ENCEPHALARTOS

JOURNAL OF THE
CYCAD SOCIETY OF
SOUTHERN AFRICA

TYDSKRIF VAN DIE
BROODBOOMVERENIGING
VAN SUIDELIKE AFRIKA

NO. 7

SEPTEMBER 1986

ENCEPHALARTOS

JOURNAL OF THE CYCAD SOCIETY OF SOUTHERN AFRICA

TYDSKRIF VAN DIE BROODBOOMVERENIGING VAN SUIDELIKE AFRIKA

NO. 7

SEPTEMBER 1986

EDITOR/REDAKTEUR

Maans Kemp
51 Constance Road/Constanceweg 51
Broadwood
PORT ELIZABETH 6065

Tel. no. 041-323344 (H)
533121, Ext./Uitbr. 245 (W)

VOORBLAD/COVER

Encephalartos horridus

EDITORIAL

When the Cycad Society of Southern Africa was formed, it soon became evident that people are interested in cycads for a variety of reasons. There existed some doubt, therefore, about whether it would be possible at all to unite the collectors, botanists, nature conservationists, nurserymen, horticulturists, etc. within one body. Added to this, there are the problems created by the fact that the Society's members (and Committee Members) are spread out over our large country and outside its borders.

We are very grateful for the fact that this doubt has been proven to be unfounded and that today, merely two years after the first uncertain steps were taken, we are a lively, successful society which can rightly claim that it represents the cycad lovers of Southern Africa. Our substantial number of members and the steady stream of new membership applications are but a few indications of the Society's vitality.

REDAKSIONEEL

Toe die Broodboomvereniging van Suider-Afrika gestig is, het dit baie gou duidelik geword dat mense om wyd-uiteenlopende redes in broodbome belangstel. Daar was dus aan die begin twyfel of dit ooit moontlik sou wees om die versamelaars, plantkundiges, natuurbewaarders, kwekers, tuinboukundiges, ens. in een liggaam saam te snoer. Daarby het nog die probleme gekom wat geskep word deur die feit dat die Vereniging se lede (en Komiteelede) dwarsoor ons groot land en buite die landsgrense verspreid woon.

Ons is baie dankbaar vir die feit dat hierdie twyfel ongegrond geblyk te wees het en dat ons vandag, skaars twee jaar nadat die eerste onsekere treetjies gegee is, 'n lewendige, suksesvolle Vereniging is wat met reg daarop aanspraak kan maak dat dit die broodboomliefhebbers van Suider-Afrika verteenwoordig. Ons aansienlike ledetal en die bestendige stroom nuwe aansoeke om lidmaatskap, is maar enkele aanduidings van die Vereniging se lewenskragtigheid.

EDITORIAL

- CONTINUED -

It would however be foolish to think that the Society can now run on its own. No machine can keep running without continuously receiving energy from somewhere. No plant, not even the most hardy cycad, can live and grow and develop without light and water and food. In the same way, the Cycad society will also not continue to live and flourish without an input of energy.

The contributions made by the members are the energy input of the Cycad Society. The larger the number of members who make contributions and the larger the contributions, the more the Society will flourish. The fewer the contributions, the poorer the Society will perform. If the contributions stop, the Society will die.

It is undoubtedly true that all members cannot contribute to the same degree, for a variety of reasons. The following are a number of ways in which members can make an input, however:

1. Recruit a new member.
2. Renew your membership annually, before the closing date.
3. Attend meetings of your region.
4. Write a letter to ENCEPHALARTOS.
5. Send an interesting news item, photograph, newspaper cutting or article to ENCEPHALARTOS.
6. Support the Seedbank by donating seed or money.
7. Support the Pollen Exchange scheme by completing and sending in the green form.
8. Take the lead to form new regional branches, for example in Pretoria or Johannesburg.
9. Volunteer to serve on the committees of such new branches.
10. Make suggestions and proposals to the National Committee, your regional committee and ENCEPHALARTOS.

Is there really a member of the Society who can honestly say that he or she cannot make a contribution in one of these ways?

REDAKSIONEEL

- VERVOLG -

Dit sou egter dwaas wees om te dink dat die Broodboomvereniging nou self verder sal loop. Geen masjien kan aanhou loop sonder dat dit voortdurende energie van êrens kry nie. Geen plant, selfs nie die taaiste broodboom, kan leef en groei en ontwikkel sonder lig en water en voedsel nie. Net so sal die Broodboomvereniging ook nie aanhou leef en floreer sonder energie-insette nie.

Die bydraes wat die lede lewer, is die energie-insette van die Broodboomvereniging. Hoe groter die aantal lede wat bydraes lewer en hoe groter die bydraes, hoe meer sal die Vereniging floreer. Hoe minder die bydraes, hoe swakker sal die Vereniging vaar. As die bydraes ophou, sal die Vereniging sterf.

Dit is ongetwyfeld waar dat almal nie ewe veel kan bydra nie, vir 'n verskeidenheid redes. Hieronder is egter 'n aantal maniere waarop lede insette kan lewer:

1. Werf 'n nuwe lid.
2. Hernu jaarliks u lidmaatskap voor die sluitingsdatum.
3. Woon byeenkomste van u streek by.
4. Skryf 'n brief aan ENCEPHALARTOS.
5. Stuur 'n interessante nuusbrokkie, foto, uitknipsel of artikel aan ENCEPHALARTOS.
6. Ondersteun die Saadbank deur saad of geld te skenk.
7. Ondersteun die Stuifmeelruilskema deur die groen vorm in te vul en in te stuur.
8. Neem die leiding om nog streektakke te stig, bv. in Pretoria of Johannesburg.
9. Bied aan om in die komitees van sulke nuwe streke te dien.
10. Gee wenke en maak voorstelle aan die Nasionale Komitee, u Streekkomitee en ENCEPHALARTOS.

Is daar werklik 'n lid van die Vereniging wat eerlik kan sê dat hy of sy nie op een van hierdie maniere 'n bydrae kan lewer nie?

REGIONAL NEWS STREEKNUUS

Natal

VISIT TO HIGHFLATS

Danie Nel reports:

On Sunday, 8 June, 25 Natal members and seventeen other visitors visited the farm of Wallace Roseveare at Highflats, under the leadership of Bill Hutton.

On arrival we were treated on refresh=ments and then Mr Roseveare and his son guided us to the spot on the farm where the members and visitors could see the most splendid cycad specimens. We were delighted to see large numbers of Ence=phalartos natalensis (a very broad-leaved variety), E. villosus and Stangeria eriopus. Some of the specimens were the largest that some of us had ever seen. They were all healthy plants, growing among the rocks and presented us with a beautiful sight. Seeing these plants in their natural habitat, brought the fact home to us that these mature plants are where they are meant to be growing.

We ended the day with a "braai" and elec=ted two new members to the Natal Commit=tee: Roy Shooter and Robert Campbell. We welcome them to the committee.

SLIDE SHOW

The next meeting will take the form of a slide show on 26 September at the Westville Library. Details will be sent to Natal members.

Oos-Kaap / Eastern Cape

SKYFIEVERTONING

Ongeveer 20 Oos-Kaapse lede en ander be=langstellendes het die byeenkoms van die streek op 24 Julie in Port Elizabeth by=gewoon. Mnr. Crawford Phillips het kleurskyfies van Suid-Afrikaanse brood=bome vertoon en gesels oor sy belangstel=ling in en ondervinding van broodbome. Almal het die byeenkoms baie interessant en aangenaam gevind.

Natal members enjoying their excursion to Highflats

(photograph by Harry Gerber)

COLLECTING AND STORING POLLEN

by Willie Tang

A prerequisite for pollinating cycads is of course collecting and, if necessary, storing the pollen. Below are well tes= ted and effective methods for doing this.

WHEN TO COLLECT POLLEN

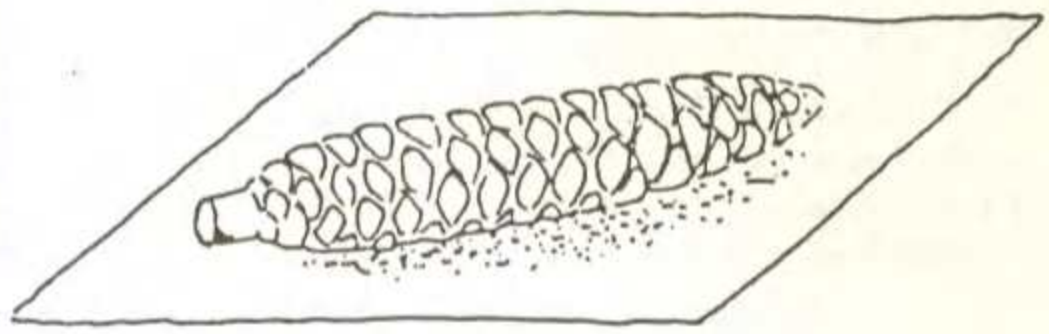
When the male cone is ready to shed, it will begin elongating. In many species (especially Bowenia, Ceratozamia, Cycas, Dioon, Encephalartos, Lepidozamia and Macrozamia) elongation is rapid with the male cone increasing its length by up to 10 to 25% per day.

The colour and texture of the cone will appear to change as the scales separate from one another and the lighter coloured interior is exposed. In some species the scales themselves will change colour during this period (for example, E. hil= debrandtii will turn from a light green to yellow). Many species will also emit strong odours, especially Cycas and Dioon. Near the end of elongation the cone will shed its pollen. This may be completed in as little as two days or as long as a week. The exception is Stangeria which takes 5 to 8 weeks to shed its pollen (2).

COLLECTING POLLEN

When the male cone has elongated and is just beginning to shed its pollen, cut it off at the stalk. Be careful not to tip the cone or shake it too violently or much of the pollen may fall off before you can collect it.

Place the cone on a smooth piece of paper. Don't use newspaper as a substantial portion of the pollen will be trapped on its coarse surface. Place it indoors in a dry clean place. In a few days it will complete its pollen shed. When most of the pollen sacs have burst and exposed their small balls of pollen, bang the cone gently to shake the rest out.



STORING POLLEN

Pollen can be conveniently stored in small envelopes. I use 9x6 cm envelopes constructed from typing paper and glue. These are large enough to accommodate the pollen from all but the largest cones. If the pollen will not be used within about a week it is necessary to store it under cool dry conditions to prolong its viability. These conditions can be easily created in your home by placing the envelope of pollen in an airtight jar or container along with a drying agent like silica gel and putting it in the refrigerator.

LONGEVITY OF POLLEN

According to the few published accounts that I am aware of, cycad pollen has a relatively short lifespan. Charles Joseph Chamberlain (1), pioneer in many aspects of cycad biology, wrote early in the century:

> "The pollen of cycads is short-lived. It gives the greatest percentage of germination when first shed; after a few days there is a notable decrease in the number of spores which germinate; at the end of ten days less than half the spores germinate; at the end of three weeks very few spores germinate, and a month from the time the pollen has been shed I have not been able to germinate the pollen of any cycad. Mrs Alice Bailey, who is particularly skillful with culture media, was able to germinate pollen a few days after my attempts failed, but a month can be regarded as the limit of life of Ceratozamia pollen."

Based on this account, without special treatment, half a month can be practically considered the lifespan of cycad pollen.

EFFECT OF STORAGE

A number of methods are employed in the storage of pollen. Generally low humidity, low temperature, and low oxygen concentrations will extend pollen life (3). The first two conditions can be easily created in the home by the method described above.

To get some idea of its effectiveness, cycad pollen stored by this method for various lengths of time was tested for viability,using nitroblue tetrazolium (NBT). NBT stains specifically for succinic dehydrogenase, an enzyme in redox pathways, and has been found to be a good indicator of viability in at least 13 taxa of angiosperm pollen that have been tested (3). Pollen was placed on microscope slides with NBT, covered with a coverslip, and placed under incandescent lights for 15 to 20 minutes. Two samples of 20 to 50+ grains each were assayed for each test. A browning of the pollen grains was considered a positive reaction. This was slow to occur in most genera except for Dioon (4 species tested) which gave an instant intense false positive reaction. This suggests that Dioon pollen has some unusual chemical or structural property not present in the other genera. Results are displayed below.

These preliminary results suggest that this storage method affects different genera differently, being especially successful for Ceratozamia. These results should be interpreted with caution, however, since the accuracy of NBT as an indicator of pollen viability in cycads has not been determined, and factors such as initial pollen quality was not controlled.

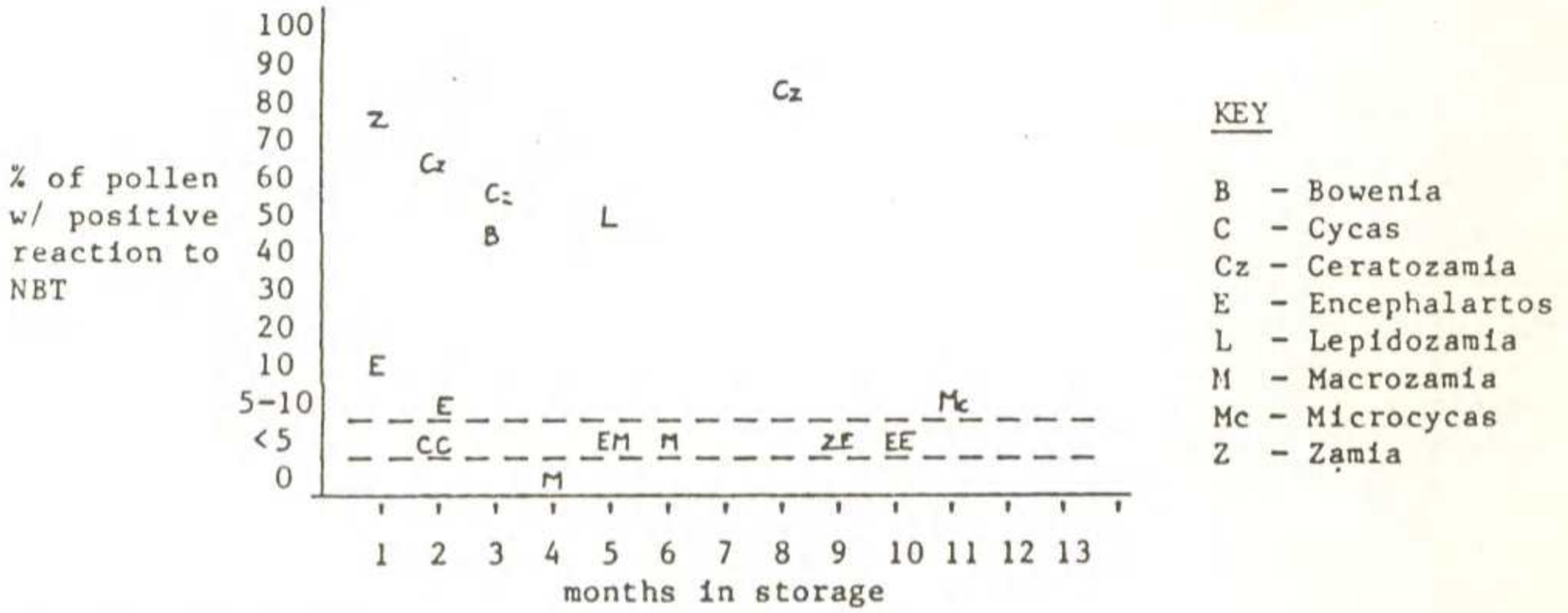
The most accurate and meaningful test for pollen viability is of course pollinating a female cone and counting how many fertile seeds are produced. Ceratozamia mexicana (Belize form) stored for two months by this method gave excellent results. Pollen stored for longer periods have also been used successfully.

LITERATURE CITED

1. Chamberlain, C.J. (1926), Hybrids in Cycads, Botanical Gazette 81: 401-418
2. Rattray, G. and H.H.W. Pearson (1913), Notes on the pollination of some South African cycads, Transactions of the Royal Society of South Africa 3: 259-270.
3. Stanley, R.G. and H.F. Linskens (1974), Pollen Biology Biochemistry Management, Springer-Verlag.

(Reprinted from "The Cycad Newsletter" (U.S.A.), Volume VIII, no. 2, September 1985, with kind permission of the author and the editor, Mr Garrie P. Landry.)

Percent pollen viable as a function of storage time using NBT assay.



SAADBANK

Dit is met dankbaarheid dat ek kan sê dat die Saadbank nou stewig gevestig en goed op dreef is. Tagtig van ons lede maak reeds gebruik van die fasiliteite wat die Saadbank bied en die donasies van die lede beloop 'n mooi bedrag. Die Saadbank is nou in die posisie om saad van skaars spesies aan te koop om aan die lede te voorsien.

Wat ek graag sou wou sien, is dat al die lede gebruik sal maak van die saadbank en ook skenkings van saad aan die saad=bank sal maak.

Die volgende sade is tans beskikbaar: Encephalartos natalensis, E. villosus, E. ferox, Lepidozamia hopei, Macrozamia communis en M. moorei.

DANIE NEL
SAADBANKBEAMPTE

Bowkerweg 120
ESCOMBE
4093
Tel. No. 031-442505

SEED BANK

It is with gratitude that I can report that the Seedbank is now firmly establi=shed and fully operational. Eighty mem=bers have already made use of the faci=lities offered by the Seedbank and do=nations from the members amount to a sub=stantial amount. The Seedbank is now in the position to buy seed of rare species for distribution to members.

I would like to see all our members make use of the Seedbank and also donate to the Seedbank.

The following seed is now available: Encephalartos natalensis, E. villosus, E. ferox, Lepidozamia hopei, Macrozamia communis and M. moorei.

DANIE NEL
SEEDBANK OFFICER

120 Bowker Road
ESCOMBE
4093
Tel. no. 031-442505

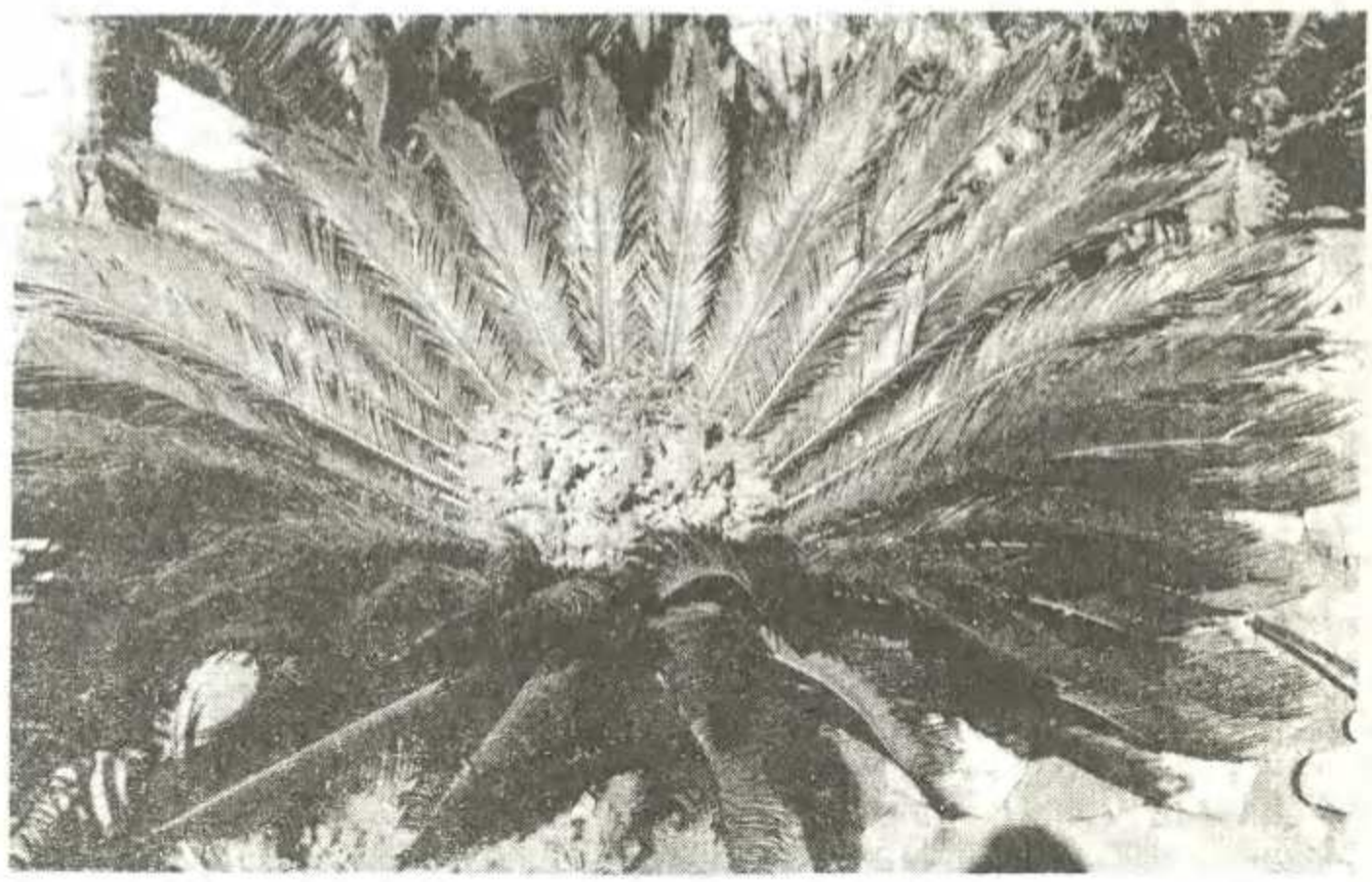
CYCAD HIT PARADE

BY ROY OSBORNE

I was asked the other day which species of cycad is the most popular one - a dif=ficult question unless the definition of "popularity" is made clear. One way in which the question could be answered is to see which species figure most frequent=ly in botanic gardens around the world. Fortunately we have a copy of Gren Lucas's Interim Report on "The Botanic Gardens List of Cycads" which was compiled by the IUCN Threatened Plants Committee at Kew Gardens in 1980.

Not surprisingly, Cycas revoluta comes out as 'top-of-the-pops', featuring at least once in each of 62 botanic gardens of the total number of 74 which have cy=cads. Dion edule is a somewhat distant second, being found in 41 of the gardens. Of the Southern African species, it may come as something of a surprise to see that Stangeria eriopus gets the honour, in 35 gardens, while in the Encephalartos genus, E. altensteinii, E. horridus, E. villosus, E. lehmannii and E. ferox are the top five. The overall 'top twenty' are:

1.	Cycas revoluta	62
2.	Dion edule	41
3.	Cycas circinalis	39
4.	Ceratozamia mexicana	38
5.	Stangeria eriopus	35
6.	Encephalartos altensteinii	30
	Encephalartos horridus	30
	Macrozamia communis	30
9.	Cycas rumphii	26
	Encephalartos villosus	26
	Zamia floridana	26
12.	Encephalartos lehmannii	24
13.	Cycas media	23
	Lepidozamia peroffskyana	23
15.	Dion spinulosum	20
16.	Encephalartos ferox	19
17.	Zamia pumila	18
18.	Macrozamia reidlei	17
19.	Cycas thouarsii	16
	Encephalartos lebomboensis	16
	Encephalartos transvenosus	16
	Macrozamia miquellii	16
	Macrozamia spiralis	16



Cycas revoluta: Top of the Pops

FOCUS ON... FOKUS OP...

In each edition of ENCEPHALARTOS, we focus on one Southern African species, in the form of an in-depth article in layman's language. In this edition the spotlight falls on:

In elke uitgawe van ENCEPHALARTOS fokus ons op een Suider-Afrikaanse broodboomspesie, in die vorm van 'n in-diepte-artikel in leketaal. In hierdie uitgawe val die kollig op:

ENCEPHALARTOS HORRIDUS

by Maans Kemp

INTRODUCTION

Encephalartos horridus is a very distinctive South African cycad which has been known to botanists for almost 200 years. Its very characteristic leaves always make an impression on people who see it for the first time, as is evident from its name. Yet, almost everyone agrees that E. horridus is a very attractive plant in its own way.

NAME

It is not known who "discovered" E. horridus, botanically speaking, or when this happened. What is known is that by 1801 at least one plant was growing in Vienna. In this year it was described, illustrated and named by Jacquin, who called it Zamia horrida. In 1834, when he introduced the genus name, Encephalartos, Lehmann changed the name to Encephalartos horridus.

The species name of E. horridus is unique amongst South African cycads in that it is the only one with a negative connotation. Charles Joseph Chamberlain, who saw plants in habitat at Despatch during a visit in 1912, wrote: "Its terrible leaves give it a clear title to its name" and concluded that "Encephalartos horridus is well named". Many present-day cycad enthusiasts, who find E. horridus very attractive, would probably disagree.

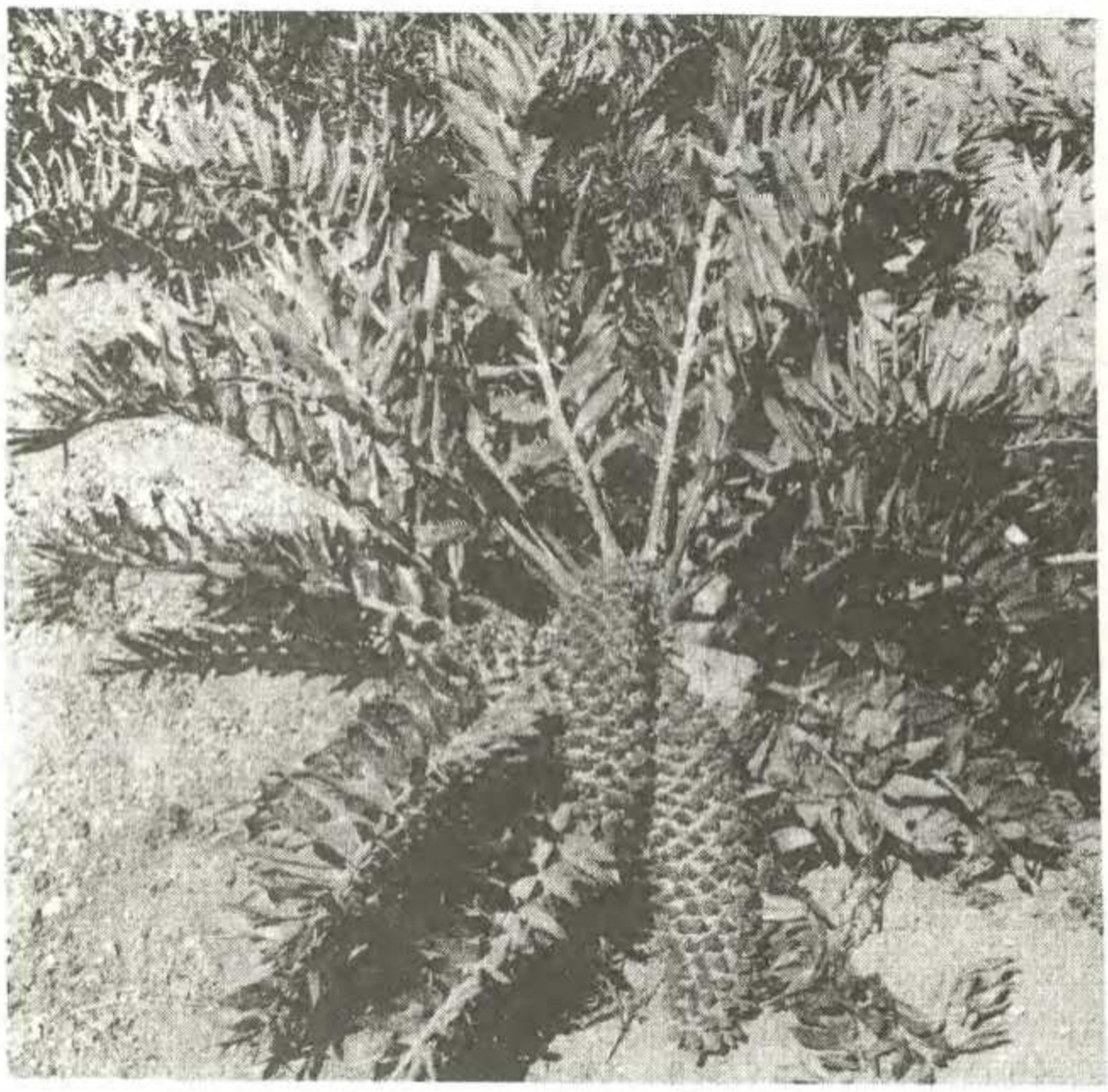
DISTRIBUTION

E. horridus occurs in the Eastern Cape Province, in the districts of Port Elizabeth and Uitenhage. Its habitat varies from Karroo scrub, including the dense Addo and Uitenhage bush, to sourveld near Port Elizabeth and from deep, fertile soil to infertile, rocky ridges. The vast majority of plants occur in the drier but more fertile areas, however, where they grow amongst plants such as the indigenous spekboom, (Portulacaria) and noors (Euphorbia) and the alien prickly-pear. Rainfall varies from 250 to 600 mm per year and is fairly evenly distributed throughout the year. The climate is temperate and frost is unusual. Summer temperatures may however be as high as 40°C and more.

DESCRIPTION OF PLANT

1. STEM

The stems of "typical" mature plants are between 50 cm and 1 m in length and 20 to 30 cm in diameter. Where plants grow in deep soil, the bottom half or more of the stem may be covered by soil, creating the impression that E. horridus is a dwarf species. In more rocky areas, the stems may be entirely above ground level. The entirely crown of the stem is slightly woolly.



E. horridus with old male cones

E.horridus forms thick, tuberous roots. Even small seedlings have large roots, appearing out of proportion with the stem and leaves. Many of these tuberous roots may be formed, especially if the original tap-root is broken off or damaged.

Plants may be unbranched but are more usually branched from the base. Large clusters of plants may be formed.

2. LEAVES

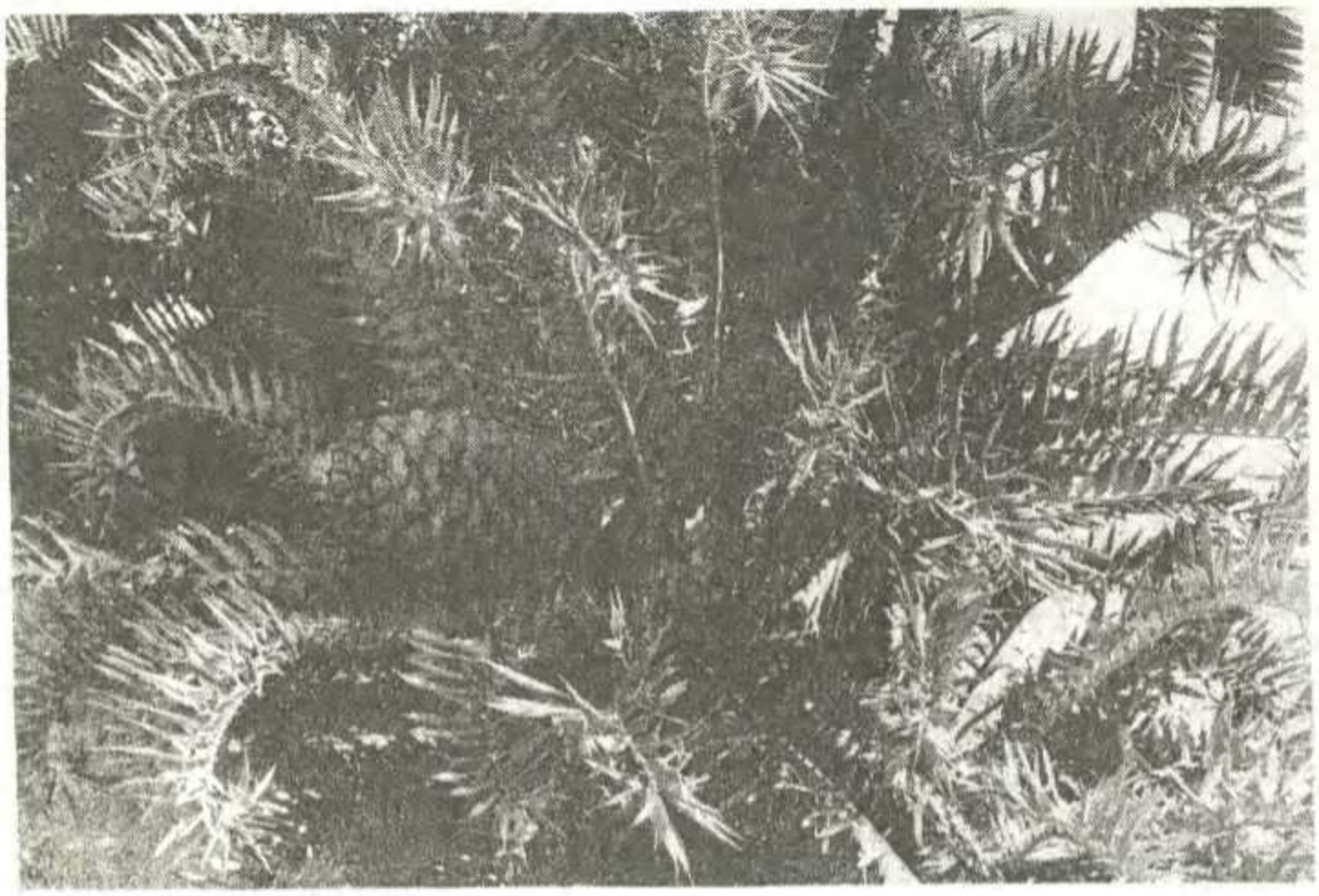
The very characteristic leaves of E. horridus, which are responsible for the species name, are approximately 1 m long on average and usually sharply recurved towards the tip. Younger leaves have a very attractive silvery-blue colour. The leaves turn green with age. The petiole is up to 15 cm in length. The leaf base is large and light-brown in colour.

The leaflets at the middle of the leaf are approximately 10 cm long and 2,5 cm broad. In drier, less fertile areas the leaflets tend to be narrower and the leaf less recurved at the tip. Each leaflet has two or three prominent lobes on the lower margin, up to 4 cm in length. These lobes are twisted out of the plane of the leaflet, giving the leaves a dense appearance. The leaflets are fairly widely spread towards the base of the stem. Those near the base are smaller and may be entire, but are not reduced to more than one prickle. Towards the tip of the leaf the leaflets are more closely spaced and forms an even regular pattern, especially in plants growing in more fertile soil. The tips of the leaflets and lobes are very sharp and thorn-like.

3. CONES

Single cones are usually formed, although male and female plants with two cones have been observed. The cones have a brownish- or blackish-red colour, due to a dense layer of fine hair on the cone scales. In older cones the hair wears off and the cones appear more green in colour. Male and female cones are supported by short, thick stalks, approximately 8 cm long and 3 cm in diameter.

The male cone is cylindrical in shape but narrower at the ends than in the middle. It is up to 40 cm long and up to 12 cm in diameter. The cone



"Normal" E. horridus with female cone

scale is 3 to 4 cm long and approxi= mately 3 cm broad, with a relatively smooth face. The face of the cone scale at the middle of the cone forms a beak up to 1 cm long. There are usually about 15 spirals of scales.

The female cone is egg-shaped and up to 40 cm long and up to 20 cm in diameter. The cone scale is ap= proximately 5 cm long, 5 cm wide and 3 cm high. The face of cone scales at the middle of the cone protrudes about 2 cm and is ridged towards the tip. The scale face is fairly smooth. There are usually 8 to 10 spirals of scales.

The seeds are pale red to carmine in colour and are approximately 3,5 cm long and 2,5 cm in diameter. The seeds tend to be roughly triangular with three flattened surfaces.

VARIATIONS

Some variation occurs within the species.

In the Port Elizabeth district, to the west and north of the city, plants have been found which are in all respects smaller than the "normal" E. horridus found in the Uitenhage district. Some uncertainty still exists about the status of this "dwarf" form. The first of these smaller plants were found on a quartzite hill with sparse, sour vege= tation. This different habitat gave rise to the possibility that the dwarf nature of these plants was the result of the poorer soil conditions. There have subsequently been reports of dwarf plants originating from areas where the conditions are closer to those in the fertile Uitenhage area.

"Dwarf" E. horridus with female cone

The dwarf plants (which the author has only seen in cultivation) seem to dif= fer from the typical specimens of E.hor= ridus in the following ways:

1. The stems of mature plants are only up to approximately 20 cm high and up to 15 cm in diameter.

2. The plants branch more freely from the base of the stem, forming large clusters, sometimes of almost the same size as the original stem.

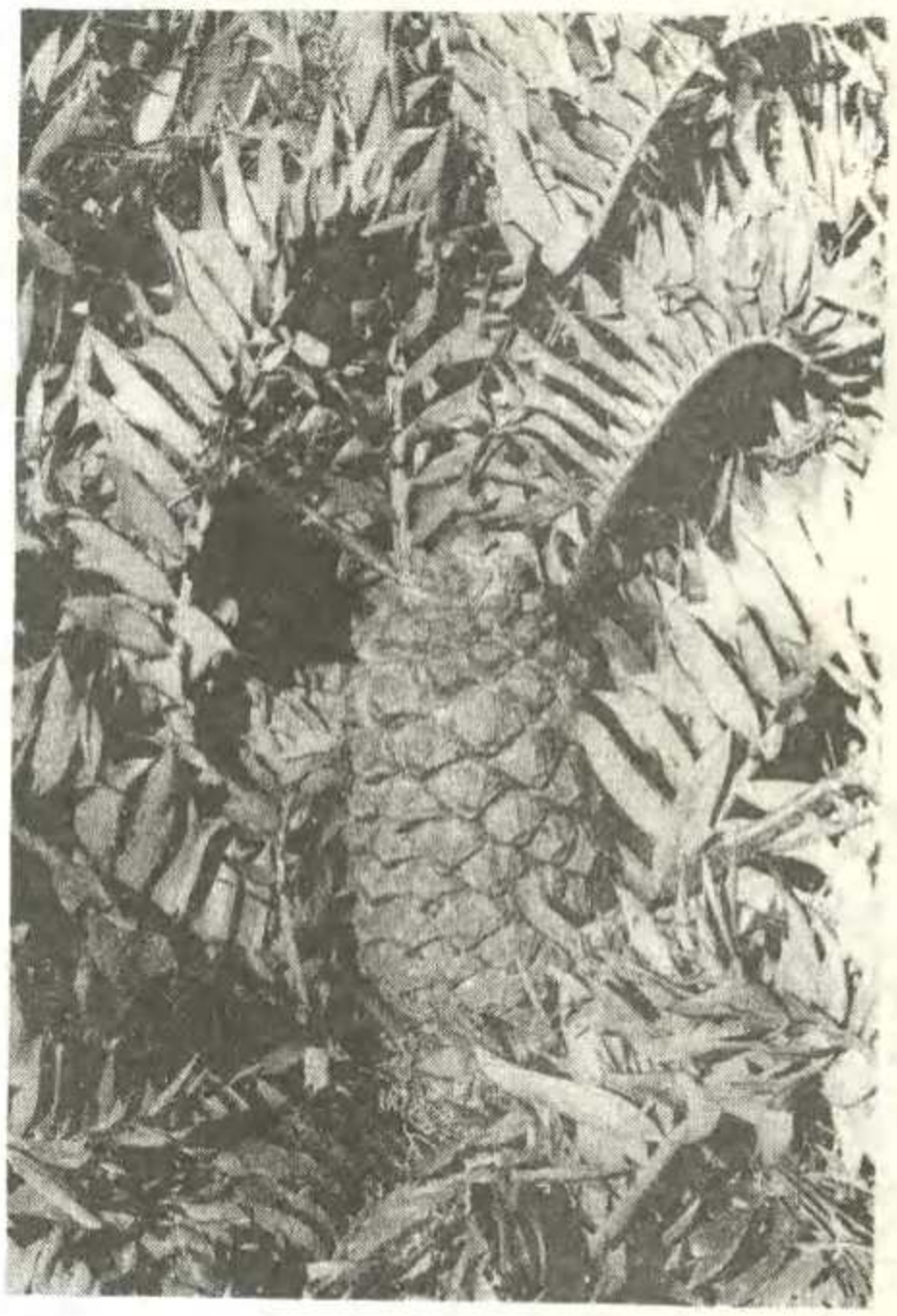
3. The leaves are only up to approxi= mately 50 cm in length, with narrower leaflets, although longer leaves can be seen in some specimens.

4. The female cones are only up to 30 cm long and up to 15 cm in diameter.

5. The male cones, before elongation, and only approximately 20 cm long and 8 cm in diameter.

6. The seeds are only approximately 2 cm long and 1,5 cm in diameter.

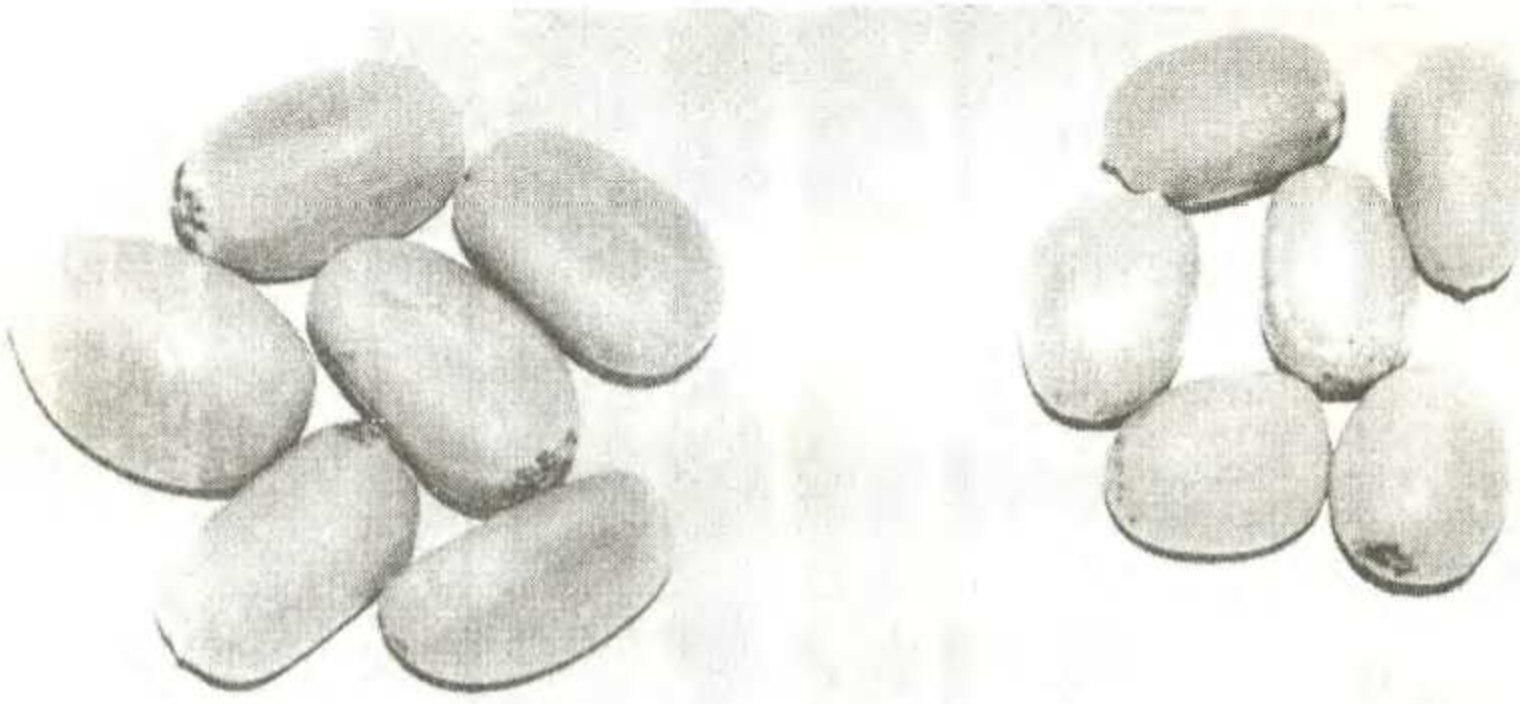
Male cones of "dwarf" variety of E. horridus



Female cone of "dwarf" variety of E. horridus

Although smaller in these respects, the dwarf plants are similar to the typical form in all other respects. There are no distinct differences in cone or leaf characters. The dwarf nature seems to be persistent in cultivation, however. The plants seen had been in cultivation for more than three years, forming cones and leaves annually. This far there has not been any increase in size of any part, despite the fact that the plants grow in ideal garden conditions.

Plants growing west of Uitenhage, in a drier part of the district, tend to have leaves with narrower, less densely spaced leaflets. These characters, together with the fact that the plants grow in shallower soil and the stems are thus more exposed, give the plants a diffe= rent appearance in habitat. The first crop of leaves of plants of this form which were transplanted to a garden in Port Elizabeth, with its higher rainfall, were similar to the typical form, however. There was a distinct difference between the old leaves which had been retained and the new leaves formed after the transplant.



Seeds of "normal" E. horridus (left) and "dwarf" variety (right), showing comparative size.

AFFINITY

E. horridus is most closely related to E. trispinosus, a very variable species which was separated from E. horridus in 1965. Before that it was known as E. horridus var. trispinosa. Some forms of E. trispinosus are the only other cycads which could be confused with E. horridus. With this exception, it is readily distinguished from other species, even in the absence of cones.

The following differences occur between E. horridus and E. trispinosus:

1. E. horridus occurs only in the Port Elizabeth and Uitenhage districts and its distribution area does not overlap with that of E. trispinosus which occurs further east in the Bushmens and Fish River Valleys.

2. The median leaflets of E. horridus are wider and the twisting of the lobes on the lower surface of the leaflets is much more regular and uniform than in E.trispinosus, where the lobing is irregular, especially in the lower part of the leaf, where the leaflets are frequently entire. The leaflets of E.trispinosus are only distinctly lobed in the top part of the leaf.

3. The colour of young leaves of E. horridus is an intense silvery blue whereas the leaves of E. trispinosus are less blue and may be green in some forms.

4. The cones of E.horridus are brownish-red in colour while those of E. trispinosus are yellow, greenish-yellow, or bluish-green.

5. The female cone scales of E. horridus are relatively smooth, with some ridges,while those of E. trispinosus are much wrinkled and pimpled.

HIBRIDIZATION

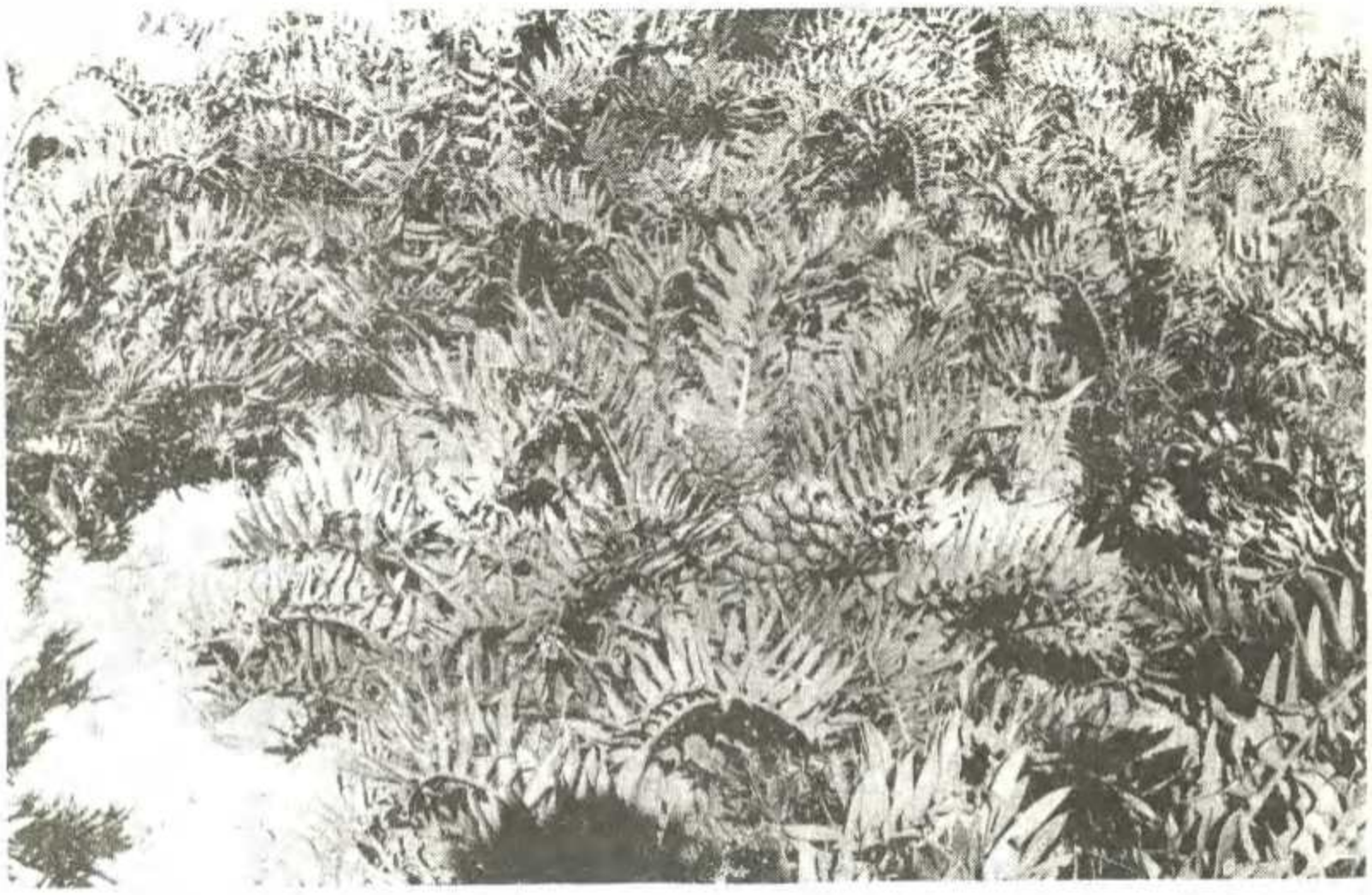
In the Uitenhage district E. horridus grows together with E. longifolius and many hybrids have been found. Features of both parents as well as intermediate characteristics occur in these hybrids. Leaflets range from entire to deeply lobed. In most cases the green colour of E. longifolius predominates, while cone colour tends to be closer to that of E. horridus.

Unconfirmed reports of hybrids between E. horridus and E. lehmannii in the Uitenhage district have been heard but none of these have been seen by the author.

IN THE GARDEN

E. horridus grows well in the garden and,once established, forms new leaves and cones regularly. It responds well to deep, fertile soil with sufficient organic material in the form of compost.

The soil must be well-drained, however, and plants should be grown in full sun to preserve the blue colour of the leaves. E. horridus is very attractive amongst succulent plants, for example in a rockery, or may be used on its own as on accent plant or with low green shrubs to provide contrast.



A few plants of the "dwarf" variety of E. horridus, showing its much-branched nature.

CONSERVATION

E. horridus must have been very abundant up till fairly recently. Not many years ago it was still possible to see plants along the roads around Uitenhage. The numerous specimens in gardens in Uitenhage, Despatch and Port Elizabeth, and the fact that it is very well represented in collections in the rest of South Africa and overseas, indicate clearly that its days of abundance in nature are past. It is possible, however, that there may be colonies consisting of fairly large numbers of plants in the patches of dense, sometimes almost impenetrable bush which occur in the Uitenhage district. Some colonies are protected in the Springs Nature Reserve near Uitenhage, as well as in private nature reserves and on private farms. Like all other cycads, E. horridus has been declared an endangered species in the Cape Province and may not be removed from its natural habitat without a permit.

Unfortunately very few viable seeds seem to survive in nature. Almost all the seed appear to be infested with the curculionid weevil. The status of reproduction of E. horridus in nature therefore seems uncertain.

Fortunately E. horridus is easily pollinated by hand and is easy to cultivate from seed. Seedlings do not grow fast, however, and it may take a few years before they can be planted amongst larger plants in the garden. They can however be used very effectively in smaller containers or in rockeries with small succulents.

Although E. horridus does not seem to be in any immediate danger as a species, growing it from seed is essential to ensure its long-term survival.

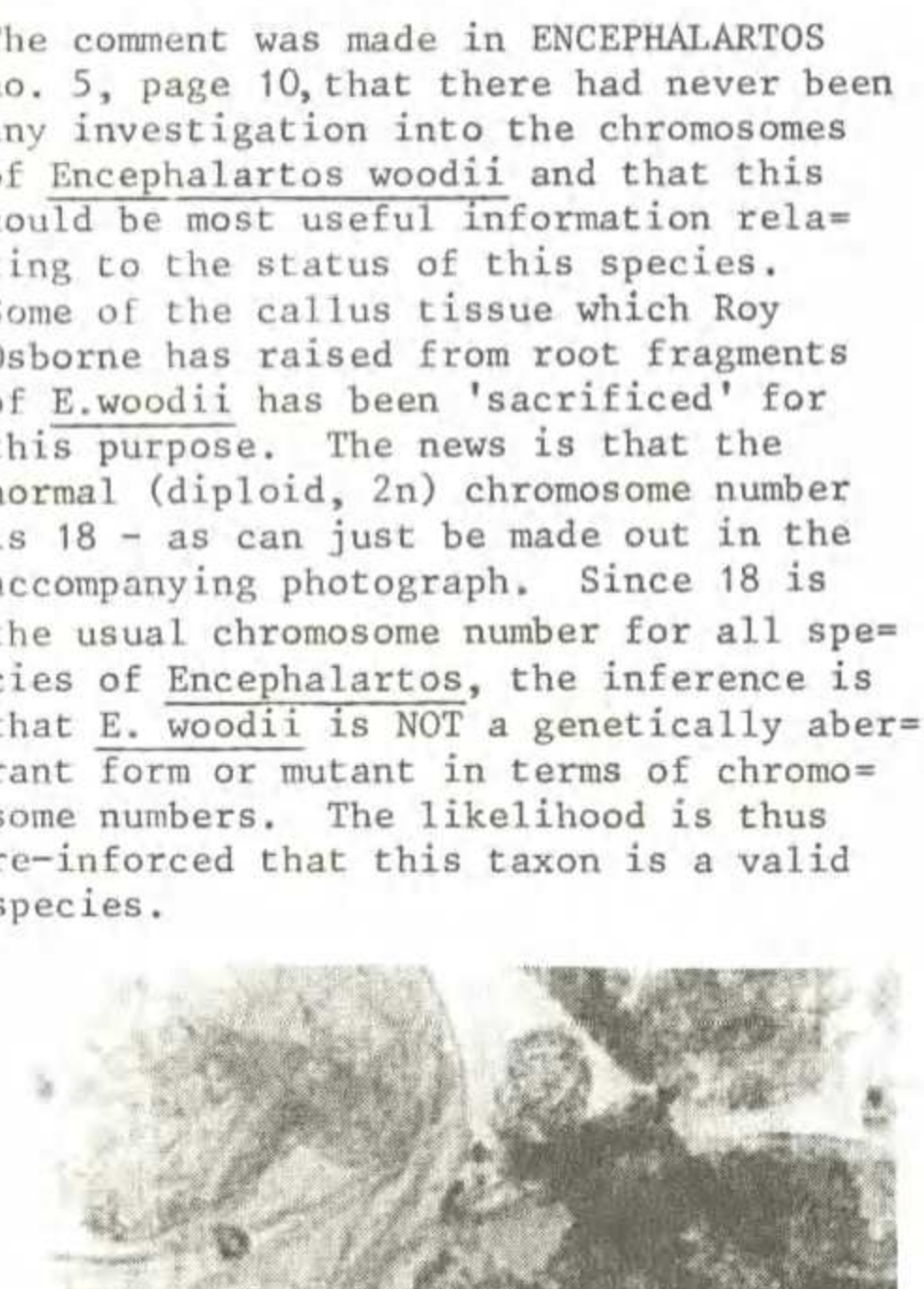
BIBLIOGRAPHY

- Chamberlain, C.J., The Living Cycads, 1919.
- Dyer, R.A., "New Species and notes on type specimens of South African Encephalartos", in The Journal of South African Botany, Vol. 31, 1965.
- Dyer, R.A., "The Cycads of Southern Africa", in Bothalia, Vol. 8, Part 4, 1965.
- Dyer, R.A. and I.C. Verdoorn, "Zamiaceae", in Flora of Southern Africa, Vol.1,1966.
- Giddy, C., Cycads of South Africa, 1974.
- Henderson, M.R., "Materials for a revision of the South African species of Encephalartos", in The Journal of South African Botany, Vol. 11, 1945.
- Hutchinson, J. and G. Rattray, "Cycadaceae", in Flora Capensis, Vol. 5, Section 2, 1933.

BITS AND PIECES STUKKIES EN BROKKIES

CHROMOSOME COUNT OF ENCEPHALARTOS WOODII

The comment was made in ENCEPHALARTOS no. 5, page 10, that there had never been any investigation into the chromosomes of Encephalartos woodii and that this could be most useful information relating to the status of this species. Some of the callus tissue which Roy Osborne has raised from root fragments of E.woodii has been 'sacrificed' for this purpose. The news is that the normal (diploid, 2n) chromosome number is 18 - as can just be made out in the accompanying photograph. Since 18 is the usual chromosome number for all species of Encephalartos, the inference is that E. woodii is NOT a genetically aberrant form or mutant in terms of chromosome numbers. The likelihood is thus re-inforced that this taxon is a valid species.



Chromosomes of E. woodii, magnified 500 times
(photograph by Roy Osborne)

TEMPERATURE INCREASE IN MALE CONES

Dr Amy Jacot-Guillarmod, a Grahamstown member of the Society, reported in the journal Nature in 1958 that the male cones of Encephalartos altensteinii show a significant temperature increase shortly after being cut from the parent plant. There have been few reports or further investigations into this phenomenon, but a number of growers have mentioned that male cones cut for pollen collection purposes soon become 'warm to the touch'. Roy Osborne now reports that a male cone of E. woodii, which was cut for tissue culture work, soon showed the heating effect. Within 18 hours the internal temperature had risen to 30°C, which was 7°C higher than outside. Associated with the warmth was the evolution of a heavy fruity odour. Furthermore, since the temperature increase implies very high metabolic activity in the cone, it is quite possible that the carbon dioxide level immediately next to the cone would increase. The entomologists tell us that insects are capable of detecting small gradients in all these events (heat, odour and CO_2). These observations therefore must lead to the conclusion that insects play an important rôle in cycad pollination.

But there is one little problem: the cone-heating effect has not been reported in intact cones on the plants. Admittedly this is a little more difficult to do than under laboratory conditions, with various errors possible; but this is still an effect we really don't know much about. Can anyone contribute any further information?

TISSUE CULTURE

Following the initial successes in the callus-production stage of cycad tissue culture, Roy Osborne (President of the Society) was invited to address the Sixth International Congress of Plant Tissue and Cell Culture at the University of Minneapolis, Minnesota, USA, in August this year. He was accompanied on his trip by Professor Hannes van Staden, Head of the University of Natal's Research Unit for Plant Growth and Development, who also presented research findings at the congress. A report on this visit will appear in ENCEPHALARTOS no. 8.

CYCADS IN THE AIR

Members who have recently travelled on South African Airways flights may have seen an article entitled "Save the Cycad" in the Airways magazine. Written by Beryl Bowie, it appears on pages 27 and 28 of "The Flying Springbok", July 1986. We are grateful to "The Flying Springbok" and the SAA for making its passengers aware of cycads and the need to preserve them. A few technical points detract from the overall quality of this never=theless interesting article; e.g. Stan=geria eriopus is described as 'endange=red' while for example, E. inopinus and and E. cupidus are not! In closing, the author mentions an avenue of E. alten=steinii rising 'eight metres high' in Lukin Road, East London. Three metres would be closer to reality.

For those with a wider interest in things botanical, there is an excellent text with some quite magnificent photographs on fungi, by Rob Böck, in the same magazine.

East London's avenue of E. altensteinii plants

The distorted E. woodii cone (photograph by Roy Osborne)

HOPES RAISED - THEN DASHED - BY E. WOODII

There was great excitement at the Durban Botanic Gardens in June this year. The Encephalartos woodii plants were in cone again - but something odd happened to one particular cone. Soon after emer=gence the whole cone went brown and stopped growing, and then a new part of a cone started appearing at the base. The new cone had much bigger cone scales and they seemed to be more tightly packed (see photograph). Hopes were raised that this might just be a female, but two weeks later the cone scales had started developing the usual microsporangia and the cone was just a somewhat distorted male. The female E. woodii continues to elude us!

CROWN ROT TREATMENT

Mr Neil Munro, a keen member of the So=ciety from Lyndhurst in Johannesburg, has told us how he treated one of his speci=mens which developed crown rot. He has also sent us photographs to illustrate the different stages of the treatment. The crown rot problem can often result in the death of a prize specimen.

Neil Munro sawing off the top part of the stem

Neil dusting the cut surface with flowers of sulphur

He first removed all the leaf bases from the infected area to expose the central trunk, which he sawed off cleanly (first photograph). He then copiously dusted the surface with flowers of sulphur (second photograph) and allowed the surface to dry. At this stage it is necessary to protect the surface from dew and rain (a plastic bag loosely tied over the top will do the job). When the cut surface has dried out, some people seal it with tree seal or even white cement. All going well, the trunk will then produce one or more branches below the cut and/or form one or more suckers at the base of the stem, which can be removed for propa=gation. Although this treatment is rather drastic the 'surgical' approach seems to be one way to guarantee that the rotting process is halted.

FROM THE AUTHOR'S MOUTH

Reprinted from Lawrence G. Green's book, "These wonders to behold" (1981 reprint), chapter two, with kind permission from the publishers, TIMMINS of Cape Town.

Last of the great "rain queens" in the Transvaal was Mujaji, that withered and famous old woman who was known to Rider Haggard. General Smuts described her as "a woman who impressed me with her force of character and intangible air of au= thority - a woman who really was a queen".

Mujaji was known to her people, the small Lovedu tribe, as "Transformer of the Clouds". Once the Lovedu people lived to the north of the Limpopo; but about the year 1500 they migrated to the Soutpans= berg foothills, bringing their rain queen with them.

For centuries the rain queen was expected, in her old age, to pass on her secrets to a daughter or younger woman and then to commit ritual suicide by taking poison. Mujaji was prevailed upon by missionaries to break this savage tradition, and she died of old age.

Mujaji was installed as rain queen early this century,* and year after year her reputation and influence grew. She inhe= rited the earthen "rain pots" containing medicines calculated to make the heavens open. She ordered the rain dances and the drumming. Two anthropologists who watched this ceremony declared that the clear, silvery tones of reed-pipes rang out like a peal of bells. Beyond doubt Mujaji was a most successful rain queen. Indeed there were seasons when the lands were flooded and the chiefs approached her nervously, asking for a dry period.

My friend T.C. Robertson, secretary of the National Veld Trust visited Mujaji some years ago and tried to discover her secret. He shares my view that there is always a reasonable explanation somewhere outside the realms of magic. I believe the theory he formed of Mujaji's technique is correct.

Mujaji's kraal, Robertson noticed, was built on a ridge with one slope facing south-west and another north-east. On the north-east slope there grows a forest of cycads, weird and ancient plants. It is probably the largest forest of that particular species in South Africa, and botanists have pointed out that the cli= matic conditions must have been most unusual for such a forest to have sur= vived in a grove facing north-east. The cycads are exposed to the rain winds coming in from the Indian Ocean. They are extremely sensitive to atmospheric changes.

"Mujaji and the rain queens before her were obviously shrewd observers of cycad behaviour," Robertson told me. "Often they had to tell the people that the time was not ripe for making rain. And then one day they would find changes in the foliage and other signs, and they would order the rain-making ceremonies to begin."

*Mujaji died in February 1959, aged eighty-six. It was announced that the tribe would mourn her death for six months and then appoint a successor.

CYCADS OF AUSTRALIA

by Len Butt

Macrozamia moorei

Macrozamia moorei (F. Mueller) F.M. Bailey is a huge palm-like cycad. I have seen fine specimens west of Rockhampton in the Emerald, Springsure and Rolleston districts, in and around the incredible Carnarvon Gorge area and further south almost to Injune. Another area of note is the Clarence River district of northern New South Wales where it grows at the edge of rain forests. To see M. moorei in its natural state is to answer the question "Why grow or bother about Zamiaceae?" In the Carnarvon Gorge the Macrozamia dominates the scene from the entrance gates to the National Park, right through the established camping areas along the sides of the winding creek, and up both sides of the sloping gorge right up to the sheer cliffs. Even the other dominant plant in this area, an un-named Livistona fan palm, takes second place to the big showy grandeur that is this cycad. They stand like sentinel gate posts each side of one of the walking tracks in the gorge, the larger being easily four metres high at the apex of its trunk, with extra height added by the up-curving blue-green fronds up to 180 cm in length.

Many Macrozamia species do not have really clearly defined trunks or caudices, but this is not the case in M. moorei which has an extremely stout caudex in the mature plant, up to 80 cm in diameter, and has the leaf bases clearly defined by row on row of knobby projections of about 4.5 cm, the trunk being composed of these leaf bases much as bark encloses an ordinary tree.

M. moorei in habitat

(photograph by the author)

To come suddenly on to a hill covered with this species gives the first impression that here is a forest grove of stout date palms. The colour of the fronds can only be described as blue-green, and the upright arching manner of their growth is very distinctive. The pinnae (leaflets) along the rachis extend right down almost to the frond bases. The female cone of M. moorei is the largest of the genus and can be from 45 cm to 80 cm in

length and 19 cm in diameter. Although each pair of seed is covered by a green pad possessing a spine, the ripening cone reveals the bright orange seed, this very large attractive cone enhan= cing the beauty of a fascinating plant. There can be as many as eight large cones on a mature female plant and up to one hundred of the narrower cones on a male plant. A plant of M. moorei has been grown to maturity in fifty years, and some specimens two metres high in the caudex are reported to be less than one hundred years old. M. moorei has comparatively rapid growth for a member of the Cycadales.

The toxic poison associated with most parts of all the Cycadales is also pre= sent in M. moorei, but like all cycads it is not in the bright orange flesh of the seeds which is sought after by many marsupials as a food.

(Reprinted from "Australian Plants", Volume 13, no. 101, December 1984, with the kind permission of the author and the editor.)

FROM THE BOOKSHELF

"CYCAS AND THE CYCADALES"

by D.D. Pant, published by Central Book Depot, Allahabad. First edition 1962, second edition 1973.

Divya D. Pant, now Emiritus Professor of Botany at the University of Allahabad (a town of about ½ million inhabitants at the confluence of the Jumna and Ganges Rivers in India and a Hindu pilgrimage centre), was very active in research into the details of cuticle, epidermis and stomata of cycads in the early '60s. His specialist knowledge and interest in plant morphology and anatomy is reflected throughout his fascinating but little-known and not readily available book 'Cycas and the Cycadales'.

The text follows the title in dealing with the genus and the order as the two main sections. A cursory glance through the 255 pages reveals the large number of useful diagrams (87 figures and 16 plates) which illustrate appropriate aspects of the text. Many of these are reproduced from earlier works such as those of Wieland (1906), Schuster (1932) and Chamberlain (1935), which leaves the reader with a feeling that the text may be a little dated. Pant also does not recognize Lepidozamia as a distinct genus (although most people accepted that from the time of Johnson's proposal in 1959). A fair sprinkling of spelling mistakes adds to the quaintness rather than de= tracts from the overall usefulness!

Despite these limited shortcomings, there is an enormous mass of useful and inte= resting data in these pages. Nowhere else have I seen such a complete biblio= graphy of the early work on cycads. Notes on taxonomy, distribution, keys to the species known at the time and the meticulous details of plant form and function make sheer good reading for the botanist and layman alike. A few facts I would like to quote show something of the unusual detail: 1. local names for Cycas circinalis are varaguna (Sanskrit), jangli-madan-mastka-phul (Hindi), per ita, kamkshi (Telugu), canningay, madanagama (Tamil), mundicalu (Kanarese), intalap= pana,todda panna (Malayalam), orguna, odasa-mari (Uriya), 2. (rather more on the grisly side) an observation by Rumphius (of C. rumphii fame) was 'that the nomadic people of Celebes used to give the juice of the seeds of Cycas to kill their children when they wanted to move about unburdened by a family'.

Professor Pant's book occupies a strategic place on my bookshelf and I look forward to many more hours of pleasant browsing through these pages.

ROY OSBORNE

FROM THE PRESIDENT

In these times when many people in South Africa feel the effect of some or other degree of isolation in the international context, I am pleased to report that your Society continues to maintain and expand connections with overseas cycad friends. It is interesting to note that we pre=sently have more members from Australia than we do from the O.F.S.! There is a strong contingency from the U.S.A. and members have also joined from New Zealand, England, France, Germany, Austria, Israel and Italy. I am also pleased to report continued close association with the U.S. Cycad Society, the Palm and Cycad Socie=ties of Australia and New Zealand and various overseas botanic gardens and con=servation authorities. We welcome and value our international friends.

On the local front, your Society has made representations to Mr John Wiley, Minister of Environmental Affairs and Tourism, on the subject of a uniform policy on cycad conservation (see ENCEPHALARTOS no. 5, Editorial and ENCEPHALARTOS no. 6, Presi=dent's report). Minister Wiley has noted our representations with appreciation, and the Society is 'on file' with his Department for consideration in any fu=ture revision or consolidation of the relevant legislation.

On a related matter: a number of Natal members have recently been visited by officials of the Natal Parks Board and there have been occasional reports of somewhat 'hostile' attitudes of these inspectors. Following these reports, Danie Nel of the Natal Committee arranged a meeting with newly-appointed Mr Nico Snyman of the N.P.B. to discuss problems. We have been assured that the law-abiding cycad enthusiast has nothing to fear. Unfortunately it appears that there is currently some wide-scale illegal expor=ting of Natal cycads. I believe we should offer our full co-operation to the N.P.B. in their investigations. Greater tact and understanding on both the side of the inspectors and the members would be welcome.

VAN DIE PRESIDENT

In hierdie tyd wanneer baie mense in Suid-Afrika die effek van een of ander graad van isolasie in die internasionale konteks voel, is ek bly om te rapporteer dat u Vereniging voortgaan om kontak met oorsese broodboomvriende te handhaaf en uit te brei. Dit is interessant om daar=op te let dat ons tans meer lede in Australië het as in die Vrystaat! Daar is 'n sterk verteenwoordiging uit die V.S.A. en lede het ook aangesluit uit Nieu-Seeland, Engeland, Frankryk, Duits=land, Oostenryk, Israel en Italië. Dit is ook vir my aangenaam om volgehoue noue assosiasie te rapporteer met die V.S.A. Broodboomvereniging, die Palm- en Broodboomverenigings van Australië en Nieu-Seeland en verskeie oorsese bota=niese tuine en bewaringsowerhede. Ons verwelkom en waardeer ons internasionale vriende.

Op die plaaslike front het u Vereniging vertoë tot mnr. John Wiley, die Minister van Omgewingsake en Toerisme, gerig oor die kwessie van 'n uniforme beleid ten opsigte van broodboombewaring (sien ENCEPHALARTOS no.5, Redaksioneel, en ENCEPHALARTOS no. 6, Presidentsverslag). Minister Wiley het ons vertoë met waar=dering erken en die Vereniging is 'op lêer' in sy Departement vir oorweging tydens enige toekomstige hersiening of konsolidasie van die betrokke wetgewing.

Betreffende 'n verwante aangeleentheid: 'n aantal Natalse lede het onlangs besoek ontvang van beamptes van die Natalse Parkeraad en daar was enkele verslae van ietwat 'vyandige' houdings by hierdie in=spekteurs. Na aanleiding van hierdie verslae het Danie Nel 'n ontmoeting met nuut-aangestelde mnr. Nico Snyman van die Parkeraad gereël om probleme te be=spreek. Ons is verseker dat die wetsge=hoorsame broodboomentoesias niks te vrees het nie. Dit wil ongelukkig voor=kom of daar tans grootskaalse onwettige uitvoer van Natalse broodbome plaasvind. Ek glo dat ons ons volle samewerking aan die Parkeraad moet aanbied in hulle on=dersoek. Groter takt en begrip aan beide die kant van die inspekteurs en die lede sal verwelkom word.

Finally, may I once again congratulate Maans Kemp on his excellent efforts with your magazine, and may I express thanks to the many committee and other members who continue to contribute to the success of your Society in many and varied ways.

ROY OSBORNE

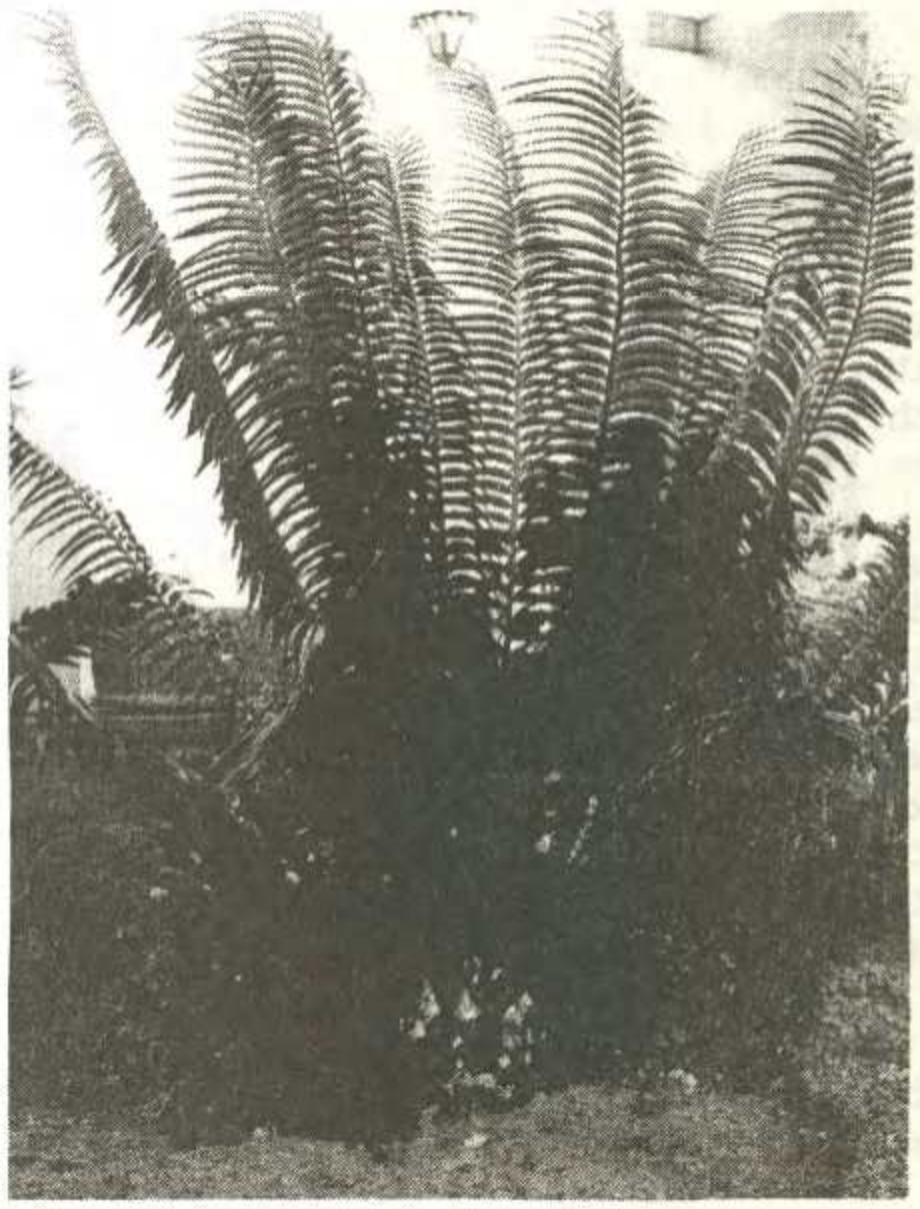
Laastens wil ek weer eens vir Maans Kemp gelukwens met sy uitstekende pogings wat u tydskrif betref en wil ek my dank uit= spreek teenoor die baie komitee- en ander lede wat voortgaan om by te dra tot die sukses van u Vereniging in 'n groot verskeidenheid maniere.

ROY OSBORNE

CYCADS FROM SEED

In ENCEPHALARTOS no. 6 (page 12) we invi= ted members to send in photographs of and information on cycads grown from seed. The accompanying photograph shows a spe= cimen of Encephalartos paucidentatus which was bought as a five-year old seed= ling in a plastic bag in June 1979. It is therefore now approximately 12 years old and has a stem diameter of 25 cm, with leaves 1,5 m long. It was kept in the bag until February 1983 and then planted in its present position in the garden.

We would be very interested in receiving more similar photographs and particulars.



The 12-year old E. paucidentatus

LETTERS BRIEWE LETTERS BRIEWE

Readers are invited to write to the editor (See address elsewhere.) Where applicable, experts will be asked to deal with specific questions.

Lesers word genooi om aan die redakteur te skryf (sien adres elders). Waar van toepassing sal kenners gevra word om spesifieke vrae te beantwoord.

Dear Sir

I have recently installed the drip irrigation system in my garden. The system is well illustrated by Gardena Gardening Equipment in their pamphlets. Other manufacturers can supply similar systems. It is easy to install except for the pricks and scratches by the cycads which we all fully understand! You can even have a water computer, fully automatic, computerized water control, moisture meter and a lot of other attachments to suit whatever your needs in the garden are. I mainly needed it for my cycads and I can assure you it does its job very well. I have had it operating for a few months. Like anything else it has its teething troubles but they can be put right effectively.

I must say I was inspired by Cynthia Giddy to water and fertilize cycads for better growth and larger and more cycad cones. I know many of us feel that, because they grow between the stones and on kranses,why can they not grow even better in our gardens without water and fertilizer. However, I am pleased that I had the system installed.

For normal-sized gardens the 13 mm P.V.C. piping is ideal. With a special tool supplied, you pierce a hole neatly in the tube and fit the micro jets or sprays or 5 mm leads with a connection and the micro jets at the end. I used two sizes of jets - one giving 3,25 litres of water per hour and the other giving 3,85 litres of water per hour. I have not as yet installed the spray jets which can be used in conjunction with the drip system jets but I do not think it necessary. There is absolutely no wastage of water. It takes the water just where you need it.

I have a friend who installed his own system and has the largest cycads I have ever seen in South Africa, for example an Encephalartos transvenosus with a stem over 70 cm wide, with leaves 2 to 3 m long. It will take some time before the plants will get the benefit from the system but I do believe it will pay for the costs involved.

Anybody interested in the system is very welcome to come over and have a look at my system. I understand it was originally manufactured and installed in Israel mainly to conserve water, which is very scarce in that country.

Before having the system installed it is advisable to have your water pressure tested. It can be used with a fairly low pressure but will require more circuits. Where I live in King William's Town the pressure is not all that high.

DON GIESE
8 NICO MALAN DRIVE
KING WILLIAM'S TOWN

Sir

I have been growing cycads of all the families - except for Microcycas calocoma - for about 8 years now. These include mostly (about 200) seedlings grown from seed, but also some older plants of C. revoluta and C. thouarsii and Z. floridana (at the coning stage). As far as the African Encephalartos and Stangeria species are concerned, my collection comprises nearly all of the species offered by Cynthia Giddy, which I bought about 3 years ago as young plants, approximately 3 to 4 years of age. I am also cultivating seedlings from seed sent by the US and Australian Cycad Societies (E. ferox, E. trispinosus, E. altensteinii and E. natalensis.)

LETTERS BRIEWE LETTERS BRIEWE

Given the quite adverse climatic condi=tions in Germany, cultivation of cycads of any species is certainly somewhat more difficult than in your country. Climatic conditions prevailing in Germany are ap=proximately 15 to 33°C at 20 to 70% re=lative humidity in Summer (June to Sep=tember) and +10 to -20°C at 60 to 90% relative humidity in Winter (November to March). The mean temperature per year in the Southwest of Germany, where I live, is 9,5°C (max. 33°, min. -13°). The mean number of sunshine hours per year is only about 1600.

This shows that cultivation of cycads under normal garden conditions is impos=sible during most of the year. During summer I keep my older plants in light shade in the garden, while the seedlings (i.e. all plants up to 5 or 6 years of age) are cultivated in the greenhouse. The plants in the greenhouse need heavy ventilation during the summer months as temperatures may easily reach 35 to 40°C, even with shading. Nevertheless, the youngest seedlings are kept on bottom heat of approximately 20°C during summer and winter.

During the winter, all plants are neces=sarily kept in the greenhouse at an air temperature of about 8 to 10°C (this in=cludes all species - even the tropical and subtropical ones), while seedlings and young plants receive additional bot=tom heat of about 20°C. Some of the Australian subtropical species of Cycas (C. armstrongii, C. cairnsiana, C. prui=nosa and C.furfuracea) seem to be deci=duous under these conditions, even at the early seedling stage. The main problem during our winter season is not so much the lack of light but rather the high humidity,especially in the well-insulated greenhouse. To compensate for the risk of overwatering and rot, the plants, except for the oldest ones, are cultivated in a mixture of 2:1 vermiculite and leafmould and are watered only from underneath. This makes heavy watering and spraying necessary when temperatures increase and air humidity decreases dramatically du=ring summer. Nevertheless, as far as growth rates and habit are concerned, the limiting factor under the rather cold and varying conditions in Germany seems to be light irradiation rather than tempe=rature. The only thing that is important is to reduce watering as far as possible during the non-vegetative period in winter. My biggest problem is that I have lost a number of plants by rotting. I found that before dying completely, the fronds yellowed and became weak. The interesting point is that rotting does not seem to begin at the root level, as could be supposed, but in the vegetative tip, i.e. in the centre of the suprater=ranean bulb. The reason might be con=densed water on the fronds, dripping into the growth tip, or too heavy spray=ing during summer or even fungi. Maybe one of the members of the Society could give me an explanation of this phenome=non?

Under these growing conditions I have found until now that E. lebomboensis is by far the most rapid-growing species. I received a seedling plant of about 3 cm diameter from Cynthia Giddy 3 years ago,which now has a stem of about 6 cm diameter and a crown of well-developed fronds of 1 m length. Except for E.tris=pinosus and E.lehmannii, which seem to rot easily, all species do very well under the conditions described above.

DETLEF BRUCK
SPEYER
WEST GERMANY

NPB cracks down on cycad racket

Graham Spence

A LARGE-SCALE cycad smuggling racket is said to be operating in Natal, the rare plants being sold for fortunes to collectors in other provinces.

And so severe is the extent of the "racket" that Natal Parks Board rangers believe that Natal could be totally denuded of these rare wild plants within a couple of years.

Cycads and tree ferns, both protected flora, are sold in some Transvaal nurseries for R1 200 a metre, and smugglers crossing the provincial borders with truckloads full are netting thousands of rands in profit.

Mr Stoffel de Jager, a Vryheid-based Natal Parks Board warden, said the problem had become so serious that tracking down cycad thieves was now his top priority. So far this year the NPB has charged one man. Two other court cases are pending.

This week a Vryheid man, Mr L J Olivier, was fined R400 when found guilty of being in possession of 13 cycads valued at R10 000. Mr Olivier pleaded guilty and no evidence was led.

Mr de Jager said although the Parks Board was making good progress in infiltrating the cycad "smuggling rings", they were still only scratching the tip of the iceberg. He believed most of the plants were gathered in KwaZulu, where traders can buy them from rural blacks for as little as 35 cents.

The plants are then transported into the Transvaal and either sold to nurseries for thousands of rands or to private collectors willing to pay huge sums for exotic garden show-pieces.

Nurseries in Natal are allowed by law to sell only young cycads with a stem of less than 10cm. However, in the Transvaal there are no restrictions as long as the nursery is recognised by the provincial conservation authorities.

Consequently, as the plants are sold by the metre, it is extremely difficult to control the "poaching" of fully grown wild plants.

"Of course, we can't prove all this at the moment, but all the facts certainly point that way. And with the current recession, a lot of people are looking at cycad theft as a chance to make a few easy bucks," said Mr de Jager.

He said the country was already so denuded of these irreplaceable plants that dealers are now scouring the bush with four-wheel drive vehicles equipped with winches and 200m cables to pull out cycads and tree ferns from cliff faces. "We once stopped a seven-ton truck en route to the Transvaal filled to the brim with tree ferns gathered this way," he said.

Licences to own and/or transport these protected plants can only be obtained from the Natal Parks Board. However, Mr de Jager has stressed that the NPB is not planning to prosecute people who have cycads growing in their gardens without permits.

"It would be impossible for us to issue permits for every garden cycad, and we're not interested in doing so as those plants are usually well looked after. It's those people who we catch actually transporting the plants or who have large numbers obviously for sale that we will throw the book at."

The maximum penalty for illegally being in possession of cycads is a R2 000 fine or 2 000 days imprisonment. However, Mr de Jager said the NPB's main aim was to educate the public that these rare plants are "part of our priceless heritage".

DAILY NEWS (Durban) 21 June 1986

Lasbrief vir polisieman se inhegtenisneming

Hofverslaggewer

'n LASBRIEF is vandag in die streekhof in Port Elizabeth deur landdros J. Kotzé uitgereik vir die onmiddellike inhegtenisneming van 'n blanke polisieman van Wolwefontein.

Deon Els (22) moes voor landdros Kotzé op aanklagte van diefstal en 'n oortreding van Ordonnansie 19 van 1974 verskyn het, maar was nie teenwoordig toe sy saak voor die hof geroep is nie.

Landdros Kotzé het gelas dat die lasbrief wat hy met Els se vorige wanverskyning gemagtig het, nou vir sy onmiddellike inhegtenisneming in werking gestel word.

Die staat beweer dat Els op 30 November 1985 vyf broodbome op die plaas Soutpansnek in die distrik Jansenville gesteel het. Na bewering het hy ook op 30 November in die distrik Uitenhage sonder 'n permit bedreigde flora in sy besit gehad, dit as 'n skenking oorhandig, gepluk of vervoer deurdat hy vyf broodbome *(encephalartos iehmanui)* verwyder het van Soutpansnek na Uitenhage vervoer en toe aan sers. Alwyn Victor Casely geskenk het.

Els is nog nie gevra om op die aanklagte te pleit nie.

Mnr. Neels Goosen was die aanklaer.

OOSTERLIG
(Port Elizabeth)

Constable fined for cycad offence

COURT REPORTER

A CONSTABLE from the Wolwefontein police station was fined R300 (or 30 days) in the Port Elizabeth Regional Court yesterday for removing cycads from a farm in the Jansenville district without a permit.

Leon Els, 22, of the South African Police, Wolwefontein, was acquitted on a charge of stealing the five cycads, an endangered species, from Soutpansnek in the Jansenville district on November 30 last year.

He pleaded guilty to a second charge of having the shrubs in his possession, transporting them to Uitenhage and giving them to Sergeant A V Casely after having removed them from Soutpansnek farm without a licence. Els said he had been given permission to take cycads from a neighbouring farm but had unwittingly removed the trees from Soutpansnek.

He was fined R300 (or 30 days).

EASTERN PROVINCE HERALD (Port Elizabeth)
27 August 1986

Cycads: man fined

DOUGLAS Heymans (29) of Marburg was fined R500 (or 100 days) when he pleaded guilty in the Port Shepstone Magistrate's Court this week of importing specially-protected indigenous cycads from the Transkei into Natal without a permit.

Natal Parks Board South Coast zone officer Mr A. Erasmus said Heymans had been found in possession of 36 cycads, two of them very rare, in a police roadblock this week. The value of the cycads found was between R4 000 and R6 000.
—Pietermaritzburg bureau

DAILY NEWS
(Durban)
17 July 1986

GIVE AND TAKE GEE EN NEEM

The exchange of plants is illegal in terms of the Plant Improvement Act. This act has however no bearing on the exchange of pollen and seeds and the unconditional donation of plants. Members are invited to use this column for offer's and requests in this connection.

The Nature Conservation Ordinances of the various provinces may however control the exchange and donation of seeds and plants and members are advised to contact their local provincial nature conservation office for information, permits, etc.

Persons who want to arrange overseas exchanges should consult the Department of Agriculture, Division of Plant and Seed Control. In this case import and export permits are usually required and a phytosanitary certificate is generally necessary.

The 'Give and Take' column is also available for requests concerning any other items of interest to members, e.g. books, photographs, etc.

Die ruil van plante is onwettig in terme van die Plantverbeteringswet. Hierdie wet het egter geen betrekking op die ruil van stuifmeel en saad en die onvoorwaardelike skenking van plante nie. Lede word genooi om hierdie kolom te gebruik vir aanbiedings en versoeke in hierdie verband.

Die Natuurbewarings-ordonnansies van die verskillende provinsies mag egter die ruil en skenking van saad en plante beheer en lede word aangeraai om met hulle plaaslike provinsiale natuurbewaringskantoor in verbinding te tree t.o.v. inligting, permitte, ens.

Persone wat oorsese ruilings wil reël moet met die Departement van Landbou, Afdeling Plant- en Saadbeheer in verbinding tree. In hierdie geval is invoer- en uitvoerpermitte gewoonlik nodig en 'n phytosanitêre sertifikaat word algemeen vereis.

Die 'Gee en Neem'-kolom is ook beskikbaar vir versoeke t.o.v. enige ander items wat vir lede van belang mag wees, bv. boeke, foto's, ens.

-Our Seedbank Officer, Danie Nel (120 Bowker Road, Escombe, 4093; tel. no. 031-442505) is keen to establish a colour slide collection for the Society, which can eventually be made available to regional branches, etc. He would be grateful for donations of colour slides of any species, taken in habitat, in a garden setting, showing cone and leaf detail, etc.

-Mr L. Forrester (PO Box 26, Cathcart, 5310; tel. no. 5310-2003) has plants of Encephalartos friderici-guilielmi for sale to collectors.

-George Massicote (103 Acton Street, Lowell, Massachusetts 01852, U.S.A.) is interested in buying fertile seed of Welwitschia mirabilis.