clawed. Filaments 3·2-3·8 and 3·4-4 mm long. Anthers 1·7-2·1 mm long. Ovary linear; style short; ovules 20-28. Siliqua 2·5-4 cm long, 2-2·7 mm broad, linear, margin straight; valves 1-nerved, finely net-veined; style 1-2·5 mm long, slender, straight. Seeds 1·7-1·8 by 1·5-1·6 mm, reniform-circular, narrowly winged.

Heliophila laciniata is allied to but differs from H. carnosa in being an annual and it differs from H. crithmifolia in the leaves, which have the lobes spaced along the whole length of the leaf, the larger flowers, and the smaller seeds which tend to be broader than long. Our species is known from only a few collections from an area south-west of Springbok. They were collected during July and September. The flowers are white, becoming mauve.

W. MARAIS

CYCADACEAE

Encephalartos inopinus R. A. Dyer sp. nov., foliolis lineari-attenuatis 14-21 cm longis 8-13 mm latis 13-21-nervatis infra glaucis facile distinguitur.

Planta basi ramosa; rami cylindrici usque 2 m longi, 17–23 cm diam. Folia 80–110 cm longa, petiolis 10–20 cm longis; rhachis rectus nonnunquam superne leviter tortus, glaber, pulvino dense bruneo-lanato usque 3.5 cm longo et 4.5 cm lato, foliolis infimis spinosis reductis; foliola media patenti-recurva lineari-attenuata, 14–21 cm longa, 8–13 mm lata, infra glauca, pungentia, marginibus integris vel rariter margino inferne apicem versus 1–2 dentibus minutis instructis. Strobili ignoti.

Transvaal: Lydenburg; between Penge and Kromellenboog, cult. Johannesburg, van Hoepen PRE 29663; Kromellenboog about 1 mile east of Asbestos mine on south facing krans, Els photo; Dyer 5788 (PRE, holotype).

Rootstock freely branched from base; stems up to about 2 m long, 17-23 cm diam. (including the persistent leaf bases); bracts lanceolate, 4.5 cm, long tomentose. Leaves 80-110 cm long including petiole 10-20 cm long; rhachis nearly straight, sometimes slightly up-curved and twisted towards apex, glabrous except for woolly back of pulvinus, flat or ridged on upper surface towards base, rounded on under surface, 8-13 mm thick; pulvinus up to 3.5 cm long, 4.5 cm broad, with dense brown wool on back readily rubbed off, shrinking in size and wearing down considerably with age to about 1.5-2 cm long: leaflets glabrous, glaucous on under surface when young, becoming green with age, base or foot inserted parallel to axis, pungent, with entire margin or occasionally with 1-2 minute teeth on the lower margin near, and directed towards apex, those leaflets above middle of leaf directed slightly upwards and outwards and sometimes recurving, not overlapping, reduced in size near apex of rhachis, those about the middle spreading more or less at right angles from rhachis, those below directed slightly downwards and slightly falcate, 1-2 cm distant from each other and reduced in size rather abruptly to 2-6 prickles on either side of the rhachis; median leaflets linear-attenuate, 14-21 cm long, 8-13 mm broad in the lowest and from there gradually tapering to the slender pungent apex, only slightly narrowed at base, not very rigid, with 13-21 veins evident but not raised on the lower surface. Cones unobserved.

This species is established on two specimens from the Lydenburg district of the Transvaal. One of these is now in cultivation in Johannesburg, collected in 1955 by Dr. Helmoed van Hoepen from a parent plant some distance from Penge and which appears to have since perished in the wild state. The other is in the wild state, discovered more recently by Mr. C. A. Els about one mile east of Kromellenboog on a krans rising sheer from the Steelpoort river. This plant was investigated in August 1964 by an expedition from the Botanical Research Institute consisting of Dr. L. E. Codd,

Miss I. C. Verdoorn, Mrs. E. van Hoepen and the writer, guided by Mr. Els. A local Bantu claims to know of the presence of about 3 more plants on the mountains a few miles further east of Kromellenboog. No other species is known within many miles of this area.

To which of the known species of *Encephalartos* this one is most nearly related is not a simple matter to decide. It is remarkable in how many inconspicuous ways it differs from those species to which it bears a general resemblance. The free branching into relatively slender trunks is noteworthy but not of specific importance and it is mainly the leaf characters which attract critical attention. The pulvinus is broad for its length; the rhachis is glabrous even at an early stage and it often has a slight twist towards the apex; the comparatively long linear-attenuate leaflets are gracefully spreading recurved and deflexed towards the base, glaucous on the under surface at first and becoming green with age, and the basal ones are reduced to prickles. Its foliage is certainly amongst the most graceful in the genus. Cones are unrecorded.

The coincidence of the discovery of an "unexpected" new species of *Encephalartos* and on a farm with the name "Onverwagt", prompted the choice of the specific epithet.

R. A. DYER

GRAMINEAE

Eriochrysis brachypogon Stapf subsp. australis J. G. Anderson, subsp. nov. a typo robustiore (ad $1\cdot 3$ m longa) differt.

Folia ad 8 mm lata, undique dense pilosa. Spiculae sessiles 5-6 mm longae, apice glumae inferioris inaequaliter 3-lobata vel acuta, apice glumae superioris cuspidata vel breviter aristata. Lemma floris superioris 3 mm longa. Spiculae pedicellatae 4-5 mm longae. Antherae 3 mm longae.

Swaziland.—Mbabane district: Forbes Reef, swamp, Compton 30488 (PRE, holotype).

Transvaal.—Ermelo district: Athole Pasture Research Station, vlei, Norval 100. Pietersburg district: Woodbush, Wager 22960; Worsdell s.n. no locality.

This subspecies is apparently rare and has so far been collected only in the Mbabane district of Swaziland and the Ermelo and Pietersburg districts of the Transvaal, where it grows in swampy areas at an altitude of approximately 4,500–6,000 ft. Professor R. H. Compton, who collected it in Swaziland, reports that, although occurring only as scattered individuals, they are conspicuous plants, standing high above the general level of the vegetation in one of the several small swamps between Forbes Reef and the top of the Komati Pass.

It is readily distinguished from typical *Eriochrysis brachypogon* by its more robust habit, the wider culm leaves which are densely and softly hairy on both surfaces and by the spikelets which are larger in all parts.

Danthonia aureocephala J. G. Anderson, sp. nov. D. davyii C. E. Hubbard affinis, sed paniculis contractis plerumque interruptis, spiculis maioribus plumis lanceolatis differt.

Gramen perenne dense caespitosum ad 90 cm altum. Folia ad 40 cm longa stricte involuta vel canaliculata purgentia; vaginae intus prope ligulam sericeae. Paniculae contractae plerumque interruptae. Glumae lanceolatae ad 2 cm longae aureae nitidae, nervo medio prominenti, nervis lateralibus 3–5 obscuris \(\frac{1}{2} \) glumae aequantibus convergentibus nervo medio confluentibus. Lemma valde bilobatum ad 13 mm longum

from the Bolus Herbarium, there is no trace of functionally male flowers. What Adamson probably observed were young female flowers with undeveloped ovaries and staminodes.

After Vol. 26 of the Flora of Southern Africa appeared, a specimen of *M. pillansii* (Moss sub TRV 19775) from Witpoortjie, Krugersdorp district, in the Transvaal, was located in the National Herbarium, Pretoria, and further specimens from the Transvaal have since been collected by Mr. J. H. Vahrmeijer (Nos. 1763 and 1819) of the Botanical Research Institute, at Breed's Nek in the Magaliesberg and by Mr. G. K. Theron (No. 1954) at Loskop Dam. It is clear that *M. pillansii* has a much wider distribution than was at first realized and it is all the more surprising that no functionally male flowers have yet been preserved. It would be appreciated, therefore, if collectors would search for male trees of *H. pillansii* to fill this serious gap in our knowledge of the species.

R. A. DYER & D. J. B. KILLICK.

ZAMIACEAE

THE CONES OF ENCEPHALARTOS INOPINUS

When Encephalartos inopinus R. A. Dyer was first described in Bothalia 8:169 (1964), only a few plants and two damaged young male cones had been recorded. No additional information came to light for inclusion in the account for the Flora of Southern Africa 1:13 (1966). In January 1969, however, both male and female cones became available for description: a beautiful full-sized, but immature, female cone collected by Mr. G. J. Alberts of the Nature Conservation Section of the Transvaal Administration, and male cones from wild and cultivated plants through the help of Mr. C. T. Phillips of Verwoerdburg

Mr. Alberts had undertaken extensive field excursions in the rough terrain of the Olifants River Valley in the Lydenburg district of the Transvaal to determine the distribution range of the species and to estimate if possible the degree to which unauthorized collecting had been taking place. He found the cycad population to be fairly widely scattered but nowhere was there a colony with young plants to prove that active regeneration is taking place from seed. Approximately 50 per cent of the plants recorded by him were on north-facing cliffs, krantzes or rocky outcrops and the other half on various other aspects including some in south-facing positions. The tallest perfectly upright stem measured approximately 1.5 m, whereas the longest stem, now procumbent, measured nearly three times this length (15 ft).

The male cone from the wild — one of a cluster — was subcylindric, more or less elliptic-oblong in outline, whereas three cones from a single stem on a garden plant, were more oblong-lanceolate. The scales of the cone from the wild were dense and the beak slightly decurved, by comparison with the relatively open, spreading scales of the plant in cultivation. It was found also that the garden cones must have had a considerably higher moisture content judging by the shrivelling and weight for size ratio. The following details amplify the original description.

Cones 1 to several in a head; the scale faces green and densely covered with small white papillae giving a general light green "matt" appearance. *Male cones* subcylindric, narrowed more or less equally to both ends or sometimes more gradually tapered towards the apex, 18-25 cm long, 6.5-8 cm diam.,

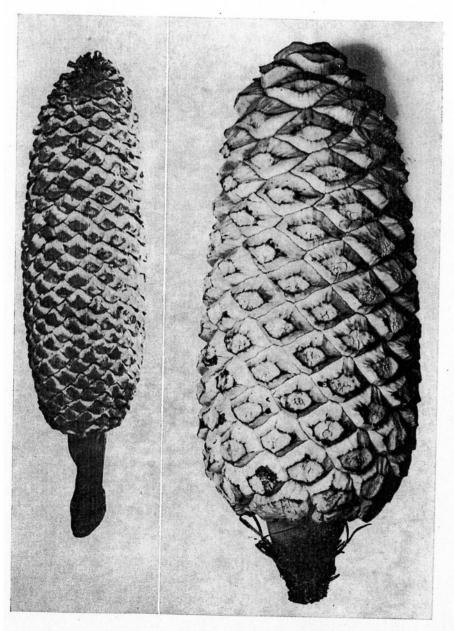


PLATE 1.—Encephalartos inopinus R. A. Dyer; left, male cone; right, female cone, both densely and minutely whitish papillate; female cone-scales largest toward the apex of the cone.

pedunculate; peduncle 6-8 cm long, 2.5-3 cm diam. at top, not much thinner at base; median scales spreading more or less horizontally from axis with deflexed beak, 2.5-3 cm long, 7-8 mm thick vertically, with sharp lateral angles, moderately ridged down upper surface, nearly flat on microsporangial surface, with pollen-sacs not spreading quite to margin; bulla-face minutely papillate, projected into a beak 9-10 mm long; upper facet with median receding ridge; lower facet continuous with microsporangial surface; terminal facet subquadrate 7-8 x 7-8 mm. Female cones broadly subcylindric, slightly narrowing to obtuse apex, 31 cm tall 15 cm in greatest width near base, and with stout peduncle; peduncle obconic, 5-6 cm long, 5 cm thick at top and narrowed to base, subtended by numerous linear-filiform tomentose bracts about the same length as the peduncle; median scales about 5 cm long, 4-4.75 cm broad, 3 cm thick vertically, with lateral ridges extending into incurved lateral lobes; bulla-face about 10 mm prominent, minutely and densely whitish papillate; upper facet with a slightly undulate surface and 1 or 2 receding ridges; lower facet similar to upper but more acutely angled from the terminal facet; terminal facet slightly below centre of bulla-face, slightly concave, about 2.5 cm broad, 1.5 cm wide vertically (slight cracking of surface at time of photograph and description probably due to slight drying out after period of 4-5 weeks since removal from parent plant); scales in the upper $\frac{1}{3}$ of the cone, broadest, up to 5 cm broad, with the terminal facet narrower vertically by comparison with those of the lower scales

The leaf characters of this species are distinctive among the South African species of the genus and the minutely papillate nature of the cone-scales recorded above is one more obvious distinguishing feature.

R. A. DYER.