorhoeve 320* (WAG neo).

Homotypic synonym: *Cordylina cristula* (W. Bull) van Geert; van Geert, Catalogue 78 (1879–1880): 12; Morren & de Vos, Bull. Fed. Soc. Hort. Belg. 1885: 83.

Heterotypic synonyms: *Dracaena elliotii* Baker; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 449; Pobéguin, Ess. Fl. Guin. fr. (1906): 255 (sp. indet. n. 791); Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384; Dalziel, Us. Pl. W. Trop. Afr. (1937): 493; Aké Assi, Contr. Et. Fl. Côte d'Ivoire II (1963): 234; Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 156; Mouton, Adansonia ser. 1, 15 (1976): 410; Jaeger & Adam, Boissieria 33 (1981): 181; de Koning, For. Banco II (1983): 454.

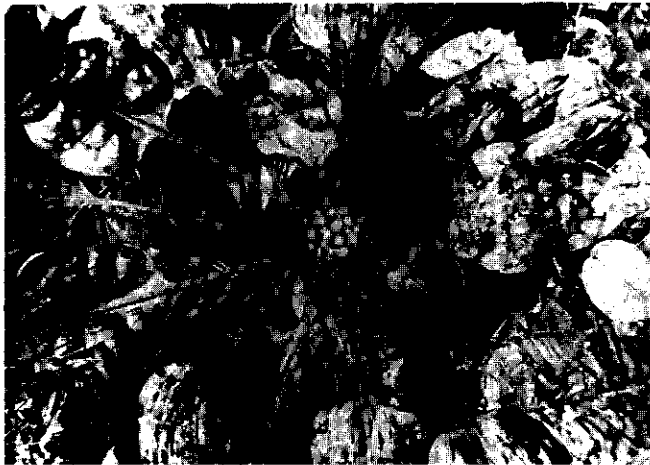
Type: Sierra Leone, Kukuna, *Scott Elliot 4689* (K holo, BM iso, MO, WAG photo).

Homotypic synonym: *Pleomele elliotii* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 278.

Misapplied Name: *Dracaena ovata* Ker Gawler teste Chevalier, Bot. I (1920): 646.

Diagnostic characters: Single stemmed unbranched shrublets, leaves congested in a terminal pseudowhorl, ovate to orbiculate, abruptly constricted into a long winged pseudopetiole, inflorescence terminal, peduncle up to 5 cm long, supporting a single sub-umbellate terminal glomerule of 10–20 flowers or more, flowers about  $1\frac{1}{2}$  cm long, perianth tube about twice as long as the lobes, fruits globose,  $1-1\frac{1}{2}$  cm in diameter.

Description: Small *shrubs* 0.2–0.6(–2) m tall, strictly single stemmed, unbranched, very rarely forked with two erect parallel stems. Roots not distinctly swollen, stems dirty pale grey-brown, marked by annular scars of fallen leaves, terminated by a congested pseudowhorl of leaves of which the apical ones may be very much reduced in size, after each flowering growth is continued sympodially by a single axillary bud. *Leaves* up to 35 cm long, differentiated into a distal blade and a proximal pseudopetiole, blade ovate to orbiculate, (3–)8–15(–17) cm × (3–)6–8(–13) cm, acuminate or sometimes cuspidate, with a distinct mucro up to 4 mm long, base rounded and abruptly narrowed into a winged pseudopetiole (1–)5–10(–20) cm × 3–5(–9) mm, its base widened into a 1–2 cm long sheath clasping the stem for slightly more than its circumference; fresh leaves light to dark green, often with dull dark purple tinges when young, sometime persistently so, blade somewhat bullate, midrib showing as a paler band above, prominent beneath, a few pairs of nerves distinctly impressed above; in herbarium midrib not distinct above but represented by a dense concentration of parallel nerves, prominent and paler below but disappearing in the upper quarter of the leaf, parallel nerves all prominent, secondary veins irregularly transverse, prominent beneath but intermittently so above. *Inflorescence* terminal, peduncle smooth, continuous to the supporting stem, 1–3(–5) cm long, involucreted at its base by transitional leaves and prophylls to 55 mm long, tipped by a single glomerule of 10–20 or even more flowers, persistent basal



PHOT. 11. *Dracaena cristula* W. Bull (photograph F. J. BRETELER).

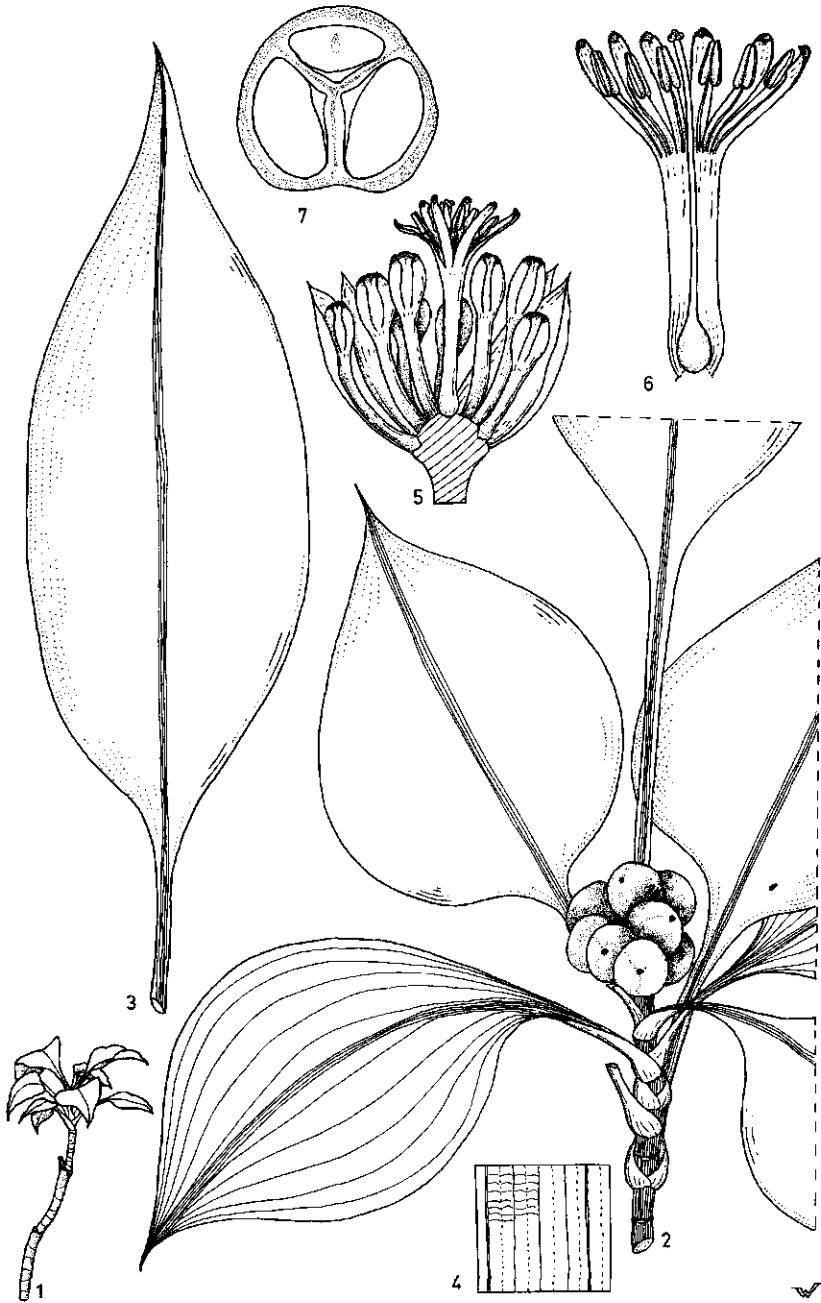
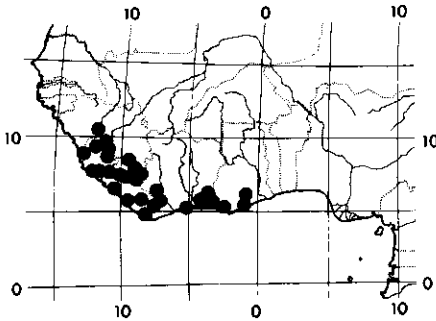


FIG. 12. *Dracaena cristula* W. Bull: 1. Habit, much reduced; 2. infructescence,  $\frac{2}{3} \times$ ; 3. leafblade,  $\frac{2}{3} \times$ ; 4. inset: leaf detail,  $2 \times$ ; 5. inflorescence in section,  $2 \times$ ; 6. flower laid open,  $3 \times$ ; 7. fruit, cross-section,  $2 \times$ . (1. living plant in conservatory WAG; 2 & 4. Voorhoeve 320; 3. Melville & Hooker 623; 5 & 6. Lane Poole 346; 7. Bos 10338 spir. coll.).

part of the pedicel about 1 mm long. *Flowers* white, about 16 mm long, the obconical receptacle 1–1½ mm, perianth tube about 10 mm, the lobes 5 mm × 2 mm with a single median vein, stamens inserted at the throat, filaments inflated, subulate tip about 1 mm shorter than the corresponding perianth lobe, anthers 1½ mm × 1 mm, style not exceeding the perianth in length, stigma capitate, shallowly lobed. *Fruit* globose to depressed globose, about 1–1½ cm in diameter with a very smooth skin, bright orange. *Seeds* dirty white, lens-shaped, flattened against each other, 7–9 mm × 6–7 mm × 3–4 mm. *Seedlings* initially provided with 3–7 prophylls in the form of leafless sheaths 3–20 mm long, gradually followed by the first true leaves 4–5 cm long.

**Distribution:** *D. cristula* is restricted to humid rainforest localities in West Africa, from Guinea to Ghana.



MAP 9. *Dracaena cristula* W. Bull

**Notes:** This species is easily recognized, even in a vegetative state, by its habit and characteristic leaves. Although *D. cristula* has been collected as early as the 1790's by AFZELIUS in Sierra Leone, it took almost a century before it was provided with a name. In 1878 WILLIAM BULL offered a new species of ornamental foliage plants for sale by the name of *Dracaena cristula*. His advertisement in the *Gardener's Chronicle* offers a perfectly adequate description of this characteristic species originating from Liberia. It does not appear to have been a commercial success as its name vanished from the horticultural scene soon afterwards. This might be explained by the fact that contrary to most *Dracaena* species, *D. cristula* is difficult to grow under greenhouse conditions. when BAKER dealt with this species twenty years later in *Flora of Tropical Africa*, he proposed the by then superfluous name *D. elliotii* for it.

#### Specimens examined:

GUINEA: Ziama, *Adam* 3561 (P); Macenta (fr. April), *Adam* 11981 (MO); Fouta Djallon (fr. March), *Chevalier* 12557bis (P); mt. Nzo (y.fr. March), *Chevalier* 21017 (P); Kisosso, *Pobéguin* 791 (P); Mamou (fl.b. Febr.), *Roberty* 10652 (G); mt. Nimba (fr. Aug.), *Schnell* 3430 (P, PRE).

SIERRA LEONE: Kabala, *Adam* 22420 & 26715 (MO); Benikoro (fl.b. Febr.), *Adam* 23607 (MO); sine loc., *Afzelius* 'Alettris 6 & 7' (UPS), *Deighton* 2571 (K); Faiama for. (fl. Jan.), *Deighton* 3876 (K); Kambui Res. (fl. Febr.), *Lane Poole* 346 (K); York Pass, *Melville & Hooker* 623 (K); Kukuna

(fl. Jan.), *Scot Elliot* 4689 (K, BM); Sendugu (fr. June), *Thomas* 568 (K); Kennema (fr. Jan.), *Thomas* 7466 (K).

LIBERIA: Yéképa (fr. Oct.), *Adam* 27492 & 30069 (MO), (fr. July), 28511 & 28560 (MO); Jabroke (fr. July), *Baldwin* 6520 (K); Zeahtown (fr. Aug.), *Baldwin* 6963 (K); Ganta (fr. July), *Baldwin* 9259 (K); Jaurazon (fr. March), *Baldwin* 11455 (K); mt. Nimba, *Breteler & de Wit* 5467 (WAG); sine loc., *Carder s.n.* (K); Paynesville (fr. May), *Dinklage* 2774 (B); Ganta (fr. Oct.), *Harley s.n. & 1145* (K); sine loc. (fr. April), *Harley* 1143 (WAG); mt. Nimba (fr. July), *Leeuwenberg & Voorhoeve* 4791 (K, WAG); Peahtah, *Bequaert in Linder* 1063 (K); Banga (fr. Oct.), *Linder* 1354 (A); Paynesville (fr. June), *Voorhoeve* 320 (WAG Neotype).

IVORY COAST: 20 km N Dabou (fr. June), *Beentje* 204 (WAG); 5 km NNW Nganda-Nganda (fr. July), *Beentje* 588 (WAG); Adiopodoumé (fr. July), *Bos* 10338 (WAG); Banco for., *Bos* 10356 (WAG); Adiopodoumé (fr. June), *Breteler* 5200 (WAG); Banco for. (y.fr. Jan.), *de Koning* 3172 (WAG); Adiopodoumé (fr. Febr.), *de Koning* 5335 (WAG), (cult. seedl.), 5735 & 6291 (WAG); Banco for. (fr. July), *de Koning* 5873 (WAG), *de Namur* 514 (ABI); Tai for. (fr. May), *de Namur* 851 (ABI, WAG), (fr. Aug.), 1185 (ABI); Oroumbo Boka, *de Wilde* 638 (WAG); sine loc., ? *Guilleaumont* 833 (ABI); Tai for., *Guilleaumont* 1439 (ABI); Youkou, *Schnell* 1686 (P); Sassandra, *Téhé Henry* 475 (ABI); mt. Tonkouï (fr. May); *van der Burg* 341 (WAG).

GHANA: Ankassa F.R. (fr. June), *Enti & Hall* GC 35599 (K); Aiyola F.R. (fr. March), *Enti & Hall* GC 40154 (GC); Kade A.R.S. (fr. Jan.), *Enti* GC 42017 (MO), (fr. June), *Irvine* 4897 (K).

Cultivated: *Culta* P, *Anonymus* ?9 (P); *Culta* WAG ex Ivory Coast, *van Setten* 241 (WAG).

### ***Dracaena deisteliana* Engl.**

**Fig. 11, p. 61; Map 10**

Engler, Bot. Jahrb. 32 (1902): 96; Id. in Engler & Drude, Veg. Erde IX-II (1908): 291; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. II (1936): 384 (in syn. to *D. fragrans* (L.) Ker Gawler); Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 157.

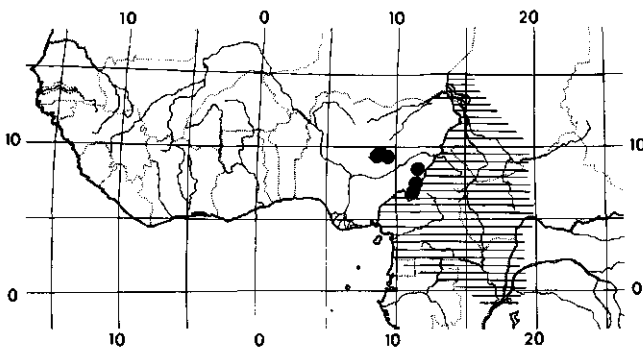
Type: Cameroun, Buea, *Deistel* 497 (B lecto, A, M iso), Id., *Lehmbach* 16 (?B † para).

**Diagnostic characters:** Rarely branched whiplike shrubs usually not over 5 m high in our area, leaves evenly distributed along the stems, narrowly lorate-oblongate, not over 40 cm long, usually 2–3 cm wide, terminal inflorescence erect, not over 35 cm long, usually branched, flowers arranged in glomerules of 10 or more flowers, large bracts usually well below the corresponding branch or glomerule, flowers 1½–2 cm, the perianth tube slightly shorter than the lobes, fruits globose, up to 1½ cm in diameter.

**Description:** Rather weak *shrubs*, producing one to several whiplike stems 1–4(–10) m tall, rarely with some branches towards their apex, often bearing evenly distributed leaves over their entire length, supported by adjacent vegetation or straggling in natural conditions, often planted as living boundaries or fences. *Leaves* concolorous, narrowly lorate-oblongate, the widest part usually above the middle, (12–)20–35(–40) cm × (1½–) 2–3(–5½) cm, acute with an awl-shaped mucro up to 1 cm long, base gradually cuneate, (4–)7–12(–18) mm wide at its narrowest point above the (1–)1½–2½(–3½) cm long sheathing base, clasping the stem for rather more than its circumference, midrib usually not visible above, distinct and prominent for about two thirds of its length beneath, parallel nerves very dense, usually less than ½ mm apart, secondary venation

not visible. *Inflorescence* terminal, erect (15–)20–28(–35) cm long, with deciduous, concave, long cuspidate bracts leaving deeply V-shaped scars, inserted distinctly below the corresponding branches or glomerules, forming a series rapidly decreasing in size from about 10 cm long at the lowest node to often absent at the apical glomerules, flowers arranged in well separated glomerules on main axis and branches containing usually well over 10 flowers each, individual flowers accompanied by scarious white bracts with a somewhat brownish centre, 2–2½(–5) mm long, as long or slightly longer than the 2–3(–4) mm long peglike persistent pedicels. *Flowers* white with some purplish tinges towards the tip, (15–)17–18(–20) mm long with a stalklike indurated receptacle 2–3(–5) mm long, perianth tube 5–8 mm, the lobes 7–9 mm × 3 mm, usually showing a single median vein, stamens inserted at or slightly above the throat, filaments inflated and about ¾ mm in diameter, with a straight subulate tip 1–2 mm shorter than the corresponding perianth lobe, anthers 2 mm × 1 mm, ovary ovoid to cylindrical, about 3 mm × 1½ mm, style filiform, stigma shallowly 3-lobed, about 1 mm in diameter and for about 1 mm exserted. *Fruits* orange, spherical to depressed globose, 8–10 mm long, 7–16 mm in diameter, retaining the persistent, not accrescent stalklike receptacle. *Seeds* pale brownish to dirty white, sometimes with a dark area round the raphe, oblong, rounded and dorsally flattened, 6–9 mm × 5–7 mm × 4–6 mm.

**Distribution:** *D. deisteliana* is restricted to the mountains of Nigeria and Cameroun, usually at altitudes between 500 and 1500 m above sea level. It is frequently planted as living boundaries, forming dense hedges several m high.



MAP 10. *Dracaena deisteliana* Engl.

**Notes:** The present treatment covers this species as it occurs in Nigeria. Apart from the type, three fruiting specimens from adjacent Cameroun, i.e. *Ngameni Kanya 76*, *Ujor FHI 30305* & *W. de Wilde 2384*, have been included in the present species diagnosis, as specimens with mature fruits are not available for our area.

*D. deisteliana* resembles *D. fragrans* closely in many respects, except in habit and leafshape. These differences are sufficiently obvious to ensure unambiguous identification. However, it has been demonstrated, notably in *D. camerooniana*,



that rather spectacular changes in phenotype may occur in individual plants in *Dracaena*. Observation of cultivated specimens of both *D. fragrans* and *D. deisteliana* over a period of several years, have not confirmed the occurrence of such changes so far.

Under these circumstances I prefer to maintain *D. deisteliana* as a distinct species until proof of the contrary is available.

#### Specimens examined:

NIGERIA: Ngel Nyaki (fl.), *Chapman 2716* (WAG); Gangoro F.R. (inf.), *Chapman 4230* (K); 12 mi. from Jos Plateau (fl., fr. Dec.), *Coombe 95* (B, BR, K, P, WAG); Mayo Ndaga (inf.), *Hall 1681* (K); Vom (fl., fr. Febr.), *McClintock 202* (K); Pankshin (fl.b. Dec.), *McGregor 437* (K); Gangirwal, *Tuley 1965* (P); Njawai (fl. Nov.), *Tuley 2115* (K); Heipang-Tabo (fl.b. Jan.), *Wimbush FHI 41823* (K).

Cultivated: *Culta WAG ex B, Bos 10415* (WAG).

#### *Dracaena fragrans* (L.) Ker Gawler

Fig. 13; Phot. 12; Map 11

Ker Gawler, *Bot. Mag.* (1808): t. 1081; Aiton, *Hort. Kew.* ed. 2, I (1811): 277; Link, *En. Pl.* 2, 1 (1821): 341; Sprengel, *Syst. Veg.* II (1825): 92; Schultes f. in Roemer & Schultes, *Syst. Veg.* VII (1829): 342; Loudon, *Hort. Britt.* I (1830): 130; Salm-Dyck, *Hort. Dyck.* (1834): 95; Steudel, *Nom. Bot.* I (1840): 529; Kunth, *Abh. K. Ac. Wiss. Berlin* (1842): 26; Id., *En. Pl.* V (1850): 9; Koch, *Berl. Allg. Gartenz.* (1858): 242, 253, 262; Regel, *Gartenflora* 8 (1859): 329; Koch, *Wochenschr.* IV (1861): 396; Id., loc. X (1867): 237; Regel, *Gartenflora* 20 (1871): 136; Id., *Act. Hort. Petrop.* I (1871): 137 = *Rev.* (1871): 37; Id. ex André, *Ill. Hort.* 19 (1872): 137; Baker, *J. Bot.* XII (1874): 165; Id., *J. Linn. Soc.* 14 (1875): 529; Nicholson, *Ill. Dict. Gard.* I (1885): 491; Engler, *Nat. Pfl.* II-5 (1888): 75; Durand & Schinz, *Consp. Fl. Afr.* V (1893): 327; Vilmorin's *Blumeng.* I (1895): 1065; Baker in Thiselton-Dyer, *Fl. Trop. Afr.* VII (1898): 440; Engler in Engler & Drude, *Veg. Erde IX-II* (1908): 290, f. 193; Wiegand in Bailey, *St. Cycl. Hort.* I (1914): 1070; Chevalier, *Bot.* I (1920): 646 (p.p., excluding 22104 = *D. mannii* Baker); Krause in Engler, *Nat. Pfl.* ed. 2, 15 a (1930): 359, f. 145; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 384 (p.p. excluding *D. deisteliana* Engl. = *McGregor 437* and *Johnson 730 & Thomas 2305* = *D. congoensis* Hua); Aubréville, *Fl. For. Côte d'Iv.* III (1936): 278 (sub *D. arborea* (Willd.) Link); Dalziel, *Us. Pl. W. Trop. Afr.* (1937): 493; Chittenden, *Dict. Gard.* II (1951): 710; Roberty, *Pet. Fl.* (1954): 338; Berhaut, *Fl. Senegal* (1954): 188; Pareys *Blumeng.* ed. 2, I (1958): 310; Aubréville, *Fl. For. Côte d'Iv.* ed. 2, III (1959): 320 (sub *D. arborea* (Willd.) Link); Irvine, *W. Pl. Ghana* (1961): 770 (p.p., excluding all specimens cited = *D. congoensis* Hua); Berhaut, *Fl. Senegal* ed. 2 (1967): 321; Hepper in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* ed. 2, III-I (1968): 157 (p.p., excluding *Johnson 730, Lyon 2873 & Thomas 2305* = *D. congoensis* Hua); Bailey & Bailey, *Hortus Third* (1976): 398; Mouton, *Adansonia ser.* 1, 15 (1976): 412; Marais & Coode, *Fl. Masc.* 183 (1978): 21; Wijnands, *Bot. Comm.* (1983): 129.

Basionym: *Aletris fragrans* L.; Linnaeus, *Sp. Pl.* ed. 2 (1762): 456; Id., *Syst.*

Nat. ed. 12, II (1767): 248; Burman f., Prodr. Fl. Cap. (1768): 10; Miller, Gard. Dict. ed. 8 (1768): *Aletris* 5; Linnaeus, Syst. Veg. ed. 13 (1774): 277; Houltuyn, Nat. Hist. II, 12 (1780): 411; Lamarck, Enc. Meth. Bot. I (1783): 79; Linnaeus, Syst. Veg. ed. 14 (1784): 337; Aiton, Hort. Kew. I (1789): 464; Linnaeus, Syst. Nat. ed. 13, II (1791): 561; Willdenow, Sp. Pl. II (1799): 183; Andrews, Bot. Rep. V (1803): t. 306; Poiret in Lamarck, Enc. Meth. Bot. suppl. I (1810): 289.

Type: Commelin, Hort. Med. Amst. II (1701): t 4 f. 2.

Homotypic synonyms: *Aloë fragrantissima* Jacq.; Jacquin, En. Stirp. Vind. app. (1762): 309 (see note).

*Pleomele fragrans* (L.) Salisb.; Salisbury, Prodr. (1796): 245 (quo ad basionym, see note); Id., Gen. Pl. (1866): 74; Brown, Kew Bull. 1914: 276, 278; Id., loc. 1915: 259 (err. not of N.E.Br. but (L.) Salisb.); Holland, Kew Bull. add. ser. IX, 4 (1922): 704 (err. not of N.E.Br. but (L.) Salisb.); Smith, Fl. Vit. Nov. I (1979): 152.

*Sansevieria fragrans* (L.) Jacq.; Jacquin, Fragm. Bot. (?1800): 5, t. 2 f. 6; Id., loc. (?1801): t. 33 f. 1 (see note).

*Cordyline fragrans* (L.) Planchon; Planchon, Fl. Serres VI (1851): 11, 132, 136; Goeppert, Nova Acta (1855): 52.

*Draco fragrans* (L.) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710; Baillon, Hist. Pl. (1894): 488.

Heterotypic synonyms: *Dracaena smithii* Baker ex Hook.f.; Hooker f., Bot. Mag. (1875): t. 6169; André, Ill. Hort. 23 (1876): 36; Regel, Gartenflora 25 (1876): 244; Masters & Moore, Gard. Chron, 1883-II: 597; Nicholson, Ill. Dict. Gard. I (1885): 491; Durand & Schinz, Consp. Fl. Afr. (1893): 331; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 440; Wiegand in Bailey, St. Cycl. Hort. I (1914): 1070; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384; Dalziel, Us. Pl. W. Trop. Afr. (1937): 493; Chittenden, Dict. Gard. II (1951): 711; Aké Assi, Contr. Et. Fl. Côte d'Ivoire II (1963): 235 (p.p., excluding *Linder 654* = *D. arborea* (Willd.) Link); Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 156 (p.p., excluding *Lyon 2873* = *D. congoensis* Hua). Type: *Culta Kew Gardens dd. 1 1874* (K lecto).

*Dracaena kerstingii* Engl. & Krause is a name without any status on the label of *Kersting 611* (B).

Diagnostic characters: Shrubs or trees to over 15 m tall, often planted as ornamentals and in fences, leaves lorate-oblongate less than  $\frac{1}{2}$  to  $1\frac{1}{2}$  m long, up to about 10 cm wide, inflorescence a branched panicle, erect or pendulous, up to about  $1\frac{1}{2}$  m long, flowers in well spaced stalked or sessile multiflowered more or less spherical glomerules, accompanied by small scarious white bracts, about 2 cm long, the perianth tube shorter than the lobes, fruits depressed globose, less than 2 cm in diameter.

Description: Single stemmed *shrubs* to branched trees,  $1\frac{1}{2}$ –15 m or even more tall, main trunk may surpass 30 cm in diameter. *Leaves* lorate-oblongate, the widest part distinctly above the middle, (30–)40–125(–150) cm ×



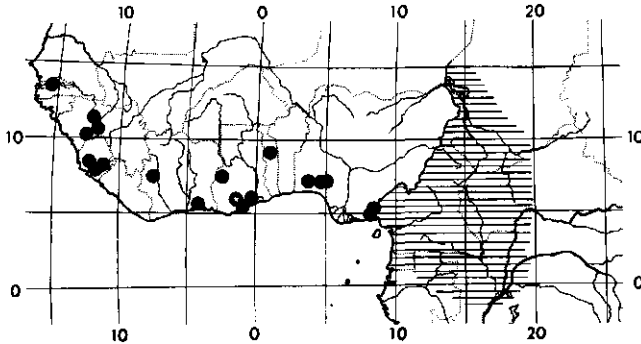
FIG. 13. *Dracaena fragrans* (L.) Ker Gawler: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. leaf,  $\frac{2}{3} \times$ . (1 & 2. Aké Assi 9417).

(3-)4-10(-12) cm, tip acute with a subulate mucro up to 4(-8) mm long, narrowly cuneate towards the base, narrowest part (8-)10-35(-43) mm wide few cm above the sheathing base enveloping the supporting stem; bright green and lacking a midrib above, paler beneath, midrib usually prominent for three quarters of its length, parallel nervature distinct in herbarium secondary venation if visible, irregularly transverse; variegation as shown in several horticultural clones has not yet been recorded in West African collections. *Inflorescence* a branched terminal panicle, erect, inclined or bend over and pendulous with a zigzag main axis, (30-)40-100(-160) cm long with up to 22 to  $\frac{1}{2}$  m long branches, 30-15 cm long, transitional leaves on the peduncle may form a series rapidly decreasing in size with the bracts subtending the inflorescence branches, flowers arranged in usually multiflowered stalked or sessile spherical glomerules evenly distributed over branches and the unbranched apex of the main axis, with 2 glomerules on each side of the base of the larger branches, in large inflorescences such lateral glomerules usually stalked at the lowest branches; the flowers accompanied by broadly triangular white scarious bracts up to 3(-5) mm long, usually slightly shorter than the 2-5 mm long persistent pedicels. *Flowers* white, often with fine red lines down the centre of each lobe outside, (15-)18-22(-25) mm long, receptacle obconical, indurated,  $1\frac{1}{2}$ -3 mm, perianth tube (5-)8-10(-11) mm long, shorter than the (8-)9-11(-12) mm long lobes, these up to 3 mm wide with a single central vein, stamens inserted at the throat, filaments inflated, up to  $\frac{3}{4}$  mm in diameter, tip subulate, 1-3 mm shorter than the corresponding perianth lobe, anthers 2-2 $\frac{1}{2}$  mm  $\times$  1 mm, ovary cylindrical to bottle-shaped, 2-3(-4) mm  $\times$   $1\frac{1}{2}$ -2 mm, style terete,  $\frac{1}{4}$  mm in diameter, stigma 3-lobed, 1 mm across, 1-3 mm exserted. *Fruits* bright orange, depressed globose, 11-18 mm long, 13-19 mm in diameter, lobed when more seeded, with a persistent up to 5 mm long receptacle. *Seeds* white, turning brown when exposed, with a brown patch enveloping the raphe, rounded-rectangular to bean-shaped, 10-14 mm  $\times$  8-9 mm  $\times$  5-7 mm. *Seedlings* produce orange roots, juvenile leaves ovate, acute, lacking the constriction above the sheathing base.

*Distribution:* *D. fragrans* is distributed throughout tropical Africa, from Gambia to East Africa and South to Angola. It is frequently cultivated and as such it has been introduced almost universally, notably as indoor ornamental in temperate regions.

*Notes:* The present treatment of *D. fragrans* is restricted to its relations with West Africa and its occurrence there.

Its great range in sizes has caused considerable confusion in the past, larger plants were regularly mistaken for *D. arborea*, while smaller specimens of other species, particularly of *D. congoensis*, have been repeatedly mistaken for *D. fragrans*. As has been observed already the particular arrangement of the flowers in spherical multiflowered glomerules and the absence of the distinct persistent pedicels peculiar to *D. arborea* are the most convenient characters to distinguish both species, while apart from differences in size and shape, the unbranched



MAP 11 *Dracaena fragrans* (L.) Ker Gawler ● Based on sterile collection only.

character of the inflorescence usually identifies *D. congoensis*.

In West Africa *D. fragrans* is frequently planted, particularly in boundaries and this regards invariably concolorous domesticated wild plants. Concolorous and particularly variegated plants of this species have been cultivated in Europe for considerable time. WIJNANDS dates introduction into the Netherlands prior to 1690. Variegated plants have never been recorded spontaneously in West Africa and their origin remains obscure. At least some of them have come to Europe from Brasil, where it must have been introduced rather early as well. At present at least several variegated clones are still in culture as ornamental foliage plants, they are commercially referred to by a number of names of which 'Lindeni', 'Massangeana' and 'Victoria' are probably most frequently employed. An attempt to delimitate these forms more exactly and to provide them with proper cultivar names will have to be postponed until the entire range of the species has been investigated. A single case of artificial hybridization with another species, *D. surculosa* Lindley var. *surculosa*, has resulted in *Dracaena* × *masseffiana* Pennock ex Bos cv. Pennock, a clone probably restricted to culture in North America (BOS, Notes Bot. Gard. Edinb. 40 (1983): 535).

*Dracaena fragrans* (L.) Ker Gawler is ultimately based on COMMELIN's description and plates (Hort. Med. Amst. I (1697): t. 49 & II (1701): t. 4 f. 1 & 2). The first volume figures a sprouting stump (see phot. 2, p. 3), the second has two plates, the plant with a budding inflorescence and a second figuring it in full flower, showing differential characters. After 1753 this Commelin reference was involved in the circumscription of three taxa: *Agave foetida* L. (1756), *Aloë fragrantissima* Jacq. (May 1762) and *Aletris fragrans* L. (Sept. 1762). WIJNANDS has demonstrated the erroneous inclusion of the Commelin reference in *Agave foetida* which eliminates nomenclatural consequences for *Dracaena fragrans*. *Aloë fragrantissima* is an earlier name for and homotypic with *Aletris fragrans*. WIJNANDS objections against the typification of *Aletris fragrans* by LINN 440/4 as proposed by MARAIS & COODE are shared by me. As there is no evidence that LINNAEUS had this material at his disposal when describing



PHOT. 12. *Dracaena fragrans* (L.) Ker Gawler (photograph J. W. MUGGE).

*Aletris fragrans* it is not accepted by me as type material and the typification proposed by MARAIS and COODE is formally rejected here.

Whether the combination *Dracaena fragrantissima* is still available is doubtful. It has been employed to indicate cultivated plants of obscure identity in 1864, as is demonstrated on p. 413 of the Gardener's Chronicle of that year. It is mentioned collectively in a report on a flowershow in Brussels on April 24, 1864. Although this in itself does not constitute validation of this combination, it does not convince me that contemporary literature of horticultural signature does not either. In view of further investigation into this species in the remainder of its area of distribution including its horticultural history and variants, I decline at this point to draw the obvious consequences offered by *Aloë fragrantissima* Jacq.

It is curious to note that JACQUIN at once abandoned the epitheton *fragrantissima* for *fragrans* after LINNAEUS had published it. When on account of its fruits JACQUIN preferred to transfer it to *Sansevieria*, he referred to *Aletris fragrans* only and ignored his own designation as *Aloë fragrantissima*.

SALISBURY based *Pleomele fragrans* on *Aletris fragrans* L. and a collection by PATERSON from Van Staad River, by which is meant Van Stadens River, a locality in the Cape province of South Africa, well beyond the range of *D. fragrans*. I have not been able to trace this material, but the circumstance that this locality is a rather classical one for what is currently referred to as *D. hookeriana* K. Koch, the single species of *Dracaena* to occur so far South, I have little doubt that the Paterson reference concerns this species and not *D. fragrans*, and should therefore be excluded.

*D. smithii* was based on a living flowering plant in Kew, but HOOKER f. states that similar plants were present in the collection at Sion house. Their origin was not known with certainty, but HOOKER f. believed them to have been received from WHITFIELD around 1850. This would indicate an origin in West Africa, as WHITFIELD collected plants for LORD DERBY in Gambia, Guinea, Sierra Leone and Liberia. Prior to its publication, the Gardener's Chronicle (1875-I: 146) reported a new species of *Dracaena* flowering at Kew, stressing the similarity with plants that MANN had sent in 1862.

Later collections of these cultivated specimens illustrate changes in size as the plants grew older perfectly within the concept of *D. fragrans* presented here.

#### Specimens examined:

GAMBIA: Bathurst (fl. Jan.), Dalziel 8254 (K).

GUINEA: Labé (inf.), Chevalier 12391 (P); Fouta Djallon, Chevalier 12709 (P), 12800 (P); Kindia (fr. May), Chevalier 13546 (P), 13587 (P); Longuery, Chevalier 14783 (P), (fl. Dec.), 14784 (K, P).

SIERRA LEONE: sine loc. (fl.), Afzelius s.n. 'Aletris 2 a' (UPS), 'Aletris 2 b' (BM, UPS), mixture (BM), Deighton 2452 (K), 2453 (K); Panguma (fr. Febr.), Deighton 4001 (K, P); York (fl. Jan.), Deighton 4586 (K); Njala, Deighton 4616 (K, P); Baiima (fl. Aug.), Deighton 6109 (K).

IVORY COAST: Abadjidoumé (fl. Febr.), Aké Assi 9417 (K); mt. Tonkoui (fr.), Aubréville 1014 (HBG, P); Adiopodoumé (fr. June), Bos 10346 (WAG), (fl.), de Koning 5333 (WAG).

GHANA: Ankaful (fl. Febr.), Hall 1826 (K); Aburi Hill (inf.), Irvine 1818 (GC); Accra-Mankessim, Leeuwenberg 11101 (WAG); Takoradi rd, Leeuwenberg 11152 (WAG); Huhunya (fr. Oct.), Swaine & Abbiw GC 43792 (K); Adamsu (fl.), Vigne 3500 (K).

TOGO: sine loc. (fr. May), *Kersting A 366* (K); Sokodé-Basari (fr. Nov.), *Kersting 611* (B).

NIGERIA: Gambari F.R. (fr. Jan.), *de Wit & Onochie 8251* (WAG); Ife-Ife, *Hall 1173* (IFE), (fl. Nov.), *Isawumi 187* (IFE); Idanre (infl.), *Hall in Medler 121* (IFE); Ondo (fl., fr. Nov.), *Onochie FHI 34342* (B, K); Aking (fl. Febr.), *Onyeachusim & Latilo FHI 54003* (FHI, K, P); Calabar (fr. March), *Onyeachusim & Latilo FHI 54266* (K); Oban (fl.), *Talbot 1412* (BM, K).

Cultivated: Culta K ex *Mann 91 acc. 1862*, *dd. V 1882* (K), *dd. III 1883* (K); Culta K 'Sion House'. *dd. I 1874* (K), *dd. II 1875* (K), *dd. XII 1890* (K); Culta WAG ex Ivory Coast (seedl.), *van Setten 240* (WAG).

### ***Dracaena goldieana* Bullen ex Masters & Moore**

**Fig. 14; Map 12**

Masters & Moore, *Gard. Chron.* 1872: 1232; Id., loc. 1873: 5, 782, 881, 1670; André, *Ill. Hort.* 20 (1873): 33; Belg. *Hort.* 23 (1873): 30; *Florist & Pomol.* (1873): 167; Baker, *J. Bot.* XII (1874): 166; Id., *J. Linn. Soc.* 14 (1875): 535; *Bull. Cat.* 1877: 9, t. VIII; Id., *Gard. Chron.* 1877-II: 454; André, *Ill. Hort.* 25 (1878): 8, t. 300; Morren, *Belg. Hort.* 31 (1881): 85; *Gard. Chron.* 1881-I: 632; loc. 1881-II: 501; loc. 1882-I: 48, t. 6; Baker, *Bot. Mag.* (1882): t. 6630; *Gard. Chron.* 1883-I: 317; Nicholson, *Ill. Dict. Gard.* I (1885): 490; Witte, *Sempervirens* 14 (1885): 89; Durand & Schinz, *Consp. Fl. Afr.* (1893): 328; Baker in Thiselton-Dyer, *Fl. Trop. Afr.* VII (1898): 449; Engler, *Veg. Erde IX-II* (1908): 292; Wiegand in Bailey, *St. Cycl. Hort.* I (1914): 1070, t. 37; Holland, *Kew Bull. add. ser. IX* (1922): 702; Krause in Engler & Prantl, *Nat. Pfl. Fam. ed. 2*, 15a (1930): 359; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 384; Chittenden, *Dict. Gard.* II (1951): 710; Pareys *Blumeng. ed. 2* (1958): 310; Hepper in Hutchinson & Dalziel, *Fl. W. Trop. Afr. ed. 2, III-I* (1968): 156; Bailey & Bailey, *Hortus Third* (1976): 398.

Type: Cultivated in Edinburgh (see note).

Homotypic synonyms: *Cordylina goldieana* (Bull) de Vos; de Vos, *Belg. Hort.* 29 (1879): 111; *Gard. Chron.* 1898-II: 39.

*Draco goldieana* (Bull) Kuntze; Kuntze, *Rev. Gen.* II (1891): 710.

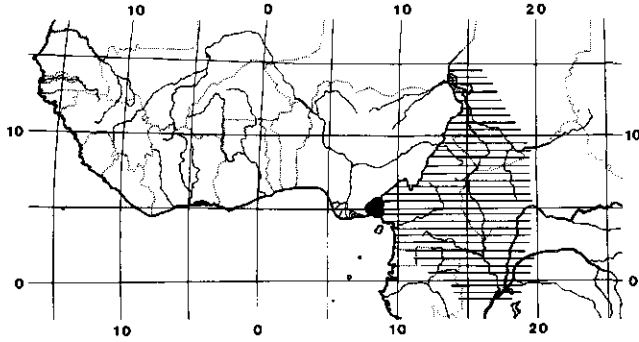
*Pleomele goldieana* (Bull) N.E.Br.; Brown, *Kew Bull.* 1914: 278; Backer, *Fl. Java III* (1930): 68; St. John, *Summ. Fl. Pl. Hawaii* (1973): 84.

Description: Erect *shrublet*, 30–60 cm, stem diameter up to 1 cm, leafy from top to bottom. *Leaves* (9–)18–27(–35) cm long consisting of an ovate blade (2½–)4½–6½(–11) cm wide with acuminate tip, 3–5 mm long filiform mucro and rounded base passing abruptly into the (2½–)3–7(–8) cm long false petiole clasping the stem for rather more than its circumference with a rather open, 1½–3(–5) cm long sheath. Upper surface apparently rather dark green with conspicuous variegation of irregular, grey transverse bands, persistent in herbarium specimens, midrib indicated by a denser distribution of the rigidly parallel nervature, secondary veins not visible, concolorous beneath, sometimes washed with purple (according to literature), midrib prominent for about ¾ of its length, diffuse towards the tip, parallel nerves similar as above but some slightly more pronounced and about ½ cm apart. Mature specimens from West Africa do not seem to have been collected so far.





FIG. 14. *Dracaena laxissima* Engl.: 1. flowering branch,  $\frac{2}{3} \times$ . (*Bos 3617, Laan 184* spir. coll.). *Dracaena goldieana* Bullen ex Masters & Moore: 2. Variegated leaf,  $\frac{2}{3} \times$ . (*Holland 195*).



MAP 12. *Dracaena goldieana* Bullen ex Masters & Moore

**Distribution:** Shady high forests of SE Nigeria, extending into Central Africa.

**Notes:** *Dracaena goldieana* was discovered by the Rev. HUGH GOLDIE in Calabar, Nigeria. He sent living material to Edinburgh, that may have arrived in 1870 or 1871. Mr. BULLEN of the Royal Botanic Garden exhibited a plant of GOLDIE's in 1872 in a Glasgow flowershow under the name *D. goldieana*. This is witnessed by an unsigned report in the Gardener's Chronicle of that year, giving an adequate description of this remarkable new ornamental foliage plant. This article must be ascribed to the editors of that journal, messrs MASTERS and MOORE. It is most likely that the eminent horticulturist WILLIAM BULL made his acquaintance with *D. goldieana* at this occasion.

BULL obtained the plant from the Edinburgh Garden shortly after, and proceeded to exhibit it with much success on flowershows in 1873 and after. It was widely hailed as the most remarkable novelty of its kind in those days, and although flowers nor fruits were yet known, BAKER accepted it as a species in 1874, accrediting its name to WILLIAM BULL. Meanwhile slow growth and limited stock prevented its propagation and Bull's nurseries were not able to offer plants for sale before 1877, as is shown in BULL's catalogues and advertisements (Gard. Chron. 1877). References of *D. goldieana* to BULL of 1871 are erroneous and stem from its entry in the Flora of Tropical Africa where, possibly due to a printer's error the year 1871 figures instead of 1877.

By 1880 *D. goldieana* was incorporated in leading plant collections in Europe, very likely as clonal material from Goldie's introduction distributed by BULL's nurseries, and flowering was reported from Marseille for the first time. In Kew Gardens this did not happen before 1882 when a flowering specimen was figured in the Botanical Magazine. Slow growth of cultivated plants restricted to the plantstove possibly accounts for its declining popularity in the years after, although *D. goldieana* never completely vanished from living plant collections till our day.

Evidence of its presence in West Africa rests on four collections from SE Nigeria cited hereafter. They represent juvenile plants that have not yet flowered and all specimens retain the characteristic variegation. Comparatively recent collections from Cameroun comprise specimens with rather dense inflorescences resembling those figured in the Botanical Magazine. However an old cultivated specimen in the glasshouse at WAG has repeatedly flowered with a quite different, widely branched inflorescence. Recently several new introductions from Gabon have been taken into cultivation at WAG that have not yet flowered.

As the first description of *D. goldieana* in the Gardener's Chronicle was based upon a single living specimen-plant of undoubtedly great value, it is unlikely that any material of that particular plant was ever conserved and, actually I was unable to trace herbarium material of that origin. Due to the prevailing diversity in inflorescences – an element absent in the original material – typification by the original description is not warranted. A plausible choice for neotypification would be a herbarium specimen from a plant cultivated at Kew dated March 21, 1882, annotated as type of *Bot. Mag. t. 6630* (K). I suspect this plant to originate from BULL's nurseries, but there is no evidence for this on the label. It simply states West Africa, while references to BULL's catalogues were added at a later date, obviously copied from Flora of Tropical Africa, including the erroneous citation of 1871 and typographical peculiarities. As the present treatment of *D. goldieana* is restricted to West Africa, I prefer to postpone the formal neotypification of this species until I have analysed the Cameroun and Gabon material as well as the cultivated plants with aberrant inflorescences.

**Specimens examined:**

NIGERIA: Oban F.R., *Hall s.n. UIH 17954* (UCI); Uwet, *Holland 195*(K); Orem, *Onochie FHI 36304* (FHI); Oban-Okarara, *Ujor FHI 30833*(B).

***Dracaena laxissima* Engl.**

**Fig. 14, p. 77; Map 13**

Engler, *Bot. Jahrb.* 15 (1892): 478; Baker in Thiselton-Dyer, *Fl. Trop. Afr.* VII (1898): 446; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 386; Dalziel, *Us. Pl. W. Trop. Afr.* (1937): 494 (p.p., quo ad Holland not Unwin); Hepper in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* ed. 2 III-I (1968): 157.

Type: Zaïre, Mukenge, *Pogge 1462* (B holo).

Homotypic synonyms: *Dracaena laevissima* Engl. ex Durand & Schinz (nomen inval.); Durand & Schinz, *Consp. Fl. Afr.* (1893): 328 (lapsus calami).

*Pleomele laxissima* (Engl.) N.E.Br. teste Hutchinson (nomen inval.); Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 386 (in syn.); Hepper in *Id.* ed. 2, III-I (1968): 157 (in syn., see note).

Heterotypic synonyms: *Dracaena elegans* Hua; Hua, *Contr. Fl. Congo fr.*, Lil. (1897): 13 = Bull. Soc. Hist. Nat. Autun X (1897): 665; Baker in Thiselton-Dyer, *Fl. Trop. Afr.* VII (1898): 446; Holland, *Kew Bull. add. series IX* (1922): 702 (p.p., quo ad Farquhar). Type: Gabon, Sanga, *Leroy s.n.* (P holo, K iso).

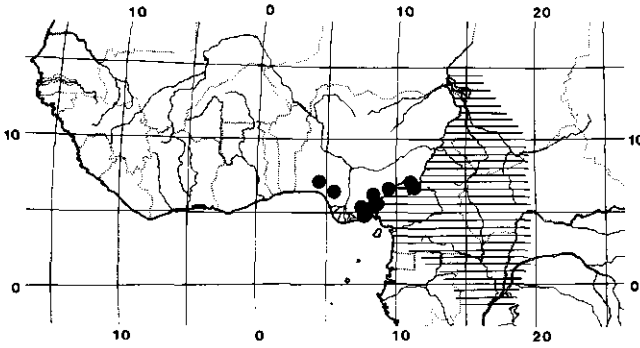
Homotypic synonym: *Pleomele elegans* (Hua) N.E.Br.; Brown, Kew Bull. 1914: 278.

Diagnostic characters: Slender branched shrubs, leaves distichously arranged along stems and branches, generally elliptic and usually with slightly unequal sides and a more or less curved midrib, up to 20 cm long, petiole represented by a tightly inrolled sheath up to  $1\frac{1}{2}$  cm long, inflorescence spreading more or less horizontally to pendulous, up to  $\frac{1}{2}$  m long, usually with several perpendicular branches, flowers distributed individually, pendulous on slender pedicels, perianth up to 2 cm long, consisting of a receptacle up to  $\frac{1}{2}$  cm, a shorter tube and lobes of about 1 cm, fruits globose, about 1 cm in diameter with an elongate receptacle.

Description: Slender *shrubs*, often supported by surrounding vegetation, usually not over 2 m tall, stems smooth, grey-brown to grey with well spaced annular leafscars, erect in their lower part, terminally spreading horizontally. *Leaves* alternate, evenly distributed, distinctly distichous towards the ends of branches, generally elliptic, occasionally ovate or obovate, lateral halves slightly unequal resulting in a more or less curved midrib, (4-)12-18(-20) cm  $\times$  (1-)3-6(-7) cm, tip acuminate, mucro awl-shaped 1-3 mm long, base broadly cuneate to rounded, petiole consisting of a tightly inrolled sheath clasping the stem completely at its base, deltoid in outline when flattened out, (3-)8-14(-15) mm long; shiny bright to dark green above, parallel nervature distinct, evenly spaced, medially condensed into the costa, secondary veins not visible, distinctly paler beneath, midrib prominent over its entire length, flanked by evenly spaced parallel nerves. *Inflorescence* terminal, continuous to the supporting branch, borne more or less horizontal, not erect, or more often reflexed and pendulous, (5-)15-30(-50) cm long, rarely simple, usually with up to 10 perpendicular branches, each in the axil of a narrowly triangular bract about 2 cm long, bracts shorter in distal branches, each branch-base with a distinctly shorter or even vestigial prophyll inserted in an opposite position to the bract, branches usually perpendicular to the main axis, the lowest longest and sometimes branched, rendering a conical outline to the entire inflorescence. *Flowers* greenish-white, distributed singly, each with a sheathing bract  $1\frac{1}{2}$ -3 mm long and a slightly shorter bracteole enveloping the base of the pedicel, pedicel jointed below the pendulous flower, (2-)4-10(-17) mm long, slender, persistent on the inflorescence; perianth 17-18(-20) mm long, including the somewhat indurated obconical 5 mm long receptacle, perianth tube up to 3 mm, slightly longer than the ovary, free lobes 9-10 mm  $\times$   $2\frac{1}{2}$  mm, showing a single median costa, stamens inserted about 1 mm above the throat, filaments inflated,  $\frac{1}{2}$ -1 mm in diameter with a subulate incurved tip, about  $1-1\frac{1}{2}$  mm shorter than the corresponding perianth lobe, anthers oblong, about 2 mm  $\times$  1 mm, ovary cylindrical,  $2\frac{1}{2}$  mm  $\times$   $1\frac{1}{2}$  mm, top rather concave, style terete, about  $\frac{1}{4}$  mm in diameter, reaching the top of the perianth, stigma capitate, 3-lobed, about  $\frac{1}{2}$  mm in diameter. *Fruits* rather dark green in development, turning orange red when mature, globose, distinctly lobed

when more than 1-seeded, 6–9(–12) mm in diameter, receptacle persistent, slightly accrescent, 7–8 mm long. *Seeds* globose, flattened against adjacent seeds if present, 4–6(–7) mm in diameter.

**Distribution:** *D. laxissima* is a forest species distributed over most of tropical Africa. In West Africa it is restricted to Nigeria.



MAP 13. *Dracaena laxissima* Engl.

**Notes:** *D. laxissima* is rather characteristic in appearance partly due to its comparatively small elliptic leaves. The few species with similar leaves, such as *D. surculosa* Lindley and (Asiatic) *D. elliptica* Thunb. may be distinguished from it by their strictly symmetrical leafshape.

When BROWN revived *Pleomele* in 1914 and shifted the bulk of the *Dracaena* species to that genus, he should have included this species. However, possibly by oversight, he did not propose the combination *Pleomele laxissima*. HUTCHINSON (1936) implies that he did by referring to *P. laxissima* Brown. As he did not accept *Pleomele*, he cited the combination in the synonymy of *D. laxissima*. HEPPEL (1968) repeated this. As I do not recognize *Pleomele* either, the combination *Pleomele laxissima* remains invalid.

HUA provided this taxon with the name *Dracaena elegans* in 1897, *D. elegans* Hua is conspecific with *D. laxissima* as was rightly claimed by HUTCHINSON in 1936. Unfortunately the combination *Dracaena elegans* had been used previously in a different sense from HUA's, indicating a horticultural form of *Cordyline fruticosa* (L.) A. Chev. This is well illustrated by its entry in *Index Londinensis*. Although I have not yet established whether this earlier interpretation of *Dracaena elegans* was validated somewhere in the realm of horticultural literature, it probably was, rendering Hua's interpretation illegitimate. As BROWN (1914) did not omit to recombine HUA's name in *Pleomele*, *Pleomele elegans* (Hua) N.E.Br. remains a valid combination, albeit that I consider it to be a synonym of *D. laxissima*.

DALZIEL's references to UNWIN are not acceptable for *D. laxissima*. UNWIN does not treat this species but an unidentified arborescent *Dracaena* which may be any of the larger woody species in West Africa.

### Specimens examined:

NIGERIA: Cross R., *Ariwaodo* 858 (MO, WAG); Mambilla Plateau (fl. b. Aug.), *H.M. Chapman* 80 (K), (fr. Febr.), *J.D. Chapman* 2658 (K, WAG), (fl. b. July), 2966 (WAG), (fl. Aug.), 4598 (K); Bende F.R. (fl. b. March), *Emwiogbon* 273 (FHI); Ikpoba (fl. b. June), *Farquhar* 13 (K); Omo F.R. (fl. June), *Gentry & Pilz* 32807 (MO); Boshi Extension F.R. (fl. June), *Hall* 2937 (IFE); Oban F.R., *Hall s.n.* (UCI); Shasha F.R. (fr. Sept.), *Latilo* FHI 67540 (K, P); Ukpon F.R. (fr. May), *Olorunfemi et al.* FHI 76402 (FHI); Nikrowa (fr.), *Onochie* FHI 34321 (K); Oban, *Talbot* 2405 (BM); Eket (fl. b.), *Talbot s.n.* (BM); Itu (fr. June), *Ujor* FHI 2799 (K).

CAMEROON: Kribi (fl. Jan.), *Bos* 3617 (WAG), for additional flowering material.

### *Dracaena mannii* Baker

Fig. 15, 16; Map 14

Baker, *J. Bot.* XII (1874): 164; Id., *J. Linn. Soc.* 14 (1875): 526; Durand & Schinz, *Consp. Fl. Afr.* V (1893): 328; Vilmorin's *Blumeng.* I (1895): 1064; Baker in *Thiselton-Dyer*, *Fl. Trop. Afr.* VII (1898): 438; Engler in Engler & Drude, *Veg. Erde IX-II* (1908): 291; Lane Poole, *Trees Shr. H. & Cl. Sierra Leone* (1916): 34 (n.v.); Chevalier, *Bot.* I (1920): 645 (sub *D. arborea* Hort. Angl. toto), 646 (sub *D. fragrans* (L.) Ker Gawler p.p., quo ad n. 22104); Holland, *Kew Bull.*, add. series IX (1922): 703; Irvine, *Pl. Gold C.* (1930): 167; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 384 (excluding *Mildbread* 10571 & *Talbot* 729 = *D. mildbraedii* K. Krause, see note); Dalziel, *Us. Pl. W. Trop. Afr.* (1937): 494; Soussa, *An. Junta Inv. Col.* 6 (1951): 50; Roberty, *Pet. Fl.* (1954): 338 (in syn. to *D. arborea* (Willd.) Link); Aubréville, *Fl. For. Côte d'Iv.* ed. 2, III (1959): 320; Irvine, *W. Pl. Ghana* (1961): 770; Keay, Onochie & Stanfield, *Nig. Trees* (1964): 440 (excluding *Talbot* 729 = *D. mildbraedii* K. Krause); Berhaut, *Fl. Senegal* ed. 2 (1967): 321; Hepper, *Kew Bull.* 21 (1968): 491 (see note); Id., loc. cit. 22 (1968): 451; Id. in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* ed. 2, III-I (1968): 156; Mouton, *Adansonia* ser. 1, 15 (1976): 410.

Type: Nigeria, Old Calabar, *Mann* 2339 (K lecto, A, B, K, P, WAG iso-), *Thomson* 8 (E, K, para-).

Homotypic synonyms: *Draco mannii* (Baker) Kuntze; Kuntze, *Rev. Gen. Pl.* II (1891): 710.

*Pleomele mannii* (Baker) N.E.Br.; BROWN, *Kew Bull.* 1914: 278.

Heterotypic synonyms: *Dracaena perrottetii* Baker var. *perrottetii*; Baker, *J. Bot.* XII (1874): 165; Id. *J. Linn. Soc.* 14 (1875): 528; Durand & Schinz, *Consp. Fl. Afr.* V (1893): 329; Vilmorin's *Blumeng.* I (1895): 1065; Baker in *Thiselton-Dyer*, *Fl. Trop. Afr.* VII (1898): 438 (excluding *Moloney* 2, see note); Pobéguin, *Ess. Fl. Guin. fr.* (1906): 256 (quo ad *Dracaena* indet n. 1224); Engler in Engler & Drude, *Veg. Erde IX-II* (1908): 291; Thonner, *Blütenpfl. Afr.* (1908): t. 18; Chevalier, *Bot.* I (1920): 647; Aubréville, *Fl. For. Côte d'Iv.* III (1936): 278; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* II (1936): 384 (in syn.); Hepper, *Kew Bull.* 22 (1968): 451; Id. in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* ed. 2, III-I (1968): 157 (excluding *Moloney* 2, see note); Adjanohoun & Aké Assi, *Contr. Pl. Med. Côte d'Iv.* (1979): 9.

Type: Senegal, Casamance, *Perrottet* 785 (G lecto, K, P iso); Nigeria, Nupe, *Barter* 1511 (K para).

Homotypic synonyms: *Draco perrottetii* (Baker) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710. *Pleomele perrottetii* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena perrottetii* Baker var. *minor* Baker; [Baker, J. Bot. XII (1874): 165]; Baker, J. Linn. Soc. 14 (1875): 529; Durand & Schinz, Consp. Fl. Afr. V (1893): 329; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384 (in syn.). Type: Guinea, Rio Nunez, *Heudelot* 2838 (K holo). Homotypic synonym: *Pleomele heudelotii* N.E.Br.; Brown, Kew Bull. 1914: 278.

*Dracaena thomsoniana* J. H. Veitch ex Masters & Moore; Masters & Moore, Gard. Chron. 1882-II: 56; Florist & Pomol. 1882: 122; de Vos, Belg. Hort. 33 (1883): 328; Kew Bull. add. series IV (1900): 166. Type: the protologue (see note).

Diagnostic characters: Shrubs or trees, occasionally up to 30 m tall, locally planted as hedges or boundary-markers, leaves dagger-shaped usually 10 times as long as wide and not exceeding  $\frac{1}{2}$  m, inflorescence usually branched, yellow to orange, pedicels persistent not exceeding 1 cm, articulated at the top, flowers usually 2–4 together, not over  $3\frac{1}{2}$  cm long, the lobes about twice as long as the tube, fruits globose 1–3 cm in diameter, turning brown prior to their orange-scarlet colour at maturity.

Description: Rather weak *shrubs* to trees, occasionally over 30 m tall and 2 m in diameter, exceptionally developing stiltroots, younger stems and branches yellow-brown with a prominent pattern of raised crescent-shaped leafscars, each with the horns turned upwards, old bark smooth, grey, longitudinally fissured and scaly, it may produce resin. *Leaves* densely distributed along the stems with a tendency of crowding towards the apex, not forming distinct pseudowhorls, much wider spaced on young fast growing shoots, narrowly oblong elliptic to obovate, usually about 10 times as long as wide, juvenile leaves and those on non-flowering fast-grown branches distinctly narrower, up to 20 times as long as wide, (4–)10–40(–50) cm  $\times$  (3–)8–35(–45) mm, tip acute with a slender subulate mucro to 2(–3) mm long, base gradually cuneate, this condition emphasized by locally inrolled margins, (1–)2–8(–15) mm wide at its narrowest part directly above the abruptly flaring leafbase, clasping the stem for half its circumference, fresh leaves medium to dark green above, lacking any form of variegation, midrib absent but for a median concentration of parallel nerves of a slightly deeper shade of green, secondary veins not visible, distinctly paler beneath, parallel nerves concentrated into a costa that may be distinctly prominent in the lower half, secondary veins sometimes visible. *Inflorescence* terminal, continuous to main stems and branches, rarely in axillary position in the form of a dwarf shoot, (11–)15–45(–57) cm long, racemose to paniculate with up to 20 racemose branches not over 20(–40) cm long, leaves of the supporting stem show a gradual or rather abrupt decrease in size in transition to a limited number of bracts on the peduncle, these forming a series decreasing in size with the bracts subtending the branches, flowers arranged in clusters of (1–)2–4(–6) flowers

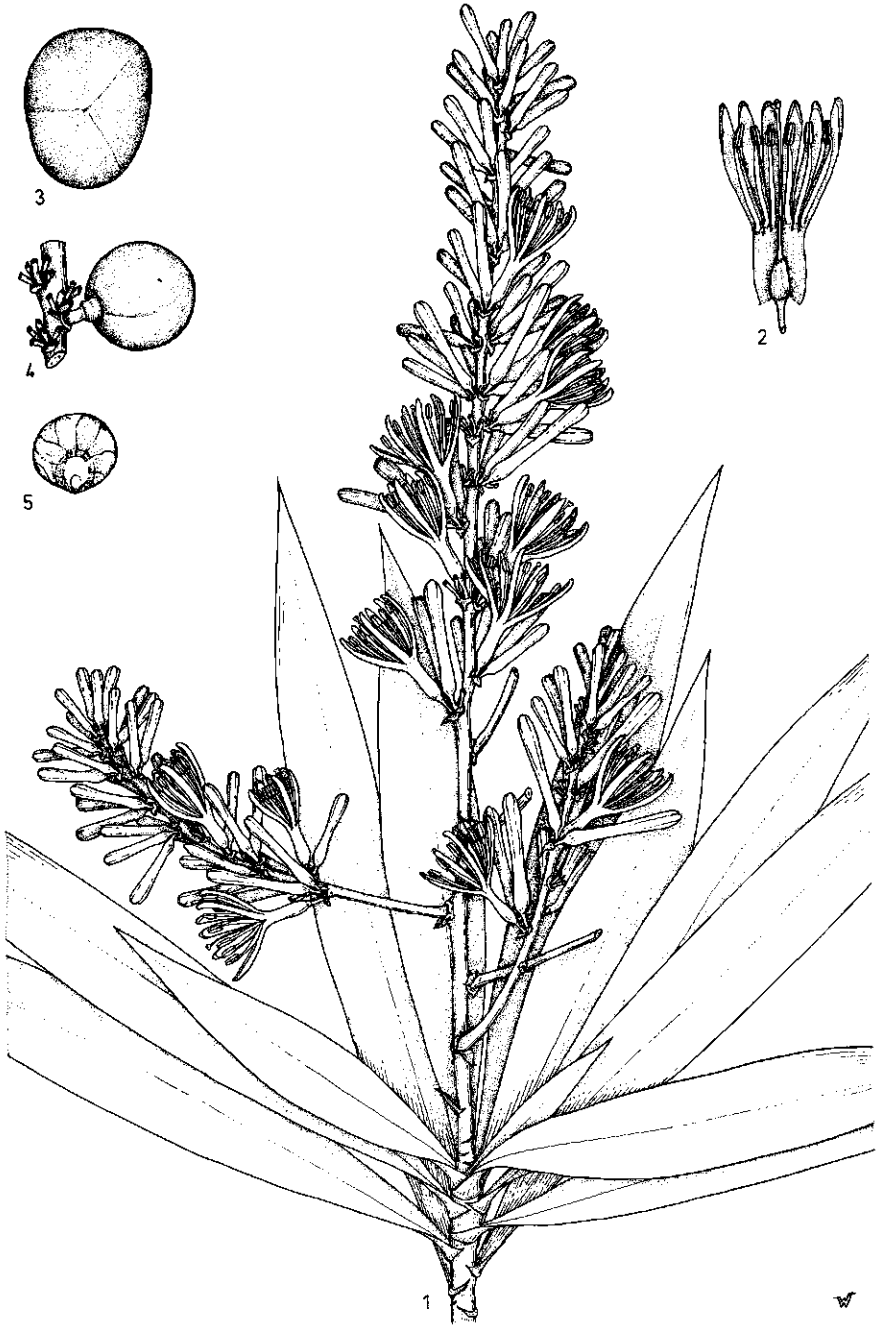
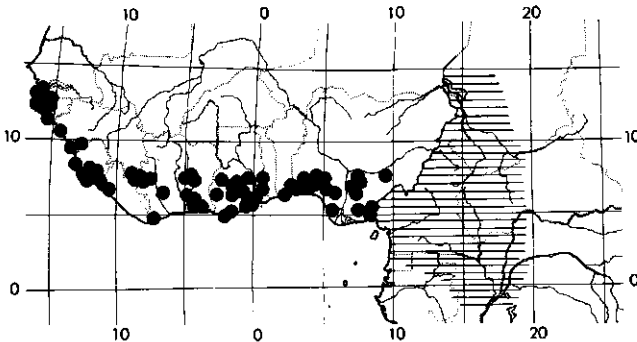


FIG. 15. *Dracaena mannii* Baker: 1. Inflorescence,  $\frac{2}{3} \times$ ; 2. flower laid open,  $1 \times$ ; 3. fruit,  $\frac{2}{3} \times$ ; 4. fruit,  $\frac{2}{3} \times$ ; 5. seed,  $\frac{2}{3} \times$ . (1 & 2. de Koning 6557; 3-5. van der Burg 478 spir. coll.).



each, clusters subtended by a small triangular bract usually about 1(-5) mm long, rarely absent, flowering pedicel 1-2 mm long, articulated at its apex, it may elongate considerably up to 7(-9) mm in fructification. *Flowers* greenish to creamy-white, fading cream-yellow, (9-)12-30(-35) mm long, receptacle obconical, indurated 1-1½ mm long. perianth tube 3-10 mm long, lobes about twice as long, 8-24 mm and up to 3 mm wide, those of the outer whorl may show 3(-7) parallel veins, those of the inner whorl a single one, stamens inserted about 1 mm above the throat, filaments inflated up to 1 mm diameter, straight subulate tip, (1-)2-3(-5) mm shorter than the corresponding perianth lobe, anthers 2-3 mm × 1 mm, ovary bottle-shaped 2½-4(-5) mm × 1-2 mm, style terete, up to ½ mm in diameter, reaching the apex of the perianth, stigma capitate, sometimes shallowly 3-lobed. *Fruits* green in development, turning brown when still immature, orange-scarlet when ripe, globose, (10-)14-30 mm × (10-)12-32 mm, retaining the accrescent (1-)2-3(-5) mm long receptacle. *Seeds* with a thin brown testa with a rather wide reticulation and the micropilar area in the centre of a large pale dot, globose, (7-)10-20(-21) mm in diameter. *Seedlings* produce considerably narrower leaves.

**Distribution:** *D. mannii* is common in West Africa from Senegal to Nigeria. Revision of *Dracaena* in the remainder of tropical Africa will reveal its frequent occurrence in a much wider area as well.



MAP 14. *Dracaena mannii* Baker

**Notes:** The present treatment is restricted to West Africa. When BAKER proposed *D. mannii* and *D. perrottetii* simultaneously in his treatment on African *Dracaenas* in 1874, he indicated a clear difference in flowersize, but overemphasized differences in size and shape of the leaves in order to segregate both species. In 1874 BAKER recognized a variety in *D. perrottetii* based on a small leaved specimen with simple racemes. This variety was validated in his monograph of 1875 when it received a name. In his treatment of *Dracaena* for the Flora of Tropical Africa BAKER no longer insisted on differences in leafshape describing the leaves of both species as 'ensiform'.

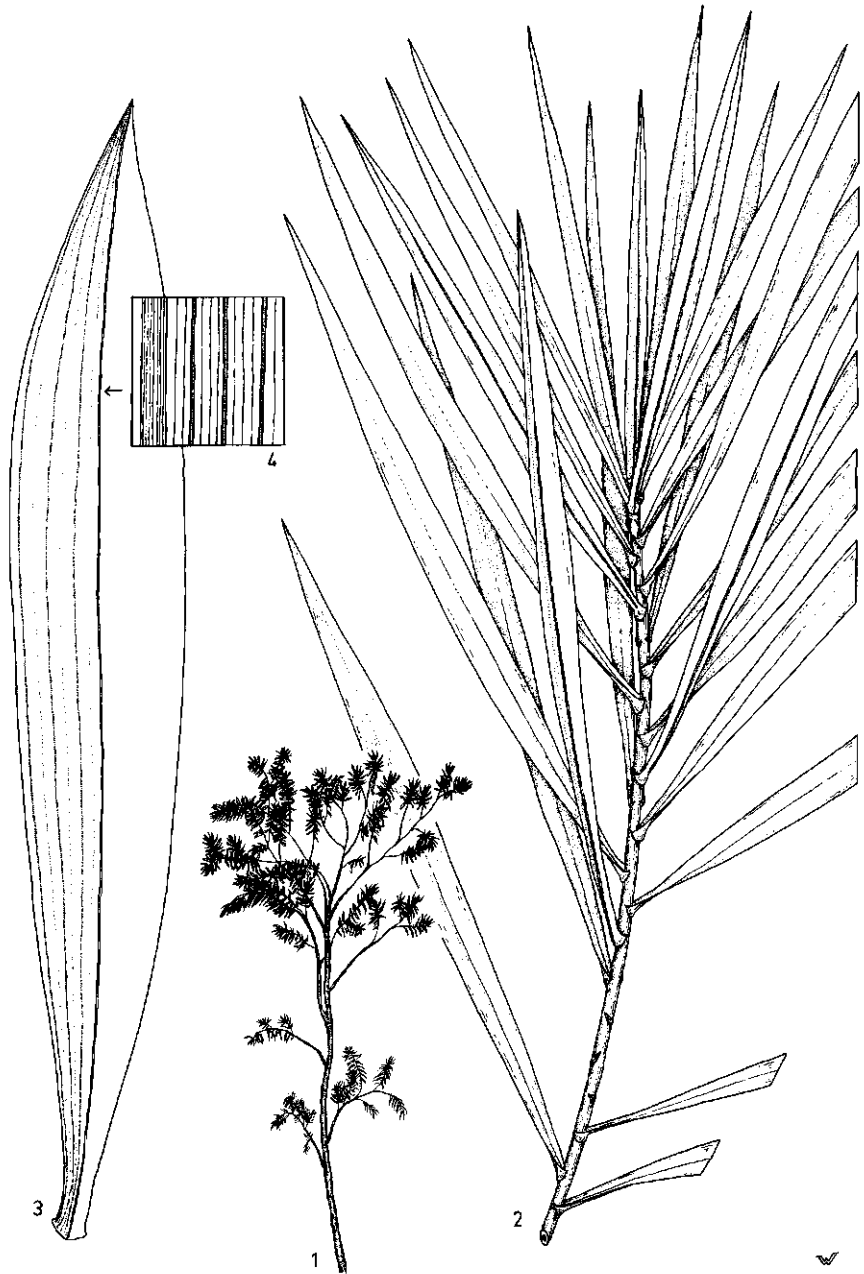


FIG. 16. *Dracaena mannii* Baker: 1. Habit, much reduced; 2. young shoot,  $\frac{2}{3} \times$ ; 3. leaf,  $\frac{2}{3} \times$ ; 4. inset: leaf detail,  $4 \times$ . (1. living plant in Conservatory WAG; 2. *Carpenter 241*; 3 & 4. *de Koning 6557*).

HUTCHINSON did not accept the two separate species and treated them as one, for which he retained the name *D. mannii*, without recognizing any taxa of sub-specific rank.

HEPPER did not concur but admitted his inability to segregate both species on macroscopic leaf characters only. He maintains both species on the grounds of the obvious difference in flowersize of the type material, supported by characters of the epidermal cells of the leaf surface. These anatomical characters were compared to those of four Central African specimens. The least similar one of these belongs to *D. afromontana* Mildbr., a distinct species. The other three were reported to compare well with *D. perrottetii* and they were identified as belonging to *D. nitens* Welw. ex Baker and *D. usambarensis* Engl., taxa I suspect to be synonymous with *D. mannii*.

Careful examination of the available West African material revealed that the size of the flowers tends to vary between limits set by the type specimens of the two species involved. The Berlin isotype of *D. mannii* for instance includes a considerably larger flower than any of its duplicates in the other herbaria. Under these circumstances I fully endorse HUTCHINSONS view to treat them as one variable species.

HUTCHINSON cited the specimens *Mildbraed 10571* and *Talbot 729* erroneously under *D. mannii* in the first edition of the Flora of West Tropical Africa. Both specimens are conspecific and belong to *D. mildbraedii* K. Krause, a species hitherto not recognized in West Africa.

The specimen *Moloney 2* cited by BAKER in Flora of Tropical Africa and retained by HEPPER in *D. perrottetii* is not accepted by me in *D. mannii*. It was collected in Lagos, Nigeria and it has leaves that are five rather than ten times as long as wide. Its flowers are distributed singly rather than in clusters and they are considerably longer than the largest ones in *D. mannii* with perianth lobes that are rather shorter than the tube. Although I have not been able to trace *Stanfield FHI 47067* from Apapa near Lagos, Nigeria, Keay's description of an unidentified arborescent *Dracaena* based on this specimen leaves me little doubt that it is conspecific with *Moloney 2*. Recent acquisitions from coastal localities in Gabon show distinct affinities with this specimen. However, the taxonomic status of this material cannot be fully appreciated prior to analysis of related taxa from Central Africa.

*Dracaena thomsoniana* J. H. Veitch ex Masters & Moore concerns a plant exhibited by Messrs VEITCH & SONS on July 5, 1882, at the Royal Botanic Society, where it received a Botanical Certificate. Reports covering this flowershow provide all essential requirements for validation. The first one of these reports appeared in the July 8 issue of the Gardeners Chronicle of that year. As the author of this particular article is not identified in any way, I feel justified in accrediting it to the editors of the Gardeners Chronicle of that time, i.e. M. T. MASTERS and T. MOORE. The same article reveals the origin of the plant to be West Africa, while its erect habit is compared to that of a *Cordyline* with long bright green leaves, no doubt in the way of *Cordyline australis* (Forst.f.) Endl. These data preclude its identification with any of the available *Dracaena*

species with the exception of *D. mannii* in its seedling stage. As such *D. thomsoniana* constitutes a superfluous name for *D. mannii*. Its description was based on a living exhibition plant of which no pictures exist and certainly no herbarium material was retained. For these reasons the name should be typified by the protologue itself. It does not seem to have met with any commercial success and it has not been reported since.

#### Specimens examined:

SENEGAL: Marsassoum, *Adam* 13711 (MO); Casamance (fl. b. Jan.-Febr.), *Chevalier* 2572 (BR, P); Mampalago (fl. b. Febr.), *Chevalier* 2573 (P); Itou, *Chevalier* 2574 (P), (fl. b. Jan.), 2575 (K, P); sine loc. (fl.), *Heudelot s.n.* (P); Casamance (fl. April), *Perrottet* 785 (G, K, P).

GAMBIA: Kombo (fr.), *Heudelot s.n.* (G, P, WAG); Albreda (fl. March), *Perrottet* 785 (G); Lamin, *Rosevaer* 32 (FHO).

GUINEA-BISSAU: Cacheu (fr. Aug.), *Espirito Santo* 1258 (COI, LISC); Safim (fr. March), *Espirito Santo* 1911 (COI, LISC, PRE, WAG); Bubaque (fr. May), *Espirito Santo* 2053 (COI, LISC, M, PRE, WAG); Suzanna-S. Domingos (fl. March), *Espirito Santo* 2252 (COI, LISC, M, WAG).

GUINEA: Nzérékoré (fl. March), *Adam* 3903 (MO, P); Los isl., *Chevalier* 13302-bis (P); Friguiaigbé (fr. May), *Chillou* 463 (BR, P, PRE), (fr. June), 3787 (P); Rio Nunez (fl.), *Heudelot* 2838 (K), (fl., y.fr.), *Hudelst s.n.* (OXF); sine loc. (fl. b.), *Jacques-Félix s.n.* (P); Tetambe, *Paroisse* 158 (P); Los isl., *Pobéguin* 1224 (P).

SIERRA LEONE: sine loc. (fl.), *Afzelius 'Alettris 5'* (UPS); Yoni (fl., fr. March), *Deighton* 2476 (K); Bo (fr. Nov.), *Deighton* 2476 B (K); Jene (fl. April), *Dinklage* 2541 (B); Sherbro isl. (fr. ?Nov.), *Hunter* 45 (BM); Bo (fl. May), *Lane Poole* 189 (K, MO, Z); John Obey (fl. b. March), *Morton* SL 899 (K); Rowalla (fr. July), *Thomas* 1026 (K); sine loc. (fl.), *Thomas* 9591 (K); Mano (fl. April), *Vickery primo* (WAG).

LIBERIA: Yekepa (fl. b. March), *Adam* 21241 (MO); Bomboma, *Linder* 1303 (A); mt. Qeeah, *Voorhoeve* 286 (WAG).

IVORY COAST: Moronou (fl., fr. Febr.), *Aké Assi* 8517 (G, K); mt. Mafa (fl., fr. March), *Aké Assi* 9534 (K); Viviro(?), *Aubréville* 564 (P); Bian Houné (fl. March), *Aubréville* 1125 (P); Bago, *Chevalier* 16188 (P); Agboville, *Chevalier* 16615 (P); nr. Bouaké (fr. July), *Fleury in Chevalier* 22104 (P); Morénoú (fr. Nov.), *Chevalier B* 22422 (P); km 30 Daloa-Issia (fl. Febr.), *de Koning* 6557 (WAG), (fl., fr. Febr.), 6559 (WAG); Oroumbo Boka, *de Wilde* 640 (WAG); Bingerville, *Guilleaumont* 825 (ABI); 2 km E Danané (fl. March), *Leeuwenberg* 3000 (BR, FHO, K, WAG); mt. Mafa, *Leeuwenberg* 7938 (WAG); Danané, *Nozéran s.n.* (P); Adiopodoumé (fl. Oct.), *Téhé Henry* 958 (ABI); 4 km N Bogouiné (fr. March), *van der Burg* 478 (WAG), (seedl.), 478 A (WAG); 1 km S Angoakro, *van der Burg* 1180 (WAG); Adiopodoumé, *van Doorn & van Doorn-Hoekman* 81 (WAG); Tabou-Béréby, *van Doorn & Van Doorn-Hoekman* 210, 211, 212 & 213 (WAG); 12 km E Abidjan, *Versteegh & den Outer* 691 (MO, WAG); Adiopodoumé (fl. b. Febr.), *Ybert* 581 (ABI).

GHANA: Kumassi, *Andik* 3728 (K); Jimra Hill F.R. (fl. March), *Andik* 4963 (FHO); Takoradi, *Carpenter* 219 (UCI); Shame (fr. April), *Chipp* 193 (BM, K); Kwahu Nteso-Ankoma (fl. Jan.), *Enti & Hall* GC 37543 (GC, K); Mpraeso (fr. June), *Enti R* 804 (K, MO); Krokosua Hills F.R. (fl. Febr.), *Hall* GC 42520 (MO); Aburi Bot. Gard. (fr. March), *Hall c.s.* GC 45861 (BH); Berekuso (fr. June), *Hall* GC 47016 (GC, MO); Kruwi (fr. Aug.), *Hughes* 1768 (K); Abetifi, *Irvine* 315 (K); Akwapim (fl. April), *Johnson* 687 (K); Abum (fl. Dec.), *Johnson* 870 (K); km 4 Kissi-Beposo, *Leeuwenberg* 11159 (WAG); km 12 Adukrom-Koforidua (fr. March), *Leeuwenberg* 11202 (WAG); Ejura, *Morton* GC 9777 (K); Kumassi (fl. Febr.), *Vigne* 1634 (K); Sunyami (fr. Sept.), *Vigne* 2478 (K); Begoro (fl. March), *Vigne* 4352 (FHO).

TOGO: Klouto, *Brunel* 1208 (B); Misahöhe (fl. Febr.), *Brunel* 4690 (B), 4803 (B); Tomegbé falls, *Ern* 2152 (B); Badou, *Mathey & Scholtz* 238 (B).

BENIN: Pobé, *Adjanohoun* 118 (K, P); Adjara, *Poisson* 11 (P).

NIGERIA: Nupe, *Barter* 1511 (K); Umuahia, *Carpenter* 241 (UCI); Ope (fr. May), *Dennet s.n.* (BR, K, P); Uhiere F.R., *Eimunjeye c.s.* FHI 69960 (K); Irhue (fr. June), *Eimunjeye & Oguntayo* FHI 72727 (FHI); Mamu (fr. March), *Emwiogbon* 12 (FHI, MO); Ife Univ. (fl. Febr.), *Faremi &*

*de Wit 493* (IFE); Omo F.R. (fr. June), *Gentry & Pilz 32708* (MO); Aramoko Ekiti (fl. Febr.), *Hall 914* (IFE); Ife Univ., *Hall 1175* (IFE), *Isawumi 6 & 24* (IFE), (fr. June), *138* (IFE); Iseki, *Kitson s.n.* (BM); Ibadan (fl. Febr.), *Latilo FHI 22745* (K); Egabada (fr. June), *Latilo FHI 47677* (K, P); 7 km N Ehor, *Leeuwenberg 11251* (WAG); Sapoba-Iguo Mokhua, *Lowe 1101* (UCI); Ibadan, *Lowe 3852* (UCI); Old Calabar R. (fl. Febr.), *Mann 2329* (A, B, K, P, WAG); Ankpa Resthouse (fl. Jan.), *Okafor FHI 36851* (K); Ikpai, *Onyeachusim FHI 54072* (K); Ope, *P.J.O. s.n.* (K); Shasha F.R. (fl. Febr.), *Richards 3149* (BM); Agolo distr., *Thomas 156* (K); Old Calabar (fl.), *Thomson 8* (E, K.); Ope, *Thomson 506* (K); Idanre Hills, *White 8195* (FHO); Ago-Owu, *Wit c.s. 2336 & 2338* (WAG).

***Dracaena mildbraedii* K. Krause**

**Fig. 17; Map 15**

Krause in Engler, Bot. Jahrb. 51 (1914): 447.

Type: Cameroun, Moloundou distr., *Mildbraed 4976* (B holo, HBG iso).

Heterotypic synonym: *Dracaena vaginata* Hutch. nom. inval.; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 383, 384; Hepper, Kew Bull. 21 (1968): 491 et Id. in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 157 (both in syn. to *D. viridiflora* Engler & Krause). Type: Nigeria, Oban, *Talbot 729* (K holo, BM, Z iso, MO, WAG photo).

Diagnostic characters: Shrubs or shrubby trees to about 5 m high, leaves evenly distributed along the branches, narrowly oblong-lanceolate with a sheathing base, not over 25 cm long in our area, less than 2 cm wide, short simple inflorescences borne erect, less than 10 cm long, flowers in 3–5 flowered clusters in the axil of concave bracts, perianth slightly over 2½ cm long, the tube slightly longer than the lobes, fruits globose, 1½–2½ cm in diameter.

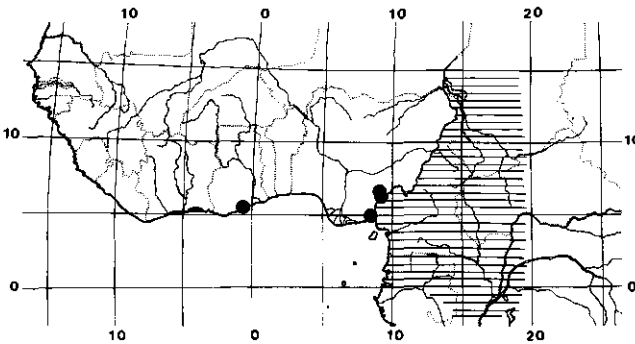
Description: *Shrubs* or shrubby trees to 5 m high or more, smooth stem and branches marked with annular leafscars, foliage evenly distributed along the branches, not congested into pseudowhorls. *Leaves* narrowly oblong-lanceolate, 5–25 cm long in our area, 7–15(–20) mm wide with parallel margins and a long acute tip, mucro subulate up to 9 mm long, lamina shallowly constricted above the 8–16 mm long sheathing base that clasps the supporting stem for rather more than its circumference, somewhat shiny rather dark green above, nerves closely parallel, usually less than ½ mm apart, centrally condensed into a costa visible in the lower ¼–½, secondary veins rarely visible in herbarium specimens, much paler green beneath, nervature similar but the midrib usually prominent for about ½(–¾) of its length, sheath pale brown. *Inflorescence* unbranched, 2½–9 cm long, terminal, sometimes apparently axillary when terminating dwarf shoots, probably always borne erect and often not continuous to, but with an angle to the supporting stem, flowers arranged in rather few (3–5) flowered sessile clusters subtended by concave bracts, the largest of these at the basal cluster up to 4½ cm long, the next bracts rapidly decreasing in size to about 1 cm at the apical clusters, flowers accompanied by about twice as many bracts and bracteoles, 4–8(–10) mm long, pale brown, enveloping the 2–7(–9) mm long persistent pedicel that is usually articulated at its top. *Flowers* up to 27 mm long, lacking an extended receptacle below the ovary, perianth tube about



FIG. 17. *Dracaena mildbraedii* K. Krause: 1. Flowering branch,  $\frac{2}{3} \times$ . (*Mildbraed 4976*). *Dracaena talbotii* Rendle: 2. flowering branch,  $\frac{2}{3} \times$ . (*Talbot 1532*).

14 mm long, lobes about 12 mm × 2 mm, showing a single median vein, filaments about 1½(-3) mm shorter than the corresponding perianth lobe, anthers about 2 mm × 1 mm, style sometimes rather far, up to 4 mm, exerted, stigma capitate, slightly lobed. *Fruits* orange to orange-yellow when mature, globose to somewhat depressed globose, 14-25 mm in diameter, retaining the flat, up to ½ mm long, indurated receptacle. *Seeds* globose when single, flattened against adjacent seeds or somewhat bilobed-discoid in 3-seeded fruits, 10-13 mm × 9 mm × 6-1 mm.

**Distribution:** *D. mildbraedii* has not been recorded for West Africa before. It was collected however in dense forests in Ghana and Nigeria on several occasions. Its area extends in Central Africa from Cameroun to Cabinda.



MAP 15. *Dracaena mildbraedii* K. Krause

**Notes:** This species is treated here as it occurs in West Africa. Its presence there was initially discovered in 1911 when TALBOT collected a specimen in Oban, Nigeria, conserved as *Talbot 729*. HUTCHINSON erroneously cited this specimen under *D. mannii* Baker in *Flora of West Tropical Africa*, but recognized it at the same time as a distinct new species. He provided it with the name *D. vaginata*, intending to publish his new species officially in *Kew Bulletin*. This intention was never executed and in the absence of a latin diagnosis the name remains invalid.

HEPPER drew attention to this situation, but he was of the opinion that *D. vaginata* was conspecific with *D. viridiflora* Engler & Krause from lower Guinea. *D. viridiflora* bears a general resemblance to *D. vaginata* but differs notably in much wider leaves.

In *D. mildbraedii* the leaves of *D. vaginata* are comfortably matched, but HEPPER did not refer to this species in any way. In the absence of any specimens with intermediate leafshape I prefer to retain both *D. viridiflora* and *D. mildbraedii* as distinct species and consider *D. vaginata* synonymous to *D. mildbraedii*. As I have not seen any specimens from West Africa with leaves that match those of the type of *D. viridiflora*, I consider this species to be absent.

Specimens examined:

GHANA: Atewa Range, *Leeuwenberg 11080* (WAG); S.S. Reserve, *Moor B 18 2116* (K).  
NIGERIA: Boshi Extension F.R. (fr. Dec.), *Daramola FHI 55516* (FHI); Obudu Plateau (fr. March), *Hall 3069* (IFE, UCI); Calabar (fl. Febr.), *Onochi FHI 36435* (K); Oban (fl.), *Talbot 729* (BM, K, Z, MO-photo, WAG-photo); Obudu Plateau (fl. Oct.), *Tuley 1042* (K); Boshi Extension F.R. (fr. May), *van Meer 1753* (WAG); sine loc. (fr.), *van Meer 1837* (WAG).

***Dracaena ovata* Ker Gawler**

**Fig. 18; Phot. 13; Map 16**

Ker Gawler, Bot. Mag. (1809): t. 1180; Sprengel, Syst. Veg. II (1825): 93; Schultes f. in Roemer & Schultes, Syst. Veg. VII-1 (1830): 345; Loudon, Hort. Britt. I (1830): 130; Steudel, Nom. ed. 2, I (1840): 529; Kunth, En. Plant. V (1850): 13; Planchon, Fl. Serres VI (1850): 109; Koch, Berl. Allg. Gartenz. (1858): 253, 263; Regel, Gartenflora 8 (1859): 330; Koch, Wochenschr. IV (1861): 398; Salisbury, Gen. Plant. (1866): 74 (see note); Koch, Wochenschr. X (1867): 238; Regel, Gartenflora 20 (1871): 144; Id., Act. Hort. Petrop. I (1871): 145 = Rev. (1871): 45; Id. ex André, Ill. Hort. 19 (1872): 139; Baker, J. Bot. XII (1874): 167; Id., J. Linn. Soc. 14 (1875): 536; Bentham in Bentham & Hooker f., Gen. III (1883): 779; Engler in Engler & Prantl, Nat. Pfl. II-5 (1888): 75; Möller's D. Gärt. Zeit. VIII (1893): 433; Durand & Schinz, Consp. Fl. Afr. (1893): 328; Vilmorin's Blumeng. I (1895): 1067; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 449; Chevalier, Bot. I (1920): 646 (p.p., excluding *n. 12557 bis* & *n. 21017* = *D. cristula* W. Bull, and in addition *n. B 22282* cited sub *D. camerooniana*); Krause in Engler & Prantl, Nat. Pfl. ed. 2, 15 a (1930): 359; Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936) 386; Roberty, Pet. Fl. (1954): 338; Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-I (1968): 157 (p.p., excluding *Baldwin 7012* = *D. camerooniana* Baker, and *Aké Assi 8381* = *D. surculosa* Lindley var. *surculosa*); Mouton Adansonia ser. I, 15 (1976): 410; Bos, Misc. Pap. Landbouwhogeschool Wag. 19 (1980): 66 = *Belmontia*, new ser. 11-56 (1980): 66; de Koning, For. Banco II (1983): 455 (see note).

Type: Bot. Mag. (1809): t. 1180.

Homotypic synonyms: *Cordylina ovata* (Ker Gawler) Planchon; Planchon, Fl. Serres VI (1850): 111, 132, 136; Goepfert, Nova Acta (1854): 55.

*Draco ovata* (Ker Gawler) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 488; Bailon, Hist. Pl. (1894): 488.

Heterotypic synonyms: *Aletris pumila* Donn non Aiton (nom. illeg.); Donn, Hort. Cant. ed. 4 (1807): 75 (lapsus cal. *primula*, see note).

*Dracaena leonensis* Lodd. ex Loudon; Loudon, Hort. Britt. (1830): 130; Steudel, Nom. ed. 2, I (1840): 529. Type: a living plant in a garden in England in 1830. Neotype: Sierra Leone, York Pass, *Morton & Gledhill SL 791* (WAG holo, K, SL iso).

*Dracaena spathulata* is a name without status of garden origin and appears to have been published exclusively in synonymy to *D. ovata* by Koch and Regel.

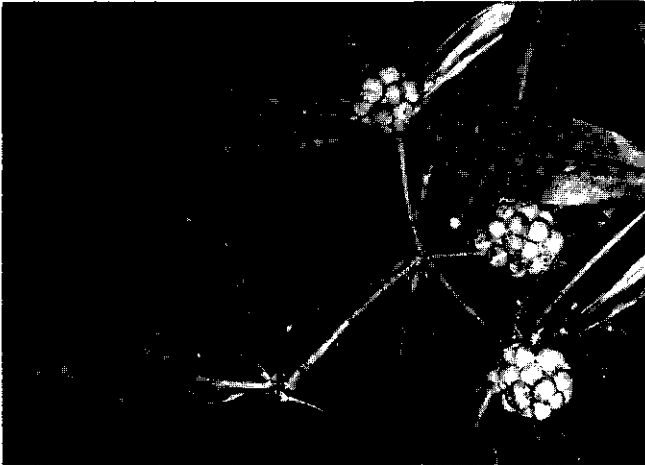
*Dracaena afzelii* Baker; Baker, J. Bot. XII (1874): 167; id., J. Linn. Soc. 14 (1875): 536; Durand & Schinz, Consp. Fl. Afr. (1893): 326; Vilmorin's Blumeng.



I (1895): 1067; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 448. Type: Sierra Leone, *Afzelius 'Alettris 4'* (BM holo, UPS iso, MO, WAG photo). Homotypic synonyms: *Draco afzelii* (Baker) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710. *Pleomele afzelii* (Baker) N.E.Br.; Brown, Kew Bull. 1914: 277.

*Dracaena prolata* C. H. Wright; Wright, J. Linn. Soc. 27 (1905): 115. Type: Liberia, Monrovia, *Whyte s.n.* (K lecto), sinoe Basin, *Whyte s.n.* (K para). Homotypic synonym: *Pleomele prolata* (C. H. Wright) N.E. Br.; Brown, Kew Bull. 1914: 279.

*Dracaena sessiliflora* C. H. Wright; Wright, Kew Bull. 1914: 338. Type: Sierra Leone, Heddles farm, *Lane Poole 155* (K holo).



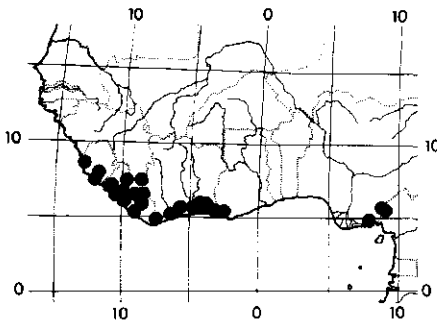
PHOT. 13. *Dracaena ovata* Ker Gawler (photograph H. C. D. DE WIT).

Diagnostic characters: Shrubs usually less than 2 m high, prophylls often persistent, fibrous and very pale grey, leaves ovate to obovate, less than 30 cm long, arranged in terminal pseudowhorls, false petiole 1–3 cm long, inflorescence terminal, rarely over 4 cm long, with several glomerules of many shortly pedicelled  $2\frac{1}{2}$ –5 cm long flowers, perianth tube twice to three times as long as the lobes, fruits globose,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm in diameter.

Description: *Shrubs* of modest proportions,  $\frac{1}{2}$ –2(–4) m high, rootcrown not producing cane-like shoots, stems usually yellowish brown, rarely greyish green, regularly covered with prophylls leaving annular scars when deciduous, persistent on some branches, fibrous to clothlike in texture, tattered when old, of a wheatened pale grey colour,  $\frac{1}{2}$ –5(–6) cm long, tightly wrapping the stem, stems terminated by a pseudowhorl of leaves, the top leaf of each whorl usually of miniature proportions, branching almost exclusively in the axils of well developed leaves, sometimes by penetration of the leafbase. *Leaves* ovate, elliptic, usually obovate, (8–)16–24(–28) cm  $\times$  ( $1\frac{1}{2}$ –)4 $\frac{1}{2}$ –6 $\frac{1}{2}$ (–8 $\frac{1}{2}$ ) cm, the widest part somewhere between 1 cm below and  $1\frac{1}{2}$  cm above the middle, tip acuminate

to cuspidate with a tiny mucro, usually damaged with a callous brim, base tapering into a 1–3 cm long pseudopetiole, 2–4(–7) mm wide in its narrowest part, fresh leaves smooth, shiny bright to dark green above, midrib not visible, parallel nervature quite distinct and prominent in herbarium specimens, secondary veins sometimes prominent or visible, traversing the parallel nerves in weak wavy lines towards the margins, beneath distinctly paler green, the midrib much paler and prominent, distinct for about  $\frac{3}{4}$  of its length. *Inflorescence* a terminal short raceme, sometimes sub-umbellate, 1–4(–6) cm long, continuous to and with the same diameter as the supporting stem, usually borne erect, flowers arranged in one to several distinct glomerules subtended by ovate-orbicular boat-shaped up to 1 cm long bracts, distinctly apiculate and rather diaphanous with prominent nerves, minute bracteoles may accompany the 1–2(–4) mm long pedicels. *Flowers* white, (25–)35–45(–50) mm long, subject to accelerated stretching of the buds into anthesis, including the  $1\frac{1}{2}$ – $2\frac{1}{2}$  mm long receptacle, perianth tube (15–)22–31 mm long, lobes (8–)10–12 mm  $\times$   $2\frac{1}{2}$ – $3\frac{1}{2}$  mm when fully expanded showing a single costa, stamens inserted in the throat, filaments inflated with a subulate tip,  $1\frac{1}{2}$  mm shorter than the corresponding perianth lobe, anthers (2–)3 mm  $\times$  1 mm, ovary oblong-ovate, about  $3\frac{1}{2}$  mm  $\times$   $1\frac{1}{2}$  mm, style filiform, reaching the tip of the perianth in bud, produced for another few mm after anthesis, stigma capitate to slightly lobed, to 1 mm in diameter. *Fruits* dark green in development, yellow-orange when ripe, globose to depressed globose, (11–)15–25 mm in diameter, pulp orange. *Seeds* dirty white, lens-shaped, flattened against adjacent seeds in more than 1-seeded fruits, 8–10(–12) mm  $\times$  8–10 mm  $\times$  4–6(–7) mm.

**Distribution:** *D. ovata* appears to be restricted to fairly undisturbed forest situations from Sierra Leone to the western limits of Cameroun. However, its area of distribution is remarkably disjunct, as apart from the adjoining localities in the west, three collections originate from the eastern borderlands of Nigeria and Cameroun.



MAP 16. *Dracaena ovata* Ker Gawler

**Notes:** GAWLER described *D. ovata* from a cultivated plant flowering in a glasshouse in Loddiges nursery-garden in Hackney, England. According to the

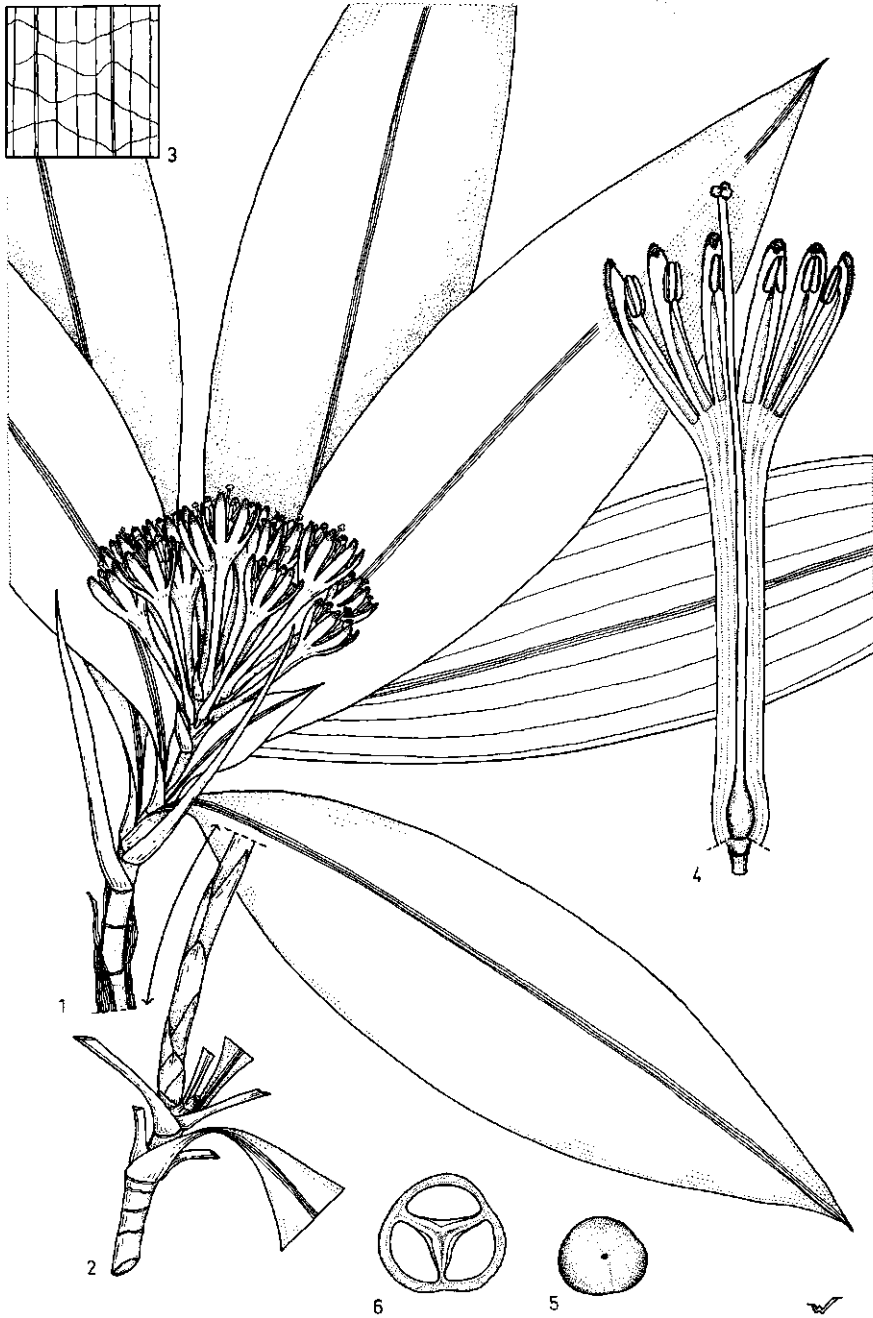


FIG. 18. *Dracaena ovata* Ker Gawler: 1. Flowering branch,  $\frac{2}{3} \times$ ; 2. base of flowering branch,  $\frac{2}{3} \times$ ; 3. inset: leaf detail,  $2 \times$ ; 4. flower laid open,  $2 \times$ ; 5. fruit,  $\frac{2}{3} \times$ ; 6. fruit, cross-section,  $1 \times$ . (1-4. Voorhoeve 169; 5 & 6. Breteler 7501 spir. coll.).

protologue LODDIGES raised the plant from seed he received from AFZELIUS in Sierra Leone. As no original material of this plant seems to have been conserved, the plate illustrating the protologue is designated as type. The correct number of this plate is 1180, but the literature cited is highly confused in this matter. The majority of the authors with BAKER as a notable exception, erroneously cite t. 1179, some even insisting that 1180 is wrong, while PLANCHON cited both numbers in the same publication. Plate 1179 depicts *Sansevieria guineensis* that should be named *Sansevieria hyacinthoides* (L.) DRUCE according to WIJNANDS, Taxon 22 (1973): 109. Apart from citing the wrong plate, DE KONING(1983) errs in his typification of *D. ovata*. If his somewhat cryptic remark, Type: *Afzelius Sierra Leone*, refers to herbarium material collected by AFZELIUS it is to be rejected. Although such material exists, i.e. the type of *D. afzelii* Baker, it is not acceptable for the typification of *D. ovata* as the protologue does not mention any other element than the living plant depicted in the plate. If, on the other hand, the origin of the seed from which the type plant was grown is indicated, it will be obvious that such seeds, even if conserved, are not acceptable either.

When BROWN reinstated Salisbury's genus *Pleomele* in order to accommodate the majority of the known species of *Dracaena* in 1914, he should have included *D. ovata* as well, as it has a well developed perianth tube. Although SALISBURY referred *D. ovata* to *Pleomele* in 1866, he did not make the necessary combination. Possibly by oversight, BROWN did not either and as a result *D. ovata* has never been combined in *Pleomele*.

In the 4th edition of Hortus Cantabrigiensis of 1807 DONN entered *Aletris primula*, translated as dwarf, introduced in 1790 from Sierra Leone and provided with symbols to indicate that it is a woody plant to be grown in a stove, i.e. a heated glasshouse. DONN's taxon was given as *Aletris pumila* by GAWLER, SCHULTES f., STEUDEL, KUNTH, KOCH, REGEL and BAKER when cited in synonymy of *D. ovata*. Under these circumstances I do not doubt that the epitheton *primula* is simply a printers error for *pumila*. Eighteen years previous the same combination was given by AITON to what is known today as *Kniphofia pumila* (Aiton) Kunth. It is unreasonable to suppose that DONN referred to AITON's taxon from Ethiopia, and I consider *Aletris pumila* Donn as a later homonym of Aiton's name and illegitimate. Although several authors, notably GAWLER and SCHULTES f., insist that this name did not appear earlier than in the 4th edition of DONN's work, Index Kewensis lists it as to have been published in the 2nd edition of 1800.

*Dracaena leonensis* was published by LOUDON in his Hortus Britannicus and accredited by him to LODDIGES. The form is such that it constitutes in my opinion valid publication. The combination of characters given fits comfortably within *D. ovata* as it is delimited here. Except for an entry in STEUDEL's Nomenclator the name never seems to have been taken up, and apparently no specimens have been conserved. For these reasons I have neo-typified this name with a specimen of *D. ovata* from Sierra Leone where LODDIGES plant came from according to LOUDON.

### Selected specimens:

SIERRA LEONE: sine loc., *Afzelius 'Alettris 4'* (BM, UPS); Freetown (fl. Jan.), *Dalziel 987* (E, K, Z); Mano (fr. Nov.), *Deighton 2412* (K); Hedde's farm (fl. Febr.), *Lane Poole 155* (K); York Pass (fl. Febr.), *Morton & Gledhill SL 791* (K, SL, WAG); Guma dam (fr. March), *Morton SL 1182* (K, WAG); sine loc., *Thomas 8444* (K).

LIBERIA: Kitoma (y.fr. Febr.), *Adam 16646* (MO), (fr. July), *28697* (MO); Dukwai R. (fl. Febr.), *Cooper 170* (A, BM, FHO, K, US); Grand Bassa (fl. Febr.), *Dinklage 1623* (B); Wanau (fr. Aug.), *Harley 1925* (B); km 40 Tapita-Chien (fr. July), *Jansen 913* (WAG); 15 km N Sino (fr. Jan.), *Jansen 1107* (WAG); Firestone div. 33 (fr. April), *Jansen 2323* (WAG); Peahtah (fr. Oct.), *Linder 1031* (A); Krahn Bassa for. (fl. Febr.), *van Harten 342* (K, WAG); Gola Yoma for. (fl. Febr.), *van Meer 386* (WAG); 30 km N Tapita (fl. Febr.), *Voorhoeve 169* (BR, MO, WAG); Monrovia (fl. b.), *Whyte s.n.* (K); Sinoe Basin (fl. b.), *Whyte s.n.* (K).

IVORY COAST: Lagako-Tokpeko (fr. May), *Beentje 38* (WAG); Teke for. (fr. July), *Beentje 566* (WAG), (fr. Febr.), *Bernardi 8186* (G, P); Yapo Nord (fl. b. March), *Bernardi 8663* (P, WAG); Adiopodoumé (fr. June), *Bos 10341 & 10343* (WAG); Banco for. (fr. July), *Bos 10355* (WAG); Adiopodoumé (fr. June), *Breteler 5201* (WAG); Teke for. (fr. Nov.), *Breteler 6078* (WAG); km 45 Lakota-Sassandra (fr. April), *Breteler 7311* (WAG spir. coll.); km 53 Abidjan-Adzopé (fr. May), *Breteler 7501* (WAG); Azaguié (fr. Sept.), *Chevalier B 22282* (P); 3 km N Abié (fr. Jan.), *de Koning 29* (WAG); Louga (fr. April), *de Koning 1266, 1272, 1284, 1316 & 1318* (WAG); culta Adiopodoumé (fl. b. Febr.), *de Koning 5337* (WAG); Banco for. (fr. Febr.), *de Koning 6509 & 6510* (WAG); Sassandra (fr. Aug.), *J. de Wilde 357* (WAG); Yapo for. (fr. Aug.), *W. de Wilde 638* (K, P, WAG), (fr. Oct.), *Leeuwenberg 1837* (WAG); Assini (infl. b. Aug.), *Nozeran s.n.* (P); Niégrouboué (fr. May), *van der Burg 118* (WAG); 35 km NNE Sassandra (fr. May), *van der Burg 162 B* (WAG); 10 km N Sassandra (fr. May), *van der Burg 286* (WAG); Yapo for. (fr. May), *van der burg 465* (WAG), (y.fr. Febr.), *van Doorn & van Doorn-Hoekman 61* (WAG); Adiopodoumé (fr. March), *van Doorn & van Doorn-Hoekman 97* (WAG).

GHANA: Ankassa F.R. (fl. March), *Enti GC 42645* (GC, K).

NIGERIA: Eket (fl. b.), *Talbot 3191* (BM, K, Z).

CAMEROUN: Lake Ejagham (fr. May), *Letouzey 13537* (P, YA); 20 km W Mamfé (fr. June), *Letouzey 13705* (K, P, WAG, YA).

### *Dracaena phrynioides* Hook.

### Fig. 19; Map 17

Hooker, Bot. Mag. (1862): t. 5352; Gard. Chron. 1862: 1199; Lemaire, Ill. Hort. 10 (1863): misc. 2 verso pl. 360; Francke, Gartenflora 12 (1863): 55; Koch, Wochenschr. X (1867): 239; Lemaire, Ill. Hort. 16 (1869): pl. 600; Regel, Gartenflora 20 (1871): 147; Id., Act. Hort. Petrop. I (1871): 148 = Rev. (1871): 48; Id. ex André, Ill. Hort. 19 (1872): 139; Baker, J. Bot. XII (1874): 167 (p.p., excluding *Mann 1625* = *D. phanerophlebia* Baker); Id., J. Linn. Soc. 14 (1875): 537 (p.p., excl. *Man 1625*); Bentham in Bentham & Hooker f., Gen. III (1883): 779 (sphalm, *phrynioides*); Nicholson, Dict. Gard. I (1885): 491; Morren & de Vos, Bull. Fed. Soc. 1883-1885 (1887): 83 (orig. err. Madagascar); Durand & Schinz, Consp. Fl. Afr. V (1893): 329 (p.p., excluding *Mann 1625* = *D. phanerophlebia* Baker); Vilmorin's Blumeng. I (1895): 1067; Baker in Thiselton-Dyer, Fl. Trop. Afr. VII (1898): 447; Wiegand in Bailey & Bailey, St. Cycl. Hort. I (1914): 1070; Chevalier, Bot. I (1920): 647 (sphalm. n. *19043* = *19048*); Holland, Kew Bull. add. ser. IX, 4 (1922): 703; Irvine, Pl. Gold Coast (1930): 167 (sub *D. humilis* toto); Hutchinson in Hutchinson & Dalziel, Fl. W. Trop. Afr. II (1936): 384; Chittenden, Dict. Gard. II (1951): 711; Pareys Blumeng. ed. 2, I

(1958): 309 (p.p., excluding descr. = *D. surculosa* Lindley var. *maculata* Hook.f.); Hepper in Hutchinson & Dalziel, Fl. W. Trop. Afr. ed. 2, III-1 (1968): 156; Mouton, Adansonia ser. 1, 15 (1976): 410.

Type: Bot. Mag. (1862): t. 5252 (see note).

Homotypic synonyms: *Draco phrynioides* (Hook.) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710, *Pleomele phrynioides* (Hook.) N.E.Br.; Brown, Kew Bull. 1914: 278.

Invalid names referred to *D. phrynioides* Hook.:

*Phrynium maculatum* hort. Angl. teste Hook., Bot. Mag. (1862): t. 5352; Lemaire, Ill. Hort. 10 (1863): misc. 2 verso pl. 360 (sub *D. phrynioides* Hook.).

*Dracaena oculata* Linden teste Morren, Bull. Fed. Soc. 1861 (1862): 296; Id. & de Vos, loc. 1883-1885 (1887): 82.

*Dracaena* sp. hort. Veitch teste Gard. Chron. 1862: 623; Id. 1863: 532.

*Dracaena* sp. nov. 2 hort. Bull. Gard. Chron. 1883-I: 405.

*Dracaena phrynioides* Hook. var. *staudtii* Engl. teste Mildbraed, Ergebn. II D. Centr. Afr. Exped. II (1922): 94.

Diagnostic characters: Suffrutices rarely exceeding  $\frac{1}{2}$  m, usually unbranched and almost stemless, leaves distinctly petiolate, petiole about as long as or longer than the ovate lamina, lamina borne horizontally, dark green and usually variegated with transversely oriented oval dots of a vivid light green colour, inflorescence capitate, often nodding on a short terminal peduncle, flowers sessile, enveloped by bracts, fruits distinctly lobed, up to  $1\frac{1}{2}$  cm in diameter, each lobe produced into a shallowly bifid horn, seeds molar-shaped with two distinct rootlike projections.

Description: Suffrutices in our area less than  $\frac{3}{4}$  m high, usually unbranched, rarely with up to 4 branches from a short prostrate part not over 5 cm long, ascending into a short, rarely up to 10 cm long erect stem, one to few prophylls sometimes present below the leaves, triangular, up to 5(-8) cm long, roots orange where known in a fresh state, not tuberous or distinctly fleshy. Leaves alternate, densely imbricate, their bases hiding the stem, rarely in a distinctly distichous spiral, (6-)10-75(-92) cm long, differentiated into an erect sheathing petiole and a horizontal ovate lamina, lamina (4-)9-25(-30) cm  $\times$  ( $1\frac{1}{2}$ -) 3-9(-11) cm, the widest part distinctly below the middle, tip acute to acuminate, with a subulate mucro up to 10 mm long, base rounded, usually symmetrical, sometimes distinctly unequal but both conditions may be observed on the same plant, when fresh glossy dark green above, variegated with transversely oriented oval dots of a vivid light to yellowish green, sometimes densely so with merging dots, rarely without any variegation, midrib not evident, parallel nerves distinct in herbarium, occasionally few (4-6) nerves may be distinctly impressed, secondary veins hardly visible, much paler and lacking variegation beneath, midrib usually prominent for the lower  $\frac{1}{2}$ - $\frac{3}{4}$  of its length, nerves distinct in herbarium, secondary transverse venation usually not visible, petiole concolorous to the lamina, terete with a shallow groove along its upper surface, (2-)7-40(-62) cm

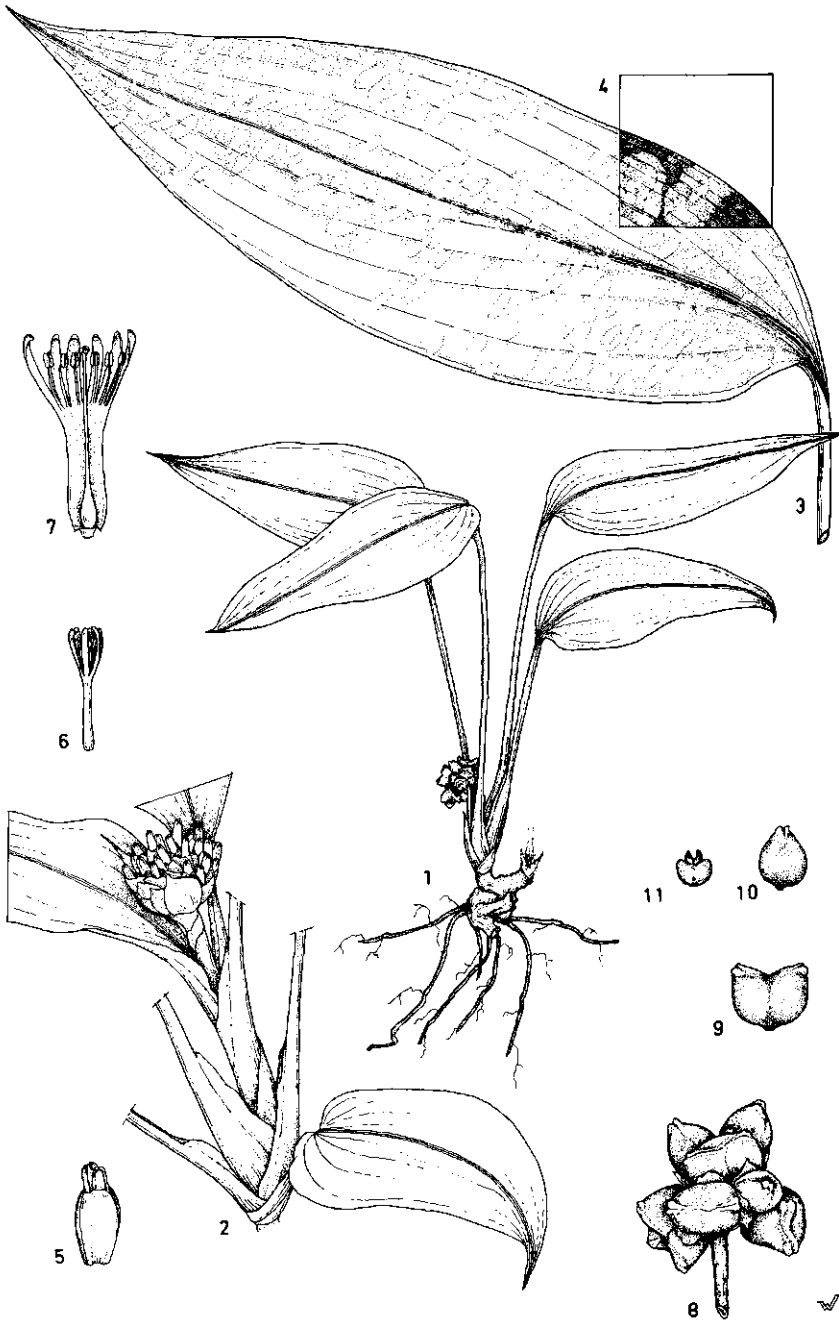
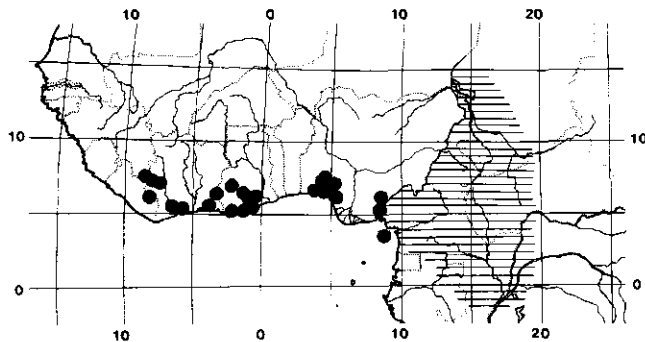


FIG. 19. *Dracaena phrynioides* Hook.: 1. Habit,  $\frac{2}{3} \times$ ; 2. inflorescence,  $\frac{2}{3} \times$ ; 3. leaf,  $\frac{2}{3} \times$ ; 4. inset: leaf detail,  $2 \times$ ; 5. bract with 2 buds,  $\frac{2}{3} \times$ ; 6. flower,  $\frac{2}{3} \times$ ; 7. flower laid open,  $1 \times$ ; 8. infructescence,  $\frac{2}{3} \times$ ; 9-11. fruits,  $\frac{2}{3} \times$ . (1. *Adam* 21683; 2 & 5-8. living plant in conservatory WAG, de Wit s.n.; 3 & 4. *Enti* FE 1324; 9-11. *Daramola* FHI 72471).

long, sheathing base (1-)2-6(-15) cm long, the top of the sheath not merging into the petiole but cleft and terminating into two lateral shortly triangular tips usually not discernable in herbarium, base of the sheath completely enveloping the stem, transitional prophylls sometimes present at the base of the inflorescence directly above the leaves, resembling the sheathing part of the petioles, up to 8(-11) cm long. *Inflorescence* terminal, continuing the stem, (1½-)4-5(-10) cm long, usually inclined, rarely straight, often distinctly nodding, smooth, terminating in a bracteate capitulum, 2½-4 cm in diameter, consisting of several closely packed clusters of about 3 bracteate sessile flowers each, resembling involucrate partial inflorescences, bracts variable, generally boatshaped broadly ovate, orbicular to square with one or several tips, about 1-1½ cm long and wide. *Flowers* white, sometimes purple tinged towards the tip, about 22 mm long, perianth tube slender, 14 mm long, lobes up to 8 mm × 2 mm when fully expanded, nerves obscure, a single central costa usually distinct in each lobe, stamens inserted in the throat, filaments inflated with a subulate inflexed tip, about 2 mm shorter than the corresponding perianth lobe, anthers about 1½ mm × ½ mm, style reaching the top of the perianth at anthesis, stigma capitate. *Fruits* orange-scarlet when mature, distinctly horned with a bifid tip to each well developed lobe, (6-)7-14(-15) mm in diameter, the lobes (6-)10(-15) mm long and (4-)6-8(-11) mm wide, containing a limited amount of orange pulp. *Seeds* pale brown, distinctively molar-shaped, (6-)7(-8) mm × (3-)4(-5) mm × (4-)7-8(-9) mm, including the paired (1-)2-3 mm long rootlike projections. First leaves of *seedlings* are usually not variegated and have considerably shorter petioles.

**Distribution:** *D. phrynioides* is restricted to rather wet, deep shady localities in fairly undisturbed rainforest in Liberia, Ivory Coast, Ghana and Nigeria, its range extending into Cameroun and Equatorial Guinea, possibly also in Gabon.



MAP 17. *Dracaena phrynioides* Hook.



Notes: This treatment of *D. phrynioides* is based on representative material from West Africa and original material collected by MANN on Fernando Póo. A review of material from Central Africa has established the presence there of specimens that will extend the limits set for this species here considerably, if those specimens prove to be conspecific with *D. phrynioides*. Apart from plants with larger height, leafsize and capitula, this may concern also *D. phanerophlebia* Baker. *D. phanerophlebia* is identical in habit and in variegation to *D. phrynioides*, but it differs obviously in having globular fruits, as is demonstrated by its type. BAKER's original description of these fruits is manifestly erroneous. *D. phanerophlebia* has never been recorded in West Africa, and its area does not seem to extend much beyond the territory of Gabon.

In West Africa *D. phrynioides* bears close resemblances to both *D. aubryana* and *D. praetermissa*, but it is usually readily recognized by its distinctive variegation of oval dots. From *D. aubryana* it differs in stricter differentiation of the leaves into lamina and petiole, capitate inflorescences with bracteate flowers, and horned fruits containing molar-shaped seeds. *D. praetermissa* has a scabrid raceme, lacking the abundance of well developed bracts; its pointed fruit lobes are not bifid and its seeds lack the paired root-like projections. Neither of these other species has ever been recorded with any form of variegation in West Africa.

The first description of *Dracaena phrynioides* was based upon a cultivated plant flowering in a conservatory two years after its introduction from Fernando Póo, where it had been collected by Gustav MANN. Although several fragments of MANN's original discovery, i.e. leaves and flowers, are conserved in herbarium, there is no unambiguous connection of this material with any of the several living plants that Mann must have sent to England. HOOKER states that plants were distributed as *Phrynium maculatum*, hence the flowering plant of the protologue was not the only one MANN sent. In absence of herbarium specimens that were prepared from the plant illustrated, the plate in the Botanical Magazine has to be the type of *D. phrynioides*.

#### Specimens examined:

LIBERIA: Kitoma (fr. March), *Adam* 16705 (P); Tchien (fr. July), *Adam* 21683 (MO); Kitoma, *Harley* 1628 (B).

IVORY COAST: Abengourou (fr. Dec.), *Aké Assi* 9387 (K); Guidéko-Zozro R. (fr. June), *Chevalier* 19048 (P); mt. Momy, *Chevalier* 21368 (P); Bingerville, ?*Guilleaume* 822 (ABI); Nigby 2, *Guilleaume* 960 (ABI); mt. Bô (fr. Nov.), *Nozeran s.n.* (P); km 82 Sassandra-Lakota (fr. May), *van der Burg* 120 (WAG).

GHANA: Bosumkese F.R. (fr. Dec.), *Adams* 2891 (GC, K); Neung F.R. (fr. May), *Enti* 1324 (MO); Kade A.R.S. (fl.b. May), *Hall GC* 42598 (GC); Bososso-Beguro F.R. (fl. June), *Hossein & Enti GC* 35431 (K); Banka (fr.), *Irvine* 491 (K); Akim (fr. June), *Johnson* 763 (K); Atewa Range, *Leeuwenberg* 11079 (WAG); S.S. Reserve (fr. Dec.), *Trevor* 2112 (K).

NIGERIA: Okomu F.R., *Brenan* 9017 (B, BR, K, P); Nikrowa (fr. Oct.), *Daramola FHI* 72471 (K, MO); Ife-Ife (fr. April), *Faremi* 742 (IFE), (fl.b. May), *Hall* 1174 (IFE), *Isawumi* 41 (IFE); Oni R. (fr. Febr.), *Jones & Onochie FHI* 14742 (FHI, K); Afi R. F.R. (?fr. May), *Jones & Onochie FHI* 18754 (K); Oshugo-Oke Ibode (fr. March), *Millson s.n.* (K); Omo F.R., *Pilz* 2459 (MO); Oban, *Richards* 5202 (K); Eluju (fr. April), *Ross* 228 (BM); Oban (fr.), *Talbot* 764 (BM); Ago-Owu, *Wit c.s.* 2339 (WAG).

FERNADO PÓO: (fl.), *Mann* 417 (K).

Cultivated: Trinidad, Port of Spain, *Broadway 4179* (K); Glasgow Bot. Gard., *Curtis 44282/63* (K); Nigeria, Ife Univ. ex Idanre Hills, *Sanford 4766* (IFE); Ivory Coast, ORSTOM Adiopodoumé, *Téhé Henry 247* (ABI), (seedl.), *Toilliez 279* (ABI, BR, P); living plants in glasshouse WAG n. 80-270 ex de Wit, Adiopodoumé, Ivory Coast.

***Dracaena praetermissa* Bos sp. nov.**

**Fig. 20; Phot. 14; Map 18**

Chevalier, Bot. I (1920): 646 (sub *D. humilis* toto).

Type: Ivory Coast, 8 km N Tabou, *van der Burg 879* (WAG holo + isotypes to be distributed).

*Dracaena parva* *D. aubryanam* et *D. phrynioidem* simulans, nervis lateralibus foliorum nonnullis distincte impressis, racemo brevi scabrido, fructus cornutis.

Diagnostic characters: Small subrosulate plants not over 30 cm high, stem very short, erect, bearing a limited number of distinctly stalked leaves, the pseudopetiole about as long as the lamina, with 4–6 sharply impressed nerves roughly 1 cm apart, inflorescence a short, finely scabrid raceme, about 5 cm long, hidden by the leaves, fruits up to 2 cm in diameter, shallowly lobed, each lobe with a distinct conical tip, seeds irregularly rhomboid.



PHOT. 14. *Dracaena praetermissa* Bos (photograph M. ANTHEUNISSE).

Description: *Suffrutices* of modest proportions not yet recorded over 30 cm high, unbranched, underground stems may be repeatedly forked, showing prominent annular leafscars, areal stems erect, up to 5 cm, clad in sheathing leafbases and 2–3(–5) cm long sheathlike prophylls, roots not inflated, dull orange. *Leaves* spirally arranged, (7–)13–30(–41) cm long, distinctly differentiated into a distal lamina and a proximal pseudopetiole, lamina rather narrowly ovate, (5–)10–17(–19) cm × (2½–)3–4½(–5½) cm, tip narrowly acute, subulate mucro up to 4(–7) mm long, base rounded, sometimes obliquely so due to rather

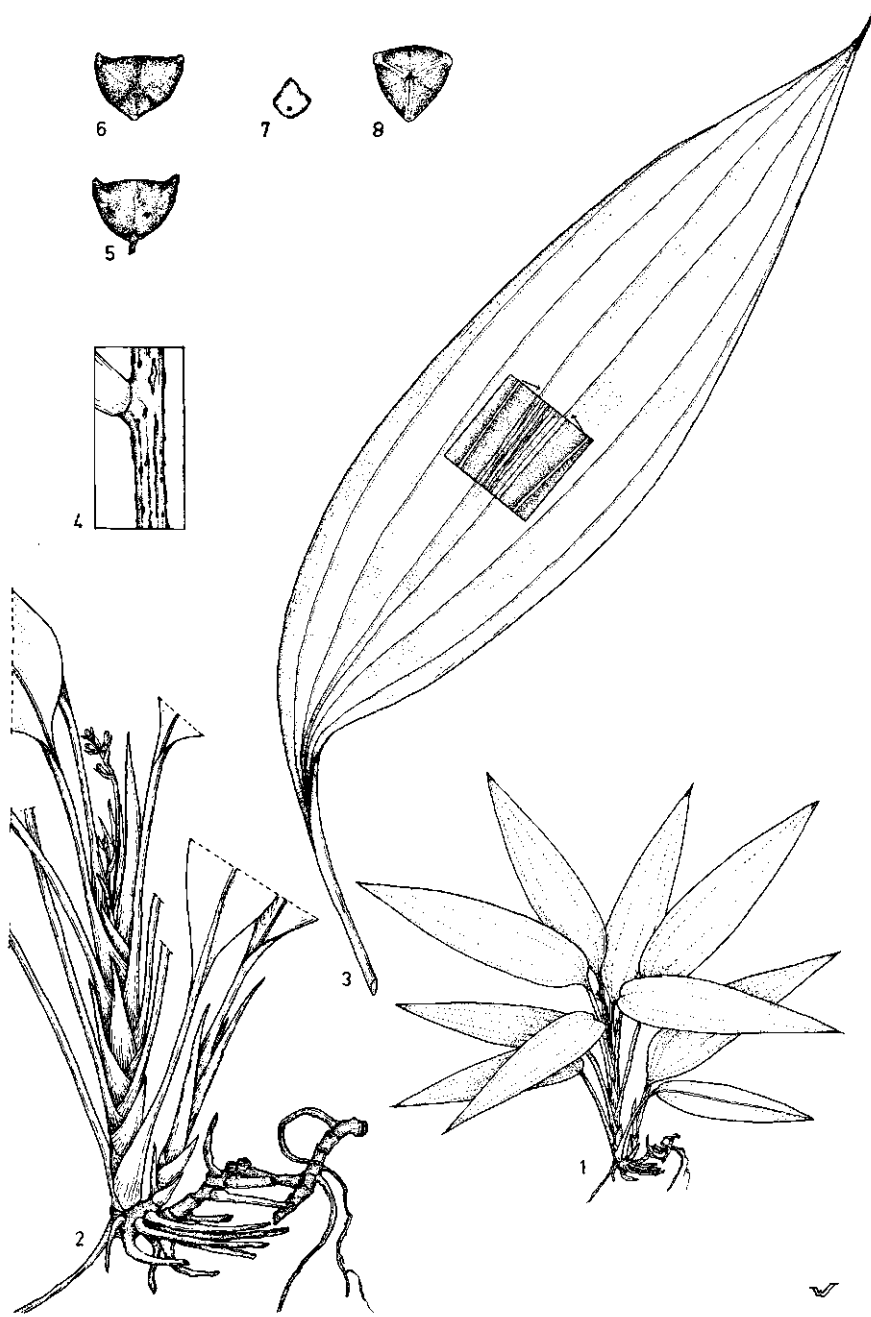
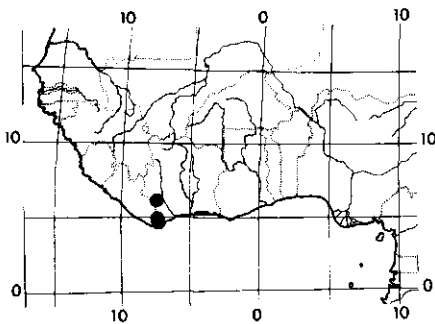


FIG. 20. *Dracaena praetermissa* Bos: 1. Habit,  $\frac{2}{3} \times$ ; 2. rhizome,  $\frac{2}{3} \times$ ; 3. leaf,  $\frac{2}{3} \times$ ; inset: leaf detail,  $2 \times$ ; 4. inflorescence axis,  $4 \times$ ; 5 & 6. fruits,  $\frac{2}{3} \times$ ; 7. seed,  $\frac{2}{3} \times$ ; 8. fruit,  $\frac{2}{3} \times$ . (1 & 2, van der Burg 879; 3, Bos 10365; 5 & 6, Chevalier 19741; 7 & 8, Antheunisse 48 spir. coll.).

unequal halves, shiny medium to rather dark green above, lacking variegation of any kind, midrib not evident, 4–6 parallel nerves very sharply impressed, roughly 1 cm apart, remaining nerves and venation hardly distinct, distinctly paler beneath, midrib prominent in the lower half, the impressed nerves correspondingly prominent, pseudopetiole concolorous with the lamina, (3–)4–15(–27) cm long, for a short distance slightly furrowed at the top, sheathing base resembling the prophylls up to about 3 cm long. *Inflorescences* terminal, when young consisting of a short reddish, rather weak raceme, about 5 cm long, minutely scabrid over its entire length, flowerbuds borne in the terminal 2 cm, single or paired in the axil of up to 4 mm long bracts, infructescences somewhat indurated, dark reddish when dry, not longer, laxly and minutely scabrid, pedicels about 4 mm long in fruit, jointed at the top. *Flowers* not yet known, expected to be of modest proportions and not to exceed 2 cm in length. *Fruits* presumably bright scarlet when fresh and ripe, 8–18 mm in diameter, with 1–3 developed shallow but distinctly horned lobes, each lobe with a conical entire tip. *Seeds* pale brown, rather irregularly rhomboid, about 6 mm × 8 mm × 9 mm.

**Distribution:** Possibly restricted to the lower Cavally R. basin. So far only collected in Ivory Coast, but expected to be present in adjacent Liberia.



MAP 18. *Dracaena praetermissa* Bos

**Notes:** *D. praetermissa* has been confused with young plants of *D. aubryana* and may be mistaken for non-variegated *D. phrynioides* of modest proportions, because of its distinctly impressed nerves. Its delicate inflorescence, well hidden by the leaves, is much shorter than that of *D. aubryana* and not capitate as in *D. phrynioides*. Moreover its axis is not smooth but finely scabrid. The fruits resemble those of *D. phrynioides* somewhat but lack the cleft in the horns.

The initial collections of this species duly aroused suspicion because of this combination of characters, and MAX ANTHEUNISSE, due to leave for fieldwork in Ivory Coast, was asked to give special attention to the occurrence of this species. He visited previous collecting localities and found them deteriorated to such an extent that the presence of this species is no longer to be expected there. Fortunately he discovered a new locality closer to the Cavally River in

the Tabou area, where this species still occurs fairly frequently in older secondary forest. Field observations in other likely localities, i.e. the Taï forest area outside of the Cavally River basin and the Banco forest near Abidjan proved negative as to the presence of this species. Although he never encountered a flowering plant, ANTHEUNISSE managed to collect several fruiting specimens. This material provided the dimensions of the seeds and their diagnostic value.

Some living plants are cultivated in Adiopodoumé and in Wageningen that may yet reveal the shape of the flowers expected to be comparatively small.

**Specimens examined:**

IVORY COAST: km 20 Tabou-Pata Idië, *Antheunisse* 41-47 (WAG), (fr. Dec.), 48 & 51 (WAG + spir. coll.), 129 (WAG spir. coll. only), 130-135 & 137-143 (WAG); 10 km N Tabou, *Bos* 10362 (WAG); 15 km E Tabou, *Bos* 10365 (WAG); Grabo (fr. Aug.), *Chevalier* 19741 (P); Zagné for., *Téhé Henry* 409 A (ABI); 8 km N Tabou (fl.b. Sept.), *van der Burg* 879 (Type: WAG holo + dupl.).

***Dracaena scabra* Bos sp. nov.**

**Fig. 21; Phot. 15; Map 19**

Type: Ivory Coast, Yakassé-Mé, *Bos* 10350 (WAG holo + isotypes to be distributed).

*Dracaena lignescens* non ramosa, *D. adamae* Hepper affinis, a quo inflorescentia late ramosa differt.



PHOT. 15. *Dracaena scabra* Bos with Mr. BOULABBAH SAVADOGO (photograph J. J. Bos).

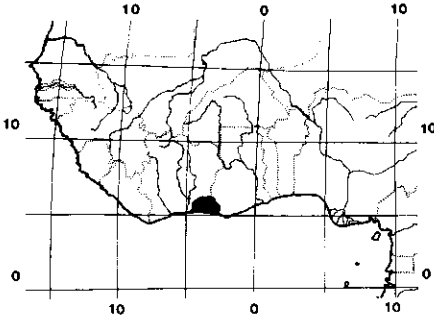
**Diagnostic characters:** Unbranched treelet to several m high, leaves obovate,  $\frac{1}{2}$ –1 m long, less than 10 cm wide, inflorescence greenish, branched scabrid, flowers in bracteate clusters, about 3 cm long, perianth-tube slightly shorter or longer than the lobes, fruits globose,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm in diameter.

**Description:** Unbranched single stemmed *shrubs* to treelets up to 4(–7) m tall, rarely forked, stems rather stout, 3 cm or more in diameter, showing annular leafscars, with a terminal tuft of leaves, after each flowering growth is continued by a single axillary bud, piercing the sheathing base of its supporting leaf but developing into a vertical stem referring the old inflorescence to an apparently axillary position. *Leaves* narrowly obovate, (40–)60–90(–110) cm  $\times$  ( $5\frac{1}{2}$ –)  $6\frac{1}{2}$ –8(–9) cm, the widest part at about  $\frac{3}{4}$  of its length or even more distal, those directly below the inflorescence in transition to the bracts, distinctly shorter but as wide as the largest leaves, tip acute to distinctly acuminate, rarely undamaged with an up to 7 mm long subulate mucro, narrowly cuneate towards the base, ( $1\frac{1}{2}$ –)2– $2\frac{1}{2}$ (–3) cm wide at its narrowest point few cm above the widened sheathing base, clasping the stem for rather more than its circumference, fresh leaves concolorous, shiny medium green above, not showing any form of nervature, dry leaves may show a median sunken strap corresponding with the midrib, distinct parallel nervature and infrequently irregular transverse venation, leaves paler beneath, showing a pale midrib for at least  $\frac{3}{4}$  of its length, parallel nerves and transverse venation similar as above. *Inflorescence* an erect terminal panicle, green to purple when fresh, drying dark brown, densely scabrid and rough to the touch, 25–60(–70) cm long, branches 6–20(–25) cm long in the axils of cuspidate bracts ranging in size from 15–1 cm, forming a transitional series between the leaves and the ultimate bracts accompanying the apical glomerules of more than 10 to over 20 flowers each, individual flowers with a 3–5(–8) mm long bracteole inserted at the base of the 3–5(–7) mm long pedicel, indurating into a long persistent peg. *Flowers* white, 28–32 mm long, receptacle flat, perianth tube 12–18 mm long, lobes either shorter or longer, 14–16 mm  $\times$   $2\frac{1}{2}$ –3 mm when expanded, showing each a single white costa, stamens inserted at the base of the lobes about 1 mm above the throat, filaments inflated for most of their length,  $\frac{3}{4}$ –1 mm in diameter, straight subulate tip almost equaling to about 2 mm shorter than the corresponding perianth lobe, anthers  $2\frac{1}{2}$  mm  $\times$  1 mm, ovary ovate, about 4 mm  $\times$  2 mm, style terete,  $\frac{1}{2}$  mm in diameter, reaching the top of the perianth to about 1 mm exerted, stigma 3-lobed, about 1 mm in diameter. *Fruits* pale orange when ripe, globose, (9–)15–23(–25) mm in diameter, receptacle persistent, 1–2(–3) mm long. *Seeds* pale brown, rather flat, shallowly bilobed to rounded rectangular in outline, 9–15 mm  $\times$  8–11 mm  $\times$  3–8 mm. *Seedlings* initially produce few (2–4) diaphanous, 3–7 mm long prophylls in gradual transition to sessile green ovate leaves with a distinct 1 mm long mucro. *Juvenile plants* develop leaves with a very slender base like a winged petiole  $\frac{1}{2}$  cm wide for about two-fifth of their length, the distal three-fifth of the blade elliptic in outline.



FIG. 21. *Dracaena scabra* Bos: 1. Habit,  $\frac{2}{3} \times$ ; 2. part of infructescence,  $\frac{2}{3} \times$ ; 3. budding inflorescence,  $1 \times$ ; 4. tip of inflorescence branch,  $\frac{2}{3} \times$ ; 5. flower,  $2 \times$ ; 6. fruit,  $\frac{2}{3} \times$ ; 7. fruit, cross-section,  $\frac{2}{3} \times$ ; 8. seed,  $2 \times$ . (1 & 2, 6-8. *Bos* 10350 + spir. coll.; 3 & 5. *Bos* 10434 spir. coll.; 4. *Bos* 10435 spir. coll.).

Distribution: *D. scabra* is possibly restricted to riverine forests. It has been collected in SE Ivory Coast, but it may be expected in similar localities in W Ghana.



MAP 19. *Dracaena scabra* Bos

Notes: In several aspect *D. scabra* bears a close resemblance to *D. adamii*, but it is readily recognized by its branched inflorescence. Another practical character can be observed on the upper surface of fresh leaves of both species. *D. scabra* is completely concolorous, but in *D. adamii* the midrib is indicated by a paler colour. This character is unfortunately lost in herbarium.

When visiting the type-locality of *D. scabra*, a phenomenon was observed that may have ecological meaning. *D. scabra* was found in a forest on the bank of Mé River. This river periodically inundates its banks during the rainy season. On this locality the extent of the inundated zone was clearly marked by a white-grey deposit sharply contrasting with the otherwise brown forest litter. The individual plants of *D. scabra* were distributed in a narrow band exactly following the limits of the grey sediment. In a locality near Maféré *D. scabra* was located on the fringes of a *Raphia* swamp. This peculiar distribution reminds me of the distribution pattern of *D. braunii* Engl. in Cameroun and Gabon. This species seems to be confined to a narrow band few meters wide, closely following the waterfront of both countries.

#### Specimens examined:

IVORY COAST: Gniahou for. (fl. b. Febr.), *Aké Assi* 12495 (G); Azaguié (fl. Febr.), *Bamps* 2409 (BR, WAG); Bébasso for. (fl. b. March), *Bamps* 2547 (BR); Maféré (fr. June), *Beentje* 458 (WAG); Nganda-Nganda (fr. July), *Beentje* 629 (WAG); Yakassé-Mé (fr. June), *Bos* 10350 (Type: WAG holo + dupl.); Maféré (fr. June), *Bos* 10353 (WAG), *Breteler* 7441 (WAG), (fr. April), 7450 (WAG); Yakassé-Mé (fr. Aoril), *Breteler* 7471 (WAG), *Leeuwenberg* 12101 (WAG).

Doubtful records: Bingerville, ?*Guilleamet* 835 (ABI); Angoakro, *van der Burg* 1179 (WAG).

Cultivated at WAG ex *Bos* 10350: *Bos* 10434 & 10435 (WAG), *van Setten* KS 278 (WAG).

#### *Dracaena surculosa* Lindley

Fig. 22, 23; Phot. 16, 17, 18; Map 20, 21

For literature, typification and synonyms see under the varieties.



Diagnostic characters: Branched shrubs to 8 m tall, with more or less tuberous roots, producing canelike shoots clad in sheathing prophylls and topped by a pseudowhorl of concolorous or variegated elliptic leaves up to 20 cm long, pseudopetiole usually not over 1 cm long, inflorescences terminal or lateral, up to 18 cm long, unbranched, with up to 7 few-flowered glomerules in the distal part and a terminal glomerule of up to 50 pedicellate  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm long flowers, perianth tube about as long as or slightly shorter than the lobes, fruits globose or lobed, up to 2 cm in diameter.

Description: Branched *shrubs* of modest proportions about 1 m high or up to 4(–8) m. Roots reddish brown, usually more or less tuberous; rootcrown well developed, periodically producing canelike shoots, usually overreaching earlier formed aerial parts, the tallest often more or less sarmentose, dark green when young, at length shiny medium brown, densely clothed in greenish-white diaphanous closely sheathing prophylls, showing parallel nerves, triangular and up to 9 cm long, deciduous or persistent for some time, their bases encircling the stem or nearly so, leaving an annular scar, stems topped by a pseudowhorl of a small number of leaves borne in a horizontal plane; growth may continue monopodially in a similar fashion, but older canes produce slender lateral branches, passing through the base of their subtending prophyll or leafbase and bearing themselves fewer-leaved pseudowhorls arranged in one plane with the horizontal branch. *Leaves* elliptic, ( $1\frac{1}{2}$ –)4–18(–20) cm  $\times$  ( $\frac{1}{2}$ –) $1\frac{1}{2}$ –6(–7) cm, the widest part almost exactly in the middle, margins sometimes slightly rough, acuminate to more or less cuspidate, tipped by a short subulate mucro often absent in herbarium, base cuneate to almost rounded, attenuate into a short pseudopetiole (2–)5–10(–13) mm long, (1–)2–5(–8) mm wide, abruptly widening to embrace the stem for about half its circumference, fresh leaves glossy bright to dark green above, concolorous or variegated with white to yellowish or light green dots, rings or fused patterns, not always distinct on the paler lower surface, parallel nerves usually indistinct above, midrib indicated by a sharp depression along its length, prominent beneath, the parallel nervature visible, leaves distinctly thinner in herbarium, stiff to quite filmy, nerves prominent on both faces, the midrib quite similar to the adjacent nerves but distinctly more prominent beneath, transverse secondary veins sometimes also prominent or distinct. *Inflorescences* terminal on canes and branches, but also axillary from leaf or prophyll axils representing leafless dwarf branches, straight, unbranched 2–18 cm long, up to 2 mm in diameter, clothed in up to 20 appressed prophylls 1–22(–55) mm  $\times$  1–4(–16) mm, with up to 7 distinct 1–5-flowered glomerules in the distal part and a 5–45-flowered terminal glomerule, bracts may be present especially on the outside of glomerules, 3–13 mm  $\times$  1–3 mm, of similar nature as the prophylls, their size and presence diminishes towards the centre of the glomerule where they may be quite absent, pedicels jointed, either above or below the middle, the persistent basal part (1–)2–4(–7) mm long, about  $\frac{1}{2}$  mm in diameter, slightly accrescent in fruit and up to 8 mm long and 1 mm thick, it may bear a flimsy subulate bracteole 1–2(–3) mm long that is usually absent



Fig. 22. *Dracaena surculosa* Lindley var. *maculata* Hook.f.: 1. Flowering branch,  $\frac{2}{3} \times$ ; 2. flower laid open,  $2 \times$ ; 3. stamen top,  $8 \times$ . (1. *de Koning 1155* & *Bos 7354* living mat.; 2 & 3. *Bos 7354* spir. coll.). *Dracaena surculosa* Lindley var. *surculosa*: 4. Inflorescence,  $\frac{2}{3} \times$ ; 5. flower laid open, ovary in section,  $2 \times$ ; 6. style top,  $16 \times$ . (4–6. *Bos 10397* + spir. coll. and living mat.).

in the central flowers of a glomerule. *Flowers* greenish- to pure white, subject to accelerated stretching of the buds into anthesis, 15–42 mm long, including the slender receptacle representing the top of the pedicel above the joint, variable in size, 1–16 mm long at anthesis but increasing in length up to the fruiting stage, perianth tube 7–12 mm long, lobes 6–16 mm long, slightly more than 2 mm wide with very delicate diaphanous margins when fully expanded, stamens inserted in the throat, filaments slightly inflated, up to  $\frac{1}{2}$  mm in diameter, up to 1 mm shorter than the corresponding perianth lobe, filiform tip bent inwards, anthers  $1\frac{1}{2}$ –3 mm  $\times$   $\frac{3}{4}$ –1 mm, ovary cylindrical with a flat top, about 2 mm  $\times$  1 mm, style filiform, reaching the top of the ovary at anthesis, eventually 1–3(–5) mm exserted, stigma capitate, clubshaped to indistinctly 3-lobed. *Fruits* orange-scarlet, globose or distinctly lobed, up to 2 cm in diameter, retaining the up to 25 mm long stalklike receptacle. *Seeds* white to light brown, globular to semispherical with variable diameters between 4–13 mm. *Seedlings* develop a short cane with prophylls, topped by a small pseudowhorl of initially often oval leaves, the primary rootlet is soon pushed aside by a stouter rather tuberous adventitious root.

**Key to the varieties:**

- 1 a Leaves not variegated, or this character not available. . . . . 2
- b Leaves variegated . . . . . 3
- 2 a Jointed pedicel of open flowers and fruits less than 1 cm long. . . . .
- . . . . . **D. surculosa** var. **surculosa**
- b Jointed pedicel of open flowers and fruits 1–2½ cm long . . . . .
- . . . . . **D. surculosa** var. **maculata**
- 3 a Variegation consisting of pure white, sometimes yellowish white, round dots, very sparse to very abundant and fused into one another, clearly distinct on both faces of the leaf. . . . . **D. surculosa** var. **surculosa**
- b Variegation consisting of sparse to abundant dots, rings, or irregular fused patterns of paler to very pale green, not white, distinct above but often indistinct beneath . . . . . **D. surculosa** var. **maculata**

**Dracaena surculosa** Lindley var. **surculosa**

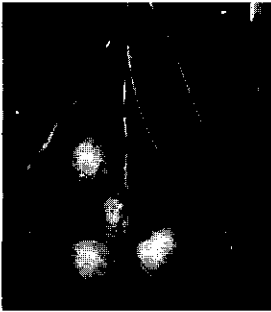
Lindley, Bot. Reg. 14 (1928): t. 1169; Bos, Misc. Pap. Landbouwhogeschool Wag. 19 (1980): 71 = Belmontia, new ser. 11-56 (1980): 71.

Type: Bot. Reg. 14 (1828): t. 1169 (see note).

Homotypic synonyms: *Nemampsis terniflora* Raf.; Rafinesque, Fl. Tellur. IV (1836): 16. *Draco surculosa* (Lindley) Kuntze; Kuntze, Rev. Gen. Pl. II (1891): 710. *Pleomele surculosa* (Lindley) N.E.Br.; Brown, Kew Bull. 1914: 278. *Dracaena maculosa* sphalm. in Gard. Chron. 1883-I: 119.

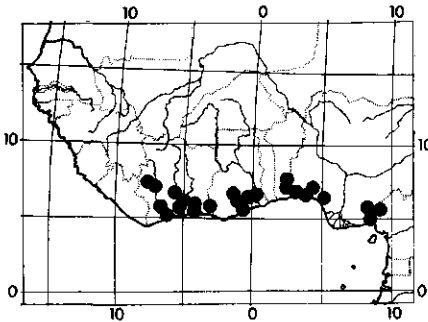
Heterotypic synonym: *Dracaena godseffiana* Sander ex Masters; Masters, Gard. Chron. 1893-I: 480. Type: Protoleque, i.e. Masters, loc. cit. Homotypic synonym: *Pleomele godseffiana* (Sander ex Masters) N.E.Br.; Brown, Kew Bull. 1914: 278.

Distinguishing characters: *Shrubs* of usually modest proportions, up to 1½(-2) m tall, roots to 1 cm in diameter, lateral branches bearing leaves in pairs or threes, leaves usually fairly stiff in herbarium, almost without exception at least slightly variegated with pure white to yellow-white dots, distinct on both faces and well preserved in herbarium, the spots entirely devoid of chlorophyll, sometimes very densely distributed and fusing in some – particularly cultivated – specimens, *inflorescence* axis 2–9 cm long, with 3–7(-8) glomerules of flowers, very rarely only a single terminal glomerule present, axillary clusters 1–5-flowered, terminal glomerule (5–)7–9(-13)-flowered, jointed pedicel less than 1 cm long, the joint usually above the middle, the basal part 1–5(-7) mm long below the joint, *flowers* usually greenish white, the stalklike receptacle 1–4 mm long, in fruit up to 5 mm, *fruits* (7–)10–15(-20) mm long, (8–)10–20(-22) mm in diameter, globose or depressed globose, not distinctly lobed when containing more than one seed, exocarp rather leathery, pulp rather tough, *seeds* semispherical to irregular discoid, resembling the cap of a mushroom, 4–8 mm × 6–10 mm × 8–12(-13) mm.

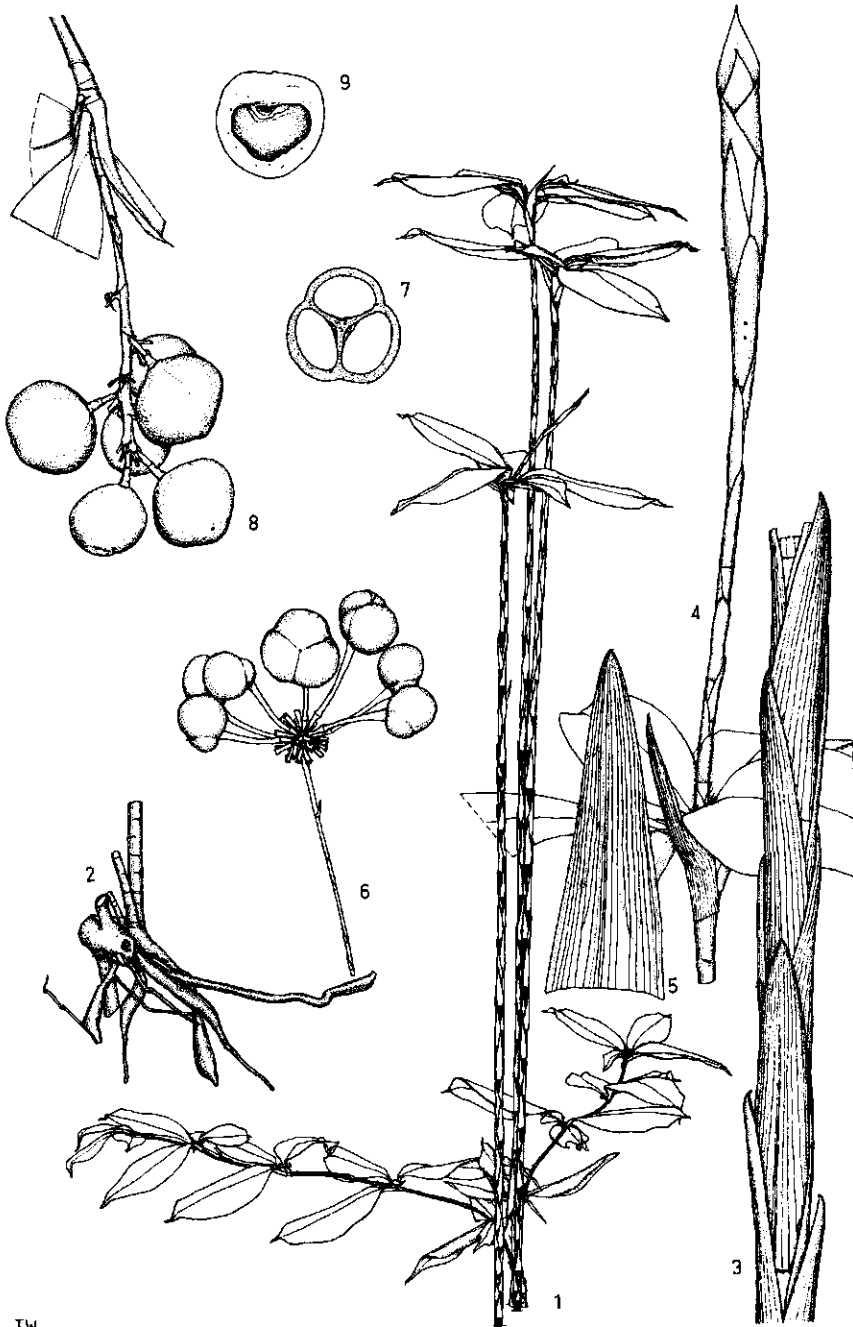


PHOT. 16. *Dracaena surculosa* Lindley var. *surculosa* (photograph H. C. D. DE WIT).  
Note the single white dot.

**Distribution:** Apart from the type originating from Sierra Leone the var. *surculosa* has been recorded from Ivory Coast to the western limits of Cameroun, it has not been collected in Liberia and Togo. Variegated forms are widely cultivated as ornamental foliage plants.



MAP 20. *Dracaena surculosa* Lindley var. *surculosa*



JW

FIG. 23. *Dracaena surculosa* Lindley var. *maculata* Hook.f.: 1. Habit,  $\frac{1}{6} \times$ ; 2. root system,  $\frac{1}{3} \times$ ; 3. cane with prophylls,  $\frac{2}{3} \times$ ; 4. developing shoot,  $\frac{2}{3} \times$ ; 5. prophyll,  $\frac{2}{3} \times$ ; 6. infructescence,  $\frac{2}{3} \times$ ; 7. fruit, cross-section,  $1 \times$ . (1. *Bos 10354* living plant in conservatory WAG; 2. *Wit & Daramola 1048*; 3-5. *Bos 10396* + living mat.; 6. *Bos 10334* A spir. coll. + *Beentje 451*). *Dracaena surculosa* Lindley var. *surculosa*: 8. Infructescence,  $\frac{2}{3} \times$ ; 9. fruit, cross-section,  $1 \times$ . (8 & 9. *Bos 10265* spir. coll.).

Notes: As was pointed out earlier (Bos, 1980), the illustration in The Botanical Register must be designated as the type. Unfortunately the number of this plate has been cited erroneously as 1189 instead of the correct no. 1169. Although both varieties of *D. surculosa* frequently share the same locality, specimens of hybrid character have never been recorded in West Africa and the available herbarium collections do not contain specimens that arouse suspicion on this account.



PHOT. 17. *Dracaena surculosa* Lindl., hybrid seedling with unique white variegation, not known in either varietal parent (photograph H. C. D. DE WIT).

A successful attempt at hybridizing both varieties artificially was conducted by F. M. VAN DER LAAN in 1979. This resulted in the production of a single hybrid seed from which a plant was raised that has flowered for the first time in Februari 1984 in the glasshouse at WAG. It shows an undeniably hybrid character with leaf-variegation and inflorescence rather like var. *surculosa*, but the taller stature, longer pedicels and lobed character of its single developing fruit like var. *maculata*. Some leaves show in addition to the dotted variegation a peculiar white striate variegation that I have never observed in any *Dracaena*. Even if these observations concern a single individual hybrid plant, it is demonstrated that hybrids between the two varieties can have intermediary characters.

An artificial interspecific hybrid between *D. surculosa* var. *surculosa* and a variegated plant of *D. fragrans* was developed in Puerto Rico and has resulted in *D. x masseffiana* Pennock ex Bos cv. Pennock (Bos, Notes Bot. Gard. Edinb. 40 (1983): 535) and it shows intermediary characters between both parents as well.

#### Selected specimens:

IVORY COAST: Amitioro for., *Aké Assi 8381* (K); Sangouiné for. (fl. Jan.), *Bamps 2356* (BR); Teké (fl. Febr.), *Bernardi 8184* (P); km 20 Daloa-Guiglo (fr. March), *Bernardi 8516* (K, P); Yakassé-Mé (fr. June), *Bos 10349* (WAG); 10 km N Sassandra (fr. July), *Bos 10366* (WAG); km 24 Sassandra-Lakota, *Breteler 7476* (WAG); Bingerville, *Chevalier 15203* (P); Guidéko-Zozro R. (fr. June), *Chevalier 19065* (P); Dioandoagowe-Niangonéplen (fl. b. May), *Chevalier 21523* (P); Sassandra-Monogaga (fr. April), *de Koning 1403* (WAG); Kassa for. (fr. Oct.), *J. de Wilde 672* (WAG); 16 km NW Sassandra (fr. June), *W. de Wilde 202* (WAG); Abonabou for. (fr. Jan.), *Leeuwenberg 2362* (K, WAG); mt. Mafa, *Leeuwenberg 7943* (WAG); 17 km SE Divo, *Leeuwenberg 8111* (WAG); 10 km N Sassandra (fr. May), *van der Burg 114* (WAG); 35 km NNE Sassandra (fr. May), *van der Burg 161 & 162 A* (WAG); 10 km N Sassandra (fr. May), *van der Burg 264-266 & 288* (WAG).

GHANA: Dede F.R. (fr. Dec.), *Adams 5039* (GC); Swedru (fl. b. Febr.), *Dalziel 8292* (K); Kade A.R.S. (fr. April), *Hall & Swaine GC 46552* (GC, K, WAG); Bobiri F.R., *Leeuwenberg 11966*

(WAG); E. Aiyola F.R. (tubers), *Leeuwenberg 12008* (WAG); Amedzofe V.R. (fl. b. Jan.), *Veldkamp 6129* (K, WAG).

BENIN: Pobé (fr. Sept.), *Adjanohoun 74* (K, P); Massé-Ketou (fl. Febr.), *Chevalier 23015* (P).

NIGERIA: Agoi F.R. (fl. Jan.), *Binuyo FHI 45464* (K); Okomu F.R. (fl. Febr.), *Brenan 9027* (B, BR, K, P, WAG); W. Iro, *Leeuwenberg 13701* (K, P, WAG); Omo F.R. (fr. May), *Pilz 2533* (MO); Shasha F.R. (fl. Febr.), *Ross 5* (BM); Oban, *Talbot 1421* (BM, K); Cross R. North F.R. (fr. May), *van Meer 1691* (WAG).

CAMEROUN: 20 km W Mamfè (fr. April), *Letouzey 13701* (K, P, WAG).

### ***Dracaena surculosa* Lindley var. *maculata* Hook.f.**

Hooker f., *Bot. Mag.* (1867): t. 5662; Bos, *Misc. Pap. Landbouwhogeschool Wag.* 19 (1980): 75 = *Belmontia*, new ser. 11-56 (1980): 75, and in add. Irvine, *Pl. G. Coast* (1930): 167 (sub. *D. elliptica* toto); Pareys *Blumeng.* ed. 2, I (1958): 309 (sub *D. phrynioides* toto).

Type: Nigeria, Old Calabar, *Mann 2327* (K lecto, P iso).

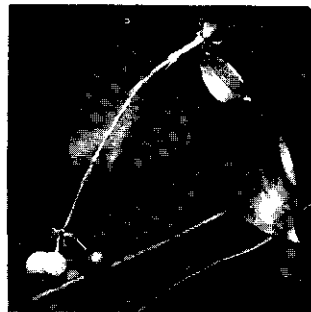
Heterotypic synonyms: *Dracaena interrupta* Haw. ex Loudon (see note); [Link, *En. Pl.* 2, 1 (1821): 341]; Loudon, *Hort. Britt.* I (1830): 130; Steudel, *Nom. Bot.* I (1840): 529. Type: Sierra Leone, *Afzelius 'Alettris Fig. Pict./37'* (BM neo).

*Dracaena surculosa* Lindley var. *capitata* Hepper; Hepper, *Kew Bull.* 22 (1968): 435; Id. in Hutchinson & Dalziel, *Fl. W. Trop. Afr.* ed. 2, III-1 (1968): 159; de Koning, *For. Banco II* (1983): 457. Type: Liberia, Sinoe basin, *A. Whyte s.n.* (K holo).

Invalid names referred to *D. surculosa* var. *maculata*:

*Dracaena surculosa* var. *verticillata* as nomen nudum in Mölisch, *Oest. Bot. Zeit.* 32 (1882): 385 and in Wunderlich, *loc.* 97 (1950): 484 is possibly of garden origin. *Pleomele globosa* Wang & Tang is a mss. name on the label of *Gamble 11038* collected in *Hort. Bot. Calcutta* in 1888 and conserved in K.

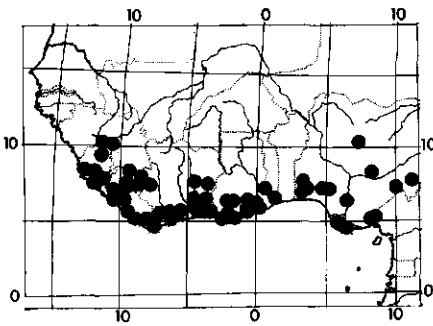
Distinguishing characters: *Shrubs* up to 4 m, exceptionally to 8 m tall, tubers to 4 cm in diameter, prophylls to 9 cm long, lateral branches bearing pseudowhorls of usually 3–4 leaves in a horizontal plane, variegation, if present, with dots, rings or irregular fused patterns of distinctly paler shades of green, never pure white, not always distinct in herbarium, usually not showing on the lower face of the leaf, the paler zones always containing chlorophyll, *inflores-*



PHOT. 18. *Dracaena surculosa* Lindley var. *maculata* Hook.f.  
(photograph H. C. D. DE WIT).

*cence* axis 3–18 cm long, about 1 mm in diameter, usually with a single terminal glomerule of (10–)15–30(–45) flowers, more rarely with up to 5 few-flowered lateral clusters below the terminal one on the distal part of the axis, jointed pedicels 1–2½ cm long, the joint below the middle, the basal part (1–)2–4(–6) mm long, the stalk-like receptacle above the joint (4–)8–12(–16) mm long at anthesis, often slightly longer and persistent on the fruit, *fruits* 6–11(–17) mm long, 6–17 mm in diameter, globose, bi- or trilobed according to the number of developed seeds, the exocarp membranous, pulp thin and soft, *seeds* globose but flattened against adjacent seeds when present, 5–7 mm × 6–8 mm × 7–11 mm.

**Distribution:** This variety has been recorded from Guinea to Western Cameroun, with the exception of Benin, in similar habitats as var. *surculosa*. Where both varieties occur simultaneously, plants of var. *maculata* are usually far more numerous. Variegated forms are rarely cultivated outside Botanical Gardens.



MAP 21. *Dracaena surculosa* Lindley var. *maculata* Hook.f.

**Notes:** The combination *Dracaena interrupta* was initially employed by LINK for a plant he received from an English garden. LINK stated that this plant was not sufficiently mature at that time to be considered by him. As such this name has no status under the ICBN and I do not intend to give it any status here. It represents quite likely the same taxon as its homonym *Dracaena interrupta* Haw. ex Loudon, which appeared in LOUDON's catalogue of 1830 where it was ascribed to HAWORTH. There is no evidence that HAWORTH actually described this plant somewhere, but it is likely that he was involved in its introduction in 1798 and that he coined this name. LOUDON's rather tabulary treatment of the plants provides the following data: An ornamental evergreen shrub of the stove, 2 feet high and white-flowered in June-July, introduced from Sierra Leone, to be propagated by cuttings and grown in peaty loam, it was entered under number 8471 and the English name is the translation of the specific epithet, i.e. interrupted. STEUDEL accepted it as a species in *Dracaena*, accredited to HAWORTH, but he does not provide any additional data. In my opinion LOUDON's treatment constitutes valid publication of this name and as the plant concerned had flowered, possibly on more than one occasion, in cultivation at the



size of not more than 2 feet, while it was introduced from Sierra Leone, I consider it to be conspecific with *D. surculosa* Lindl. This species is quite able to flower when 2 feet tall and it is the most readily flowering species in cultivation. It is interesting to note that when LOUDON introduced *D. surculosa* for the first time in a supplement to his catalogue in 1839, he provided it with the accession number 8471a, indicating no doubt its closest relationship. The circumstance that of the two varieties recognized in *D. surculosa*, the var. *maculata* is fairly common in Sierra Leone and often concolorous in its foliage, whereas var. *surculosa* is virtually absent in that country and usually distinctly variegated, leads me to consider *D. interrupta* Haw. ex Loudon synonymous with *D. surculosa* Lindley var. *maculata* Hook.f. As no original material seems to be available today, I think it appropriate to neo-typify *D. interrupta* with a specimen collected by AFZELIUS in Sierra Leone in approximately the same period, and conserved at BM, annotated in pencil with 'Aletris Fig. Pict.' and '37'.

#### Selected specimens:

GUINEA: Nzérékoré (fr. June), *Jacques-Félix* 955 (P); mt. Nimba (fl. b. March), *Schnell* 837 (P).

SIERRA LEONE: sine loc. (fl., fr.), *Afzelius* '37' (BM); Freetown (fl. Jan.), *Dalziel* 947 (K); Guma Dam (fl. b. Jan.), *Morton SL* 1622 (SL, WAG); Fourah Bay Coll. Bot. Gard. (fl., fr. April), *Morton SL* 1773 (K, WAG); Momaligi (fl. b. Sept.), *Morton & Jarr SL* 2202 (K, WAG); Kangahun (fl. Jan.), *Morton & Jarr SL* 3355 (K, WAG).

LIBERIA: Blazie (fr. Nov.), *Adam* 16196 (P); R. Cess (fr. March), *Baldwin* 11252 (K); Zorzor (fl. July), *Bos* 2215 (K, P, WAG); Cavally R. (fl. April), *Dinklage* 2654 (B); Ganta (fl., fr. Febr.), *Harley* 906 (B); Bomni Hills (fl. b. Febr.), *Jansen* 1529 (WAG); Gibi mt. (fl. Jan.), *Jansen* 1718 (WAG); 32 km SW Suakoko (fl. July), *Leeuwenberg & Voorhoeve* 4587 (B, K, WAG); Firestone Plant. (fl., fr. Nov.), *Stoop-van de Kastele* FS 244 (WAG), FS 310 (WAG), (fr. July), FS 341 (WAG); Gola F.R. (fl. b. Febr.), *van Meer* 103 (WAG); Duport Devilbush (fl. Jan.), *Voorhoeve* 776 (WAG); Sinoe basin (fl.), *Whyte s.n.* (K).

IVORY COAST: 18 km NE Ayamé (fl. b. June), *Beentje* 406 (WAG); Maféré (fr. June), *Beentje* 451 (WAG); 20 km NW Tabou (fl. Sept.), *Beentje* 813 (WAG); Maféré (fl. b., y. fr. Sept.), *Beentje* 1089 & 1121 (WAG); Banco for. (fr. May), *Bos* 10334 A (spir. coll. WAG); Maféré (fr. June), *Bos* 10352 (WAG); Banco for. (fr. July), *Breteler* 5212 (WAG); 15 km NW Sassandra (fl. b. Oct.), *Breteler* 5820 (WAG), (fr. May), 7481 (WAG); Bouroukrou (fr. Dec.-Jan.), *Chevalier* 16824 (P); Boguie (fl. Jan.), *Chevalier* 17056 (P); Soubré (fl. b. June), *Chevalier* 19142bis (P); Moy. Sassandra-Moy. Cavally (fl. June), *Chevalier* 19275 (P); Banco for. (fr. Jan.), *de Koning* 86 (WAG), (fl. Febr.), 1107, 1152, 1155, 1156, 5394 & 5395, (fr. April), 1557, 1571, 1602, 1617 & 5683, (fr. May), 1645, (fr. June), 1753 & 1776, (fl. Sept.), 2220, (fr. Nov.), 2595, (fr. Dec.), 3034 (all WAG); Culta Adiopodoumé ex Banco for. (seedl.), *de Koning* 2112, 2256, 2569, 3348, 3547, 3673 & 3788 (WAG); 15 km NW Sassandra (fr. April), *de Koning* 1310 & 1319 (WAG); Tabou (fr. Oct.), *de Koning* 2467 (WAG); Amittoro for. (fl. Sept.), *J. de Wilde* 279 (WAG); km 56 Sassandra-Gagnoa (fl. b. Aug.), *J. de Wilde* 335 (WAG); Anguededou for. (fl. b. Febr.), *J. de Wilde & Leeuwenberg* 3433 (BR, K, P, WAG); Banco for. (fl. b. Oct.), *W. de Wilde* 1091 (B, BR, K, P, WAG), (fr. Oct.), 1091 B (WAG); Téké for. (fl. b. Aug.), *de Wit* 8141 (WAG); Sassandra (fr. Dec.), *Leeuwenberg* 2262 (WAG); Banco for. (fl. Febr.), *Leeuwenberg* 2678 (WAG); Anguededou for. (fl. b. July), *Leeuwenberg* 7921 (WAG); 17 km SE Divo (y. fr. Aug.), *Leeuwenberg* 8109 (WAG); Anyama Aouabo (fl. b., fr. May), *Thijssen* 16 (WAG); mt. Tonkoui (y. fr. Aug.), *Thijssen* 195 & 213 (WAG); Anguededou for. (fl. Sept.), *Thijssen* 309 (WAG); Banco for. (fr. April), *van der Burg* 418 (WAG), (fl. July), 701 (WAG).

GHANA: Legon Hill (fl., fr. March), *Adams* 3761 (GC); Accra plains (fl. Oct.), *Brown* 370 (K); Atewa Range F.R. (fl. b. Jan.), *de Wit & Morton A* 2932 (B, WAG); Kwahu Nteso-Ankoma (fr.

Jan.), *Enti & Hall GC 3702* (K); Kade A.R.S. (fl. Aug.), *Hall & Agyakwa GC 38676* (GC); Ashanti (fr.), *Irvine 489* (K); Achimota (fl. Sept.), *Irvine 4787* (K); Ampa junction (fl. Febr.), *Leeuwenberg 11100* (WAG); Atewa Range F.R. (?fl. Oct.), *Lock 46725* (MO); Tana-Ofin F.R. (fl.b. Jan.), *Lyon 2865* (K).

TOGO: km 58 Lomé-Atakpame (fl. Sept.), *Mahoux 79* (P).

NIGERIA: Ife Univ. (fl. Oct.), *Guile 2065* (IFE), (fr. March), *2067* (IFE), (fr. April), *Isawumi 42* (IFE); Old Calabar (fl., fr. Febr.), *Mann 2327* (Type: K lecto, P iso); Kaduna (fl. Dec.), *Meikle 782* (B, K, P, WAG); Dogon Kurmi (fr. Dec.), *Olorunfemi FHI 55661* (K); Idanre F.R. (fl. Aug.), *Okafor & Daramola FHI 35293* (K); Gambari F.R. (fl. Febr.), *van Meer 601* (WAG); Univ. Bot. Gard. Ibadan (fl., fr. Nov.), *van Meer 883* (WAG); Ijaiye F.R. (fl. Dec.), *Wit & Daramola 1048* (WAG).

CAMEROON: Culca Bot. Gard. Victoria (fl., fr. Oct.), *Winkler 491* (B, WAG).

### ***Dracaena talbotii* Rendle**

**Fig. 17, p. 90**

Rendle, *Cat. Pl. Talbot* (1913): 112; Hutchinson in Hutchinson & Dalziel, *Fl. W. Trop. Afr. II* (1936): 384; Hepper in *Id.*, loc. ed. 2, III-I (1968): 157.

Type: Nigeria, Oban, *Talbot 1532* (BM lecto + iso, K iso, MO, WAG photo).

Homotypic synonym: *Pleomele talbotii* (Rendle) N.E.Br.; Brown, *Kew Bull.* 1914: 279.

**Diagnostic characters:** Plants of unknown habit with terminally congested, linear-oblancoleolate leaves up to 80 cm long and not more than  $2\frac{1}{2}$  cm wide, gradually tapering into a sheathing base, inflorescence a short dense bracteate raceme up to 15 cm long, flowers in sessile clusters enveloped by bracts and bracteoles, up to 3 cm long, the perianth tube longer than the lobes, fruits unknown.

**Description:** Habit unknown, foliage congested terminally on stems. *Leaves* linear-oblancoleolate, 28–80 cm long, up to  $2\frac{1}{2}$  cm wide, tip acute, with an up to 9 mm long mucro, very gradually tapering towards the base and about  $\frac{1}{2}$  cm wide few cm above the open sheath, clasping the stem for slightly more than its circumference, midrib visible above, nerves densely parallel, secondary veins irregularly transverse, midrib prominent beneath, disappearing within 10 cm from the tip, nervature and veins similar to the upper surface. *Inflorescence* terminal, 10–15 cm long, erect, axis smooth, peduncle bearing transitional leaves gradually merging into the main bracts of the inflorescence, distally diminishing in size, each bract with a dense sessile cluster of flowers in its axil, individual flowers embraced by a ca 15 mm long bract and bracteole, almost sessile. *Flowers* 25–31 mm long, obconical indurated receptacle 2 mm long, perianth tube 13–20 mm long, the lobes about 10–11 mm  $\times$   $2\frac{1}{2}$  mm, each with a single median vein, stamens inserted in the throat, filaments inflated, at least  $\frac{1}{2}$  mm in diameter, tip subulate, slightly inclined, about 1 mm shorter than the corresponding perianth lobe, anthers 2 mm  $\times$  1 mm, ovary ovoid, 3 mm  $\times$   $1\frac{1}{2}$  mm, style reaching the top of the perianth or up to about 1 mm exerted, about  $\frac{1}{4}$  mm in diameter, tipped by a distinctly 3-lobed stigma,  $\frac{3}{4}$  mm in diameter. *Fruits* and *seeds* unknown.

Distribution: *D. talbotii* is only known from its type, collected in Oban, Nigeria. I expect it to occur in adjacent Cameroun as well.

Notes: The type of *D. talbotii* does not provide any data on the habit of this species. It consists of 3 separate stem tips, each bearing a congested pseudo-whorl of leaves, crowned by an inflorescence. Rendle considered it to be near *D. preussii* Engl. according to its description. I tend to agree with him and I expect *D. talbotii* to be a single stemmed erect plant without branches. Growth will be continued after each flowering by means of a single axillary shoot replacing the main stem, and forked specimens will be exceptional. This habit occurs in species like *D. adamii*, *D. cristula* and *D. scabra* and as such, older plants could become several m high.

I do not hesitate to maintain *D. talbotii* as a distinct species, as its typical combination of characters does not warrant a particular affinity to any of the *Dracaena* species known to me.

Its rarity and the circumstances that it was never again collected after TALBOTS initial discovery in 1912 may be accounted for by rather severe ecological requirements for its habitat as well as the rather low collection intensity in its area.

## APPENDIX

### ***Dracaena draco* (L.) L.**

Berhaut, Fl. Senegal (1954): 188; Id., loc. ed. 2 (1967): 321 ref.: Dakar, garden, *Berhaut 345* (P).

BERHAUT describes plants of this species, cultivated in gardens in Senegal, as unbranched, about 1 m tall with leaves in the range of 60 cm to 1 m. These conditions prevail in immature specimens that have not yet flowered.

Except when the apex of a plant is damaged, branching does not occur before a terminal inflorescence has developed and flowering branches have considerably shorter leaves. I have no information on fully mature specimens of *D. draco* having become established in Senegal.

BERHAUT does not comment on the origin of the cultivated plants he observed. Although it is tempting to consider the near by Cap Verde Islands in this respect, the Canary Islands should not be disregarded either. Senegalese involvement in the tourist trade and the ready availability of both viable seeds as well as living plants as souvenirs from Macaronesia make this source far more realistic than the Cap Verde Islands where *D. draco* seems to be far less common and accessible.

### ***Dracaena* sp. cf. *D. nyangensis* Pellegrin**

Among the herbarium specimens from West Africa investigated for this paper a collection made by TALBOT in 1912 seems to have escaped attention so far.

*Talbot 2402* has been collected in Oban, Nigeria and consists of an upper part of an infructescence and a single leaf without its base in BM, and similar single leaves in K and Z respectively.

The leaves without base 80–96 cm long, differentiated into a distal elliptic to obovate lamina 13–14 cm wide, acute, with a mucro up to 1 cm long, base cuneate, tapering into a false petiole 1 cm wide at its narrowest point, midrib impressed above, parallel nerves and transverse veins prominent, midrib prominent beneath, disappearing about 15 cm below the tip, nerves and veins prominent as above, the infructescence spicate, 37 cm long, straight with a tiny erect branch of 2 cm at its base, pedicels in groups of 3–5, persistent as pegs of 1 mm or less, fruits spindle shaped if one seeded or with 2 or 3 spindle shaped lobes up to 3 cm long, each lobe 7–8 mm in diameter.

The general impression is that of a very stout form of *D. aubryana*, but the very prominent nerves in a strongly reticulate pattern are only matched in the type of *D. nyangensis* Pellegrin from Gabon. As yet undescribed collections from South Cameroun seem to approach this material as well and they will be dealt with in the Flora of Cameroun. I prefer to postpone a decision on this material until the plants from Cameroun have been analysed.

## ***Dracaena saposchnikowii* Regel**

REGEL described *D. saposchnikowii* from a living plant in the collection of a Russian gentleman SAPOSCHNIKOW, who had acquired the plant in Riga (Latviya). Whence this plant came to Riga was not known. Other plants of this species were cultivated at that time in Kew Gardens in ignorance of their origin, flowering a few years later and figured in the Botanical Magazine. Fortunately type material of REGEL'S plant has been conserved at LE.

*D. saposchnikowii* was thought to be closely related to *D. arborea* (Willd.) Link and supposed to have been introduced from Africa. After surveying the available material of *Dracaena*, I have come to the conclusion that *D. saposchnikowii* Regel is conspecific with a species from eastern Asia. This species is often identified as *Pleomele cochinchinensis* (Lour.) Merr.

This combination was formally proposed by MERRILL, but in *Dracaena* it only has the illegitimate name *D. loureiri* Gagnepain, based on *Aletris cochinchinensis* Lour. In order to provide this taxon with a correct name in *Dracaena*, the following combination is formally proposed:

### ***Dracaena cochinchinensis* (Lour.) Bos comb. nov.**

Basionym: *Aletris cochinchinensis* Lour.; Loureiro, Fl. Cochinchinensis (1790): 204.

Neotype: Vietnam, Tourane, *J. & M. S. Clemens 4048* (P lecto, BM, K, MO iso), proposed by MERRILL, Trans. Am. Phil. Soc. 24 (1935): 108.

Homotypic synonyms: *Dracaena loureiri* Gagnepain, Bull. Soc. Bot. Fr. (1934): 287, nom. illeg.

*Pleomele cochinchinensis* (Lour.) Merr., Trans. Am. Phil. Soc. 24 (1935): 108.

Heterotypic synonym: *Dracaena saposchnikowii* Regel syn. nov.; Regel, Gartenflora 20 (1871): 323, t. 705; Id., Act. Hort. Petrop. I (1871): 139 = Rev. (1871): 39; Gard. Chron. 1873: 363; Baker, J. Bot. XII (1874): 165; Id., J. Linn. Soc. 14 (1875): 528; Id. in Hooker f., Bot. Mag. (1876): t. 6234; Regel, Gartenflora 26 (1877): 180; Johnston, River Congo (1884): 76 (sphalm.: *D. sapochinowki*, misapplied); Möller's D. Gartn. Zeit. 1884: 20 (sphalm.: *D. saposchnikofiana*); Nicholson, Ill. Dict. Gard. I (1885): 491; Durand & Schinz, Consp. Fl. Afr. (1893): 331; Vilmorin's Blumeng. I (1895): 1064; Wiegand in Bailey, St. Cycl. Hort. I (1914): 1070.

Type: Cult. Hort. Petrop. s.n. dd. V 1871 (LE holo).

Homotypic synonym: *Draco saposchnikowii* (Regel) Kuntze, Kuntze, Rev. Gen. Pl. II (1891): 710.

## SPECIES EXCLUDENDA

*Dracaena hirsuta* Thunb. = ***Palisota hirsuta*** (Thunb.) Schumann ex Engl.

This combination is usually accredited to SCHUMANN in Engler's Bot. Jahrb. 24 (1897): 347. There the combination *Palisota hirsuta* (Thunb.) Schumann is entered and accompanied by a reference to two collections from Cameroun. This does not comply with the requirements for a valid combination.

CLARKE in his contemporary monograph on the genus *Palisota* preferred to retain BENTHAM's epithet *thyrsiflora*, which is illegitimate for this taxon.

When ENGLER in Engler & Drude, Veg. Erde IX-II (1908): 268 cited *Palisota hirsuta* (Thunb.) Schumann with *P. thyrsiflora* Benth. as a synonym and direct reference to THUNBERG's *Dracaena hirsuta* he fulfilled all necessary requirements for this combination, so ENGLER must be cited as its authority.

DE WILDEMAN's claim to this authority in his Pl. Thonner. (1911): 285 referring to his Miss. Laur. I (1906): 210 cannot be accepted because in 1906 he cited the SCHUMANN combination merely in synonymy to BENTHAM's name.

## NOMINA REJICIENDA

*Dracaena frutescens* is mentioned by LINK, En. Pl. 2, 1 (1821): 341 as not sufficiently mature to describe.

STEUDEL, Nom. Bot. I (1840): 529 rejects it, and GOEPPERT, Nov. act. (1854): 52 reports it from French gardens but does not know what it is. As such it remains in all 3 cases an unidentified nomen nudum without status under the ICBN.

*Dracaena gentilii* Draps-Dom (1908) non De Wildeman (1906) would be an illegitimate superfluous name for *Cordyline fruticosa* (L.) A. Chev. if its validity is demonstrated. It was coined to denote one of the numerous clones of this variegated species in *Cordyline*, generally considered as *Dracaena* in horticultural circles; it represents a cultivar introduced into the market as new in 1908 by the firm of DRAPS-DOM in Laeken, near Brussels. Its identity can be gleaned from the collective, but technically invalid descriptions in MÖLLER's D. Gartn. Zeit. 1908: 257 and in Gard. Chron. 1910-II: 345. It is quite likely, however, that some entry in a printed catalogue of DRAPS-DOM or any other firm, does provide a basis for validity. Until this is definitely established it has no status under the ICBN and remains a nomen nudum.

*Dracaena humilis* Hooibrenk was apparently a garden name in Hooibrenk's garden in Hitzing near Vienna. In harmony with the views of PLANCHON, GOEPPERT, Nov. Act. (1854): 55 preferred to change this name to *Cordyline humilis* (Hooibrenk) Goepfert. KOCH, Berl. Allg. Gartenz. 1858: 255 & 262 and in Wochenschr. 1861: 398, repeatedly stated his complete ignorance to its identity. In absence of any additional information both names remain nomina nuda without any status under the ICBN.

*Dracaena reclinata* Hort. is mentioned but not accepted by SCHULTES f. in Roemer & Schultes, Syst. Veg. VII (1830) Addenda 1677 and by STEUDEL, Nom. Bot. I (1840): 529. It remains an unidentified nomen nudum without status under the ICBN.

*Dracaena spicata* Loddiges ex Koch, Berl. Allg. Gartenz. 1858: 255 & 263 is listed as an unidentified species separate from homonyms credited to ROXBURGH and WALLICH respectively. It remains an unidentified nomen nudum without any status under the ICBN.

*Dracaena undulata* Hort. Baum. Bollwill. is mentioned by GOEPPERT, Nov. Act. (1854): 52 in total ignorance to its identity. It remains an unidentified nomen nudum without status under the ICBN.

*Dracaena viridis* is a name SCHULTES f. reported from Hort. Caters in Antwerp in Roemer & Schultes, Syst. Veg. VII (1830) Addenda 1677. He does not know its identity and STEUDEL, Nom. Bot. I (1840): 529 does not accept it as a species. It is an unidentified nomen nudum without any status under the ICBN.

## REGISTER

New names and combinations are in **bold face**, synonyms and invalid names are in *italics*. Page numbers of principal entries are in **bold face**; those of figures and photographs in *italics*.

- Agave foetida* L. 73  
*Aletris arborea* Willd. 23, 27  
 – *cochinchinensis* Lour. 121  
 – *fragrans* Hort. Cels. 25  
 – *fragrans* L. 69, 73, 75  
 – *primula* Donn 92, 96  
 – *pumila* Donn non Ait. 92, 96  
*Aloë arborescens africana* 3,  
 – *fragrantissima* Jacq. 70, 73, 75  
*Asparagus* L. 10, 16  
*Asparagus draco* L. 16  
*Cordyline* Auctt. non Comm. ex A. L. Jussieu 14  
*Cordyline* Comm. ex A. L. Jussieu 10  
 – *arborea* (Willd.) Goepfert 23  
 – *australis* (Forst. f.) Endl. 87  
 – *cristula* (Bull) van Geert 63  
 – *fragrans* (L.) Planchon 23, 70  
 – *fruticosa* (L.) A. Chev. 1, 81, 122  
 – *goldiana* (Bull) de Vos 76  
 – *humilis* (Hooibrenk) Goepfert 122  
 – *ovata* (Ker Gawler) Planchon 92  
 – *reflexa* (Lam.) Planchon 14  
*Crinum jagus* (Thomps.) Dandy 10  
*Dracaena* L. 14  
 – *acaulis* Baker 29  
 – *adamii* Hepper 7, 11, 12, 18, **19**, 20, 21, 42, 44, 108, 119  
 – *afromontana* Mildbr. 87  
 – *afzelii* Baker 92, 96  
 – *arborea* (Willd.) Link 0, 6, 10, 11, 12, 12, 18, **23**, 24, 26, 69, 70, 72, 82, 121  
 – *var. baumannii* Engl. 25, 28  
 – *vera* Hort. Berol. 23  
 – *aubryana* Brongn. ex C. J. Morren 4, 7, 11, 12, 18, **29**, 31, 35, 59, 101, 104, 120  
 – *bicolor* Hook. 11, 12, 18, **38**, 39, 62  
 – *braunii* Engl. 10, 11, 29, 34, 108  
 – *calocephala* Bos 12, 17, 22, **42**, 43  
 – *camerooniana* Baker 4, 6, 7, 8, 11, 13, 18, 19, **45**, 47, 49, 60, 68, 92  
 – *capitulifera* De Wild. & Th. Dur. 46, 51  
 – *cerasifera* Hua 4, 8, 11, 19, **54**, 56, 58  
 – *cochinchinensis* (Lour.) Bos 121  
 – *congoensis* Hua 11, 18, 38, 41, 45, **60**, 61, 69, 70, 72, 73  
 – *cristula* W. Bull 7, 8, 12, 17, **63**, 64, 65, 92, 119  
 – *cylindrica* Hook. f. 38, 41, 60  
 – *deisteliana* Engl. 11, 18, **61**, **67**, 69  
 – *densifolia* Baker 19, 22  
 – *draco* (L.) L. 6, 7, 11, 12, 14, 16, **16**, 120  
 – *dundusanensis* De Wild. 46  
 – *elegans* Hua 79, 81  
 – *elliottii* Baker 63, 66  
 – *elliptica* Thunb. 81, 115  
 – *excelsa* Ten. 25, 28  
 – *fragrans* (L.) Ker Gawler 3, 3, 11, 12, 14, 17, 18, 23, 27, 28, 60, 62, 67, 68, **69**, 71, 74, 82, 114  
 – *cv. Knerkii* 23  
 – *cv. Lindenii* 73  
 – *cv. Massangeana* 73  
 – *cv. Victoria* 73  
 – *fragrantissima* Hort. 75  
 – *frommii* Engl. & K. Krause 46  
 – *fruticosa* Hort. Berol. 27  
 – *frutescens* Link 122  
 – *gentilii* Draps Dom 122  
 – *gentilii* De Wild. 46  
 – *godseffiana* Sander ex Masters 111  
 – *goldiana* Bullen ex Masters & Moore 12, 17, **76**, 77  
 – *hirsuta* Thunb. 121, 122  
 – *hookeriana* K. Koch 75  
 – *humilis* Baker 29, 30, 34, 97, 102  
 – *humilis* Hooibrenk 122  
 – *interrupta* Baker 45  
 – *interrupta* Haw. ex Loudon 115, 116, 117  
 – *kerstingii* Engl. & K. Krause 70  
 – *kindtiana* De Wild. 30, 34  
 – *knerkiana* K. Koch (incl. orthographic variants: *kerkiana*, *knerckiana*, *knerkii*) 23, 27  
 – *kochiana* Regel 27  
 – *laevissima* Engl. ex Durand & Schinz 79  
 – *laxissima* Engl. 8, 9, 11, 17, 77, **79**  
 – *lecomtei* Hua 45  
 – *leonensis* Lodd. ex Loudon 92, 96  
 – *louveiri* Gagnepain 121  
 – *maculosa* Hort. 111  
 – *mannii* Baker 4, 8, 11, 12, 19, 59, 69, **82**, 84, 86, 91  
 – *x masseffiana* Pennock ex Bos cv. Pennock 73, 114  
 – *mayumbensis* Hua 46  
 – *mildbraedii* K. Krause 12, 18, 82, 87, **89**, 90  
 – *monostachya* Baker var. *angolensis* Baker 30, 34



- var. *monostachya* 30, 34
  - *nitens* Welw. ex Baker 87
  - *nyangensis* Pellegrin 18, 41, 120
  - *oculata* Linden 98
  - *odum* Engl. & Krause 46
  - *ovata* Ker Gawler 4, 11, 19, 30, 45, 51, 63, 92, 93, 95, 96
  - *perrottetii* Baker 11, 83, 87
  - var. *minor* Baker 83
  - var. *perrottetii* 82
  - *phanerophlebia* Baker 97, 101
  - *phrynioides* Hook. 7, 11, 17, 18, 29, 30, 32, 34, 97, 99, 104, 115
  - var. *staudtii* Engl. 98
  - *poggei* Engl. 29
  - ***praetermissa* Bos** 7, 10, 11, 18, 29, 32, 33, 101, 102, 102, 103
  - *preussii* Engl. 40, 119
  - *prolata* C. H. Wright 93
  - *reclinata* Hort. 122
  - *reflexa* Lam. 11, 14
  - *sanderiana* Sander 17
  - *saposchnikowii* Regel (incl. orthographic variants: *sapochinowki*, *saposchnikof-fiana*) 121
  - ***scabra* Bos** 11, 18, 105, 105, 107, 119
  - *sciaphila* Louis & Mullenders 46
  - *schizantha* Baker 10
  - *scoparia* A. Chev. 54, 59
  - *sessiliflora* C. H. Wright 93
  - *silvatica* Hua 46, 51
  - *smithii* Baker ex Hook. f. 60, 70, 75
  - *spathulata* Hort. 92
  - *sp.* Hort. Veitch 98
  - *sp. nov.* 2 Hort. Bull 98
  - *spicata* Lodd. ex K. Koch 122
  - *steudneri* Engl. 28
  - *surculosa* Lindley 4, 5, 6, 7, 8, 11, 13, 14, 17, 19, 51, 81, 108, 110, 113, 114, 117
  - var. *capitata* Hepper 115
  - var. *maculata* Hook. f. 5, 8, 98, 110, 111, 113, 114, 115, 115
  - var. *surculosa* 45, 46, 92, 110, 111, 112, 113, 114, 117
  - var. *verticillata* Hort. 115
  - *talbotii* Rendle 12, 18, 90, 118
  - *thalioides* Makoy ex C. J. Morren 29, 33
  - *thalioides* Makoy ex Regel 29, 34
  - *tholloniana* Hua 30, 34
  - *thomsoniana* J. H. Veitch ex Masters & Moore 83, 87, 88
  - *ueleensis* De Wild. 46
  - *undulata* Hort. Baum Bollwill. 123
  - *usambarensis* Engl. 87
  - *vaginata* Hutch. 89, 91
  - *viridiflora* Engl. & K. Krause 89, 91
  - *viridis* Schult. f. 123
- Draco* Kuntze 14
- *afzelii* (Baker) Kuntze 93
  - *arborea* (Wild.) Kuntze 23
  - *bicolor* (Hook.) Kuntze 38
  - *cameruniana* (Baker) Kuntze 45
  - *cylindrica* (Hook. f.) Kuntze 38
  - *fragrans* (L.) Kuntze 70
  - *goldieana* (Bull) Kuntze 76
  - *humilis* (Baker) Kuntze 30
  - *mannii* (Baker) Kuntze 82
  - *ovata* (Ker Gawler) Kuntze 92
  - *perrottetii* (Baker) Kuntze 83
  - *phrynioides* (Hook.) Kuntze 98
  - *saposchnikowii* (Regel) Kuntze 121
  - *surculosa* (Lindley) Kuntze 111
  - *thalioides* (Makoy ex Regel) Kuntze 29
  - *yucciformis* Vand. 16
- Kniphofia pumila* (Aiton) Kunth 96
- Nemanspis* Rafin. 14
- *terniflora* Rafin. 14, 111
- Palisota hirsuta* (Thunb.) Schumann ex Engl. 121, 122
- *thyrsiflora* Benth. 121, 122
- Phrynium maculatum* Hort. Angl. 98, 101
- Pleomele* Salisb. 14, 81, 96
- *afzelii* (Baker) N. E. Br. 93
  - *arborea* (Willd.) N. E. Br. 23
  - *bicolor* (Hook.) N. E. Br. 38
  - *camerooniana* (Baker) N. E. Br. 45
  - *cerasifera* (Hua) N. E. Br. 54
  - *cochinchinensis* (Lour.) Merr. 121
  - *congoensis* (Hua) N. E. Br. 60
  - *cylindrica* (Hook. f.) N. E. Br. 38
  - *elegans* (Hua) N. E. Br. 80, 81
  - *elliottii* (Baker) N. E. Br. 63
  - *fragrans* (L.) Salisb. 14, 70, 75
  - *globosa* Wang & Tang 115
  - *godseffiana* (Sander ex Masters) N. E. Br. 111
  - *goldieana* (Bull) N. E. Br. 76
  - *heudelotii* N. E. Br. 83
  - *humilis* (Baker) N. E. Br. 30
  - *interrupta* (Baker) N. E. Br. 45
  - *kindtiana* (De Wild.) N. E. Br. 30
  - *laxissima* (Engl.) N. E. Br. 79, 81
  - *lecomtei* (Hua) N. E. Br. 46
  - *mannii* (Baker) N. E. Br. 82
  - *mayumbensis* (Hua) N. E. Br. 46
  - *monostachya* (Baker) N. E. Br. 30
  - *perrottetii* (Baker) N. E. Br. 83
  - *phrynioides* (Hook.) N. E. Br. 98
  - *prolata* (C. H. Wright) N. E. Br. 93
  - *silvatica* (Hua) N. E. Br. 46

- *surculosa* (Lindley) N. E. Br. 111
  - *talbotii* (Rendle) N. E. Br. 118
  - *thalioides* (Makoy ex Regel) N. E. Br. 29
  - *tholloniana* (Hua) N. E. Br. 30
- Sansevieria Thunb. 10
    - *fragrans* (L.) Jacq. 70
    - *guineensis* (L.) Willd. 96
    - *hyacinthoides* (L.) Druce 96