ENCEPHALARTOS

JOURNAL OF THE CYCAD SOCIETY OF SOUTHERN AFRICA

TYDSKRIF VAN DIE BROODBOOMVERENIGING VAN SUIDELIKE AFRIKA

NO. 29

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EDITOR/REDAKTEUR

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VOORBLAD/COVER

Encephalartos dyerianus
in habitat.

Photo: P. Vorster

CONTENTS-INHOUD

FROM THE PRESIDENT

Because 126 of the 157 members that voted timeously on the Constitution, accepted the new version without reservation, it has now become the official Constitution of the Society. According to the Constitution, the Executive Committee is to be replaced by a Council. The names and addresses of the Council Members appear on the inside of the back cover. Unfortunately, the Eugene Marais and Eastern Cape Regional Branches have not yet (beginning of January, 1992) elected their new officers and the representative from their Region on Council. When the President was elected, Andre Moolman received 25 votes and the present President 168. Roy Shooter beat Marie Kruger with 95 to 90 votes in the election of a "Back Copies Officer" whilst all the other Council Members were elected unopposed. Thanks are due to all those members who used their democratic right to vote on these important Society matters.

Eleven designs for an emblem of the Society were received. After two ballots, the Executive Council decided on the design that is reproduced elsewhere in this issue of the journal as the official emblem of the Society. The emblem was designed by a young British student, Andrew Shaw who briefly visited South Africa last year and plans to pay us another visit in 1993.

The arrangements for "CYCAD 93" are progressing well and I hope that many of you will attend the conference. Please also make it one of your New Year intentions to recruit at least one new member for the Society.

Yours sincerely

Nat. Grobbelaar

Nat. Grobbelaar

VAN DIE PRESIDENT

Aangesien 126 van die 157 lede wat betyds oor die Grondwet gestem het, die voorgestelde nuwe Grondwet sondermeer aanvaar het, is dit nou die amptelike Grondwet van die Vereniging. Volgens die Grondwet, word die Uitvoerende Komitee deur 'n Raad vervang. Die name en adresse van die Raadslede verskyn op die binnekant van die agterblad. Ongelukkig het die Eugene Marais en Oos-Kaap Streek-takke nognie ten tyde van die skryf van hierdie stuk (begin Januarie 1992) hul nuwe besture en die verteenwoordiger van hul Streek op die Raad verkies nie. Toe 'n President verkies moes word, het Andre Moolman 25 stemme teenoor die 168 van die huidige President ontvang terwyl Roy Shooter vir Marie Kruger met 95 teenoor 90 stemme in die verkiesing van 'n "Beampte vir vorige uitgawes" geklop het. Die ander Raadslede is onbestrede verkies. Ek wil die lede wat aan die stemmings deelge- neem het bedank dat hulle hul demo- kratiese reg gebruik het om te help om oor hierdie belangrike sake van die Vereniging te besluit.

Elf ontwerpe vir 'n embleem vir die Vereniging is ontvang. Na twee stemmings het die Uitvoerende Komitee die ontwerp wat elders in hierdie uitgawe van die tydskrif verskyn, as die amptelike embleem van die Vereniging aanvaar. Die embleem is deur 'n jong student uit Engeland, Andrew Shaw, wat verlede jaar op 'n kort besoek in Suid-Afrika was en ons weer in 1993 wil besoek, ontwerp.

Die reëlings in verband met "CYCAD 93" vorder fluks en ek hoop dat baie van u die konferensie sal ondersteun. Maak dit asseblief ook een van u nuwejaar voor-nemens om minstens een nuwe lid vir die Vereniging te werf.

Met vriendelike groete

Nat. Grobbelaar

Nat. Grobbelaar

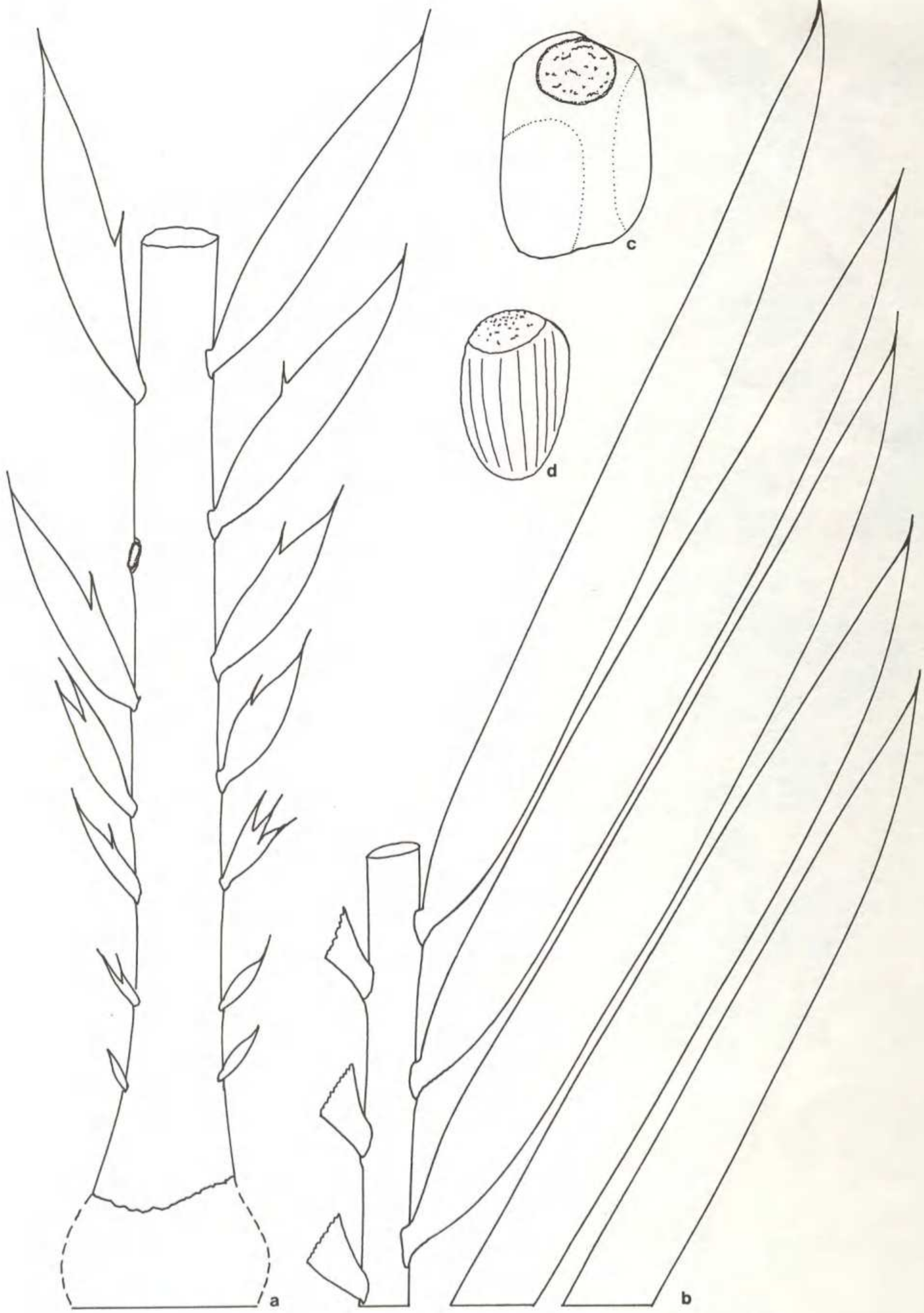

Figure 1 *Encephalartos dyerianus*: (a) proximal part of frond, showing very short petiole and lower leaflets reduced to dentate prickles; (b) median leaflets; (c) seed; (d) seed kernel; all × 1. After *Vorster & Robbertse 2944a*. Del. E.C. Vorster.

FOCUS ON... FOKUS OP...

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

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

ENCEPHALARTOS DYERIANUS

by Piet Vorster

INTRODUCTION

Encephalartos dyerianus, its name honouring Dr. R.A. Dyer who did so much to further our knowledge of the South African species of *Encephalartos*, shows two trends typical of recently described *Encephalartos* species. The first of these is that we were able to distinguish it as a separate species as a result of our better understanding of taxonomically important characteristics. The second is that the species has an extremely restricted geographical distribution. However, in contrast to some other recently described species, there are a considerable number of individuals.

DISCOVERY

This species was first discovered in the early 1970's. At that stage the variation in the glaucous-("blue-") leaved Transvaal species was still imperfectly understood. In addition there was a feeling that new species of *Encephalartos* should not be described as it invariably led to an uninhibited rush by collectors to procure specimens, without regard for the survival if the species in nature.

Some years later Miss Suzelle van der Westhuizen included these plants in her study of what she called the "*Encephalartos eugene-maraisii* complex", for which research she was awarded the degree of M.Sc. by the University of Pretoria in 1976. Research continued, but we refrained from describing it as a new species by means of publication as in the meantime it has become clear that these plants should be studied in the context of several other species, some of which were also undescribed. In 1988 we (Robbertse et al.) published it as a new species under the name *E. graniticolus*, but our paper was pre-empted by an article by Lavranos & Goode in which they published it under the name *E. dyerianus*. In terms of the *International Code of Botanical Nomenclature* the name *E. dyerianus* has priority.

DISTRIBUTION

E. dyerianus (figure 2a) occurs mainly on a low granite hill, at an elevation of about 700 m above sea level, a few kilometers north of Mica in the north-eastern Transvaal. This area consists of plains covered with mopane trees (*Colophospermum mopane*), and interrupted by a series of rather similar granite hills. Inexplicably *E. dyerianus* grows on only one of these hills. Near Gravelotte a few scattered plants have been located in the mopane bush, but these are too few and too scattered to reproduce from seed, and probably originated from seeds scattered in forgotten times by animals or early men.

On average this area gets an annual summer rainfall of 400 to 500 mm, and summer temperatures get very high amongst the granite boulders where *E. dyerianus* grows wedged into crevices, in blazing sunshine.

1. STEM

The stems (figure 2a) are well-developed and robust, unbranched but often suckering from the

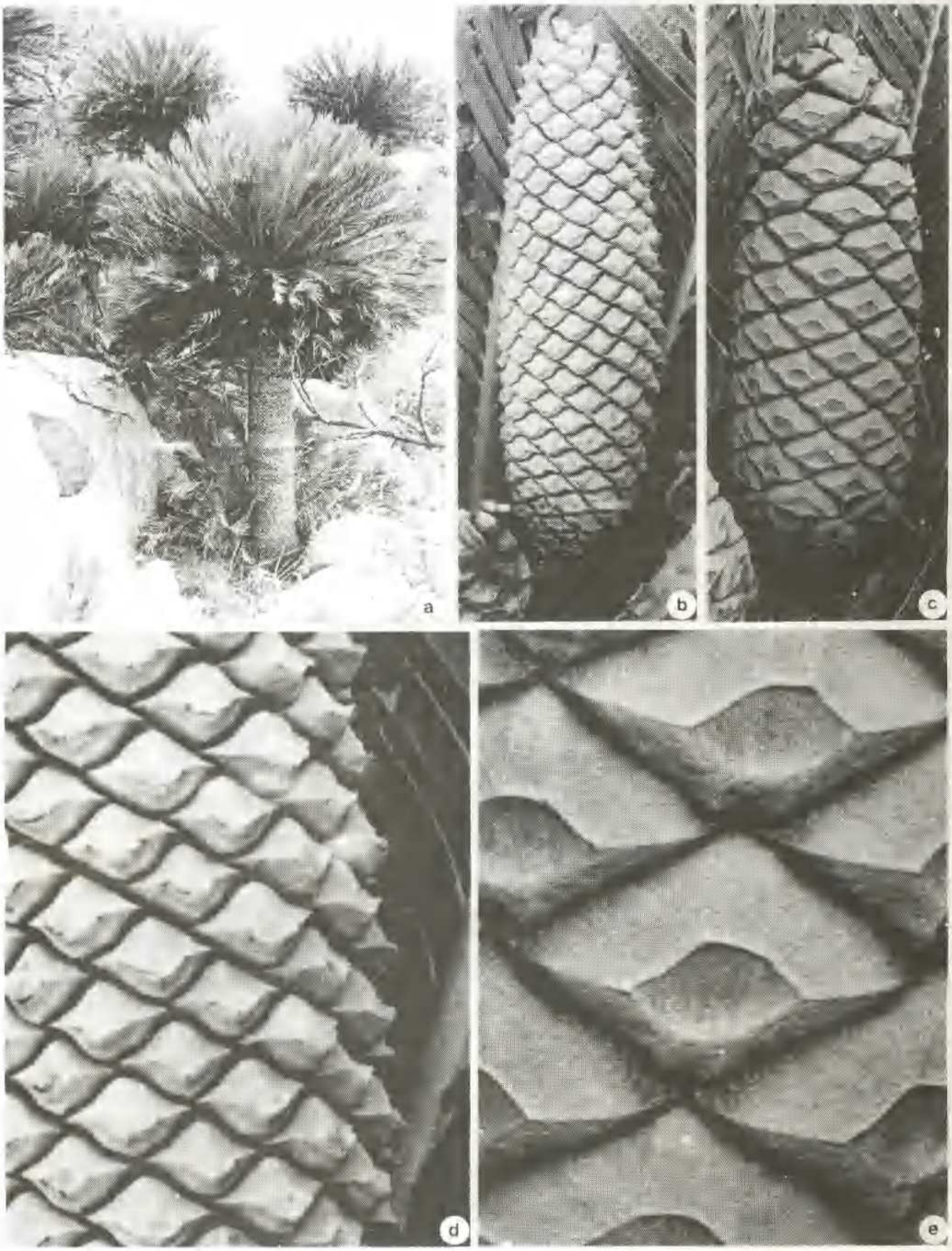

Figure 2 *Encephalartos dyerianus*: (a) plant in habitat, stem *ca.* 3 m tall; (b) male cone, *ca.* 400 mm long; (c) female cone, *ca.* 500 mm long; (d) detail of male cone, approximately life size; (e) detail of female cone, approximately life size. Photos: P. Vorster.

base, up to 3 or occasionally 6 m tall and 300 to 400 mm in diameter.

2. LEAVES

There are numerous fronds, arranged in a dense crown (figure 2a). These fronds are conspicuously glaucous ("blue"), straight and rigid, 1.4 to 1.7 m long with a leafstalk no more than 60 mm long. The leaflets (figure 1b) are directed towards the apex of the frond at an angle of about 45° with the rachis, with opposing leaflets set at an angle of about 140° to each other. The leaflets are not or only slightly overlapping, and the lower leaflets are gradually reduced to prickles towards the base of the frond (figure 1a). The median leaflets are 170 to 240 mm long and 13 to 18 mm wide, very narrowly elliptic and somewhat curved; with apices spinescent and somewhat turned in the direction of the frond apex; with several teeth on both margins of seedling leaflets but without any teeth on leaflets of mature plants.

3. CONES

The male and female cones are quite different (figures 2b & c), but both are hairless with the scale faces smooth (figures 2d & e) and bluish green.

Five to eight male cones per stem were observed (figure 3). These are narrowly egg-shaped, 270 to 460 mm long and 90 to 120 mm wide, on a 100 to 170 mm long stalk (figure 2b). The central facet of the cone scale face is slightly raised, but not drawn out into a beak or lip (figure 2d).

The female cones (figure 2c) number 4 to 5 per stem. They are cylindrical, 300 to 600 mm long and 100 t0 200 mm wide. They appear to be sessile, but are carried on peduncles up to 120 mm long which are hidden amongst the scale leaves in the crown of the stem. Each cone contains about 200 seeds (figure 1d), which are covered in orange-brown flesh (figure 1c).

AFFINITIES

At a first glance *E. dyerianus* is very similar to *E. middelburgensis*, both being large and robust plants with very dense crowns of straight, rigid, glaucous fronds (figure 2a). Even the female cones are not dissimilar. However, in *E. dyerianus* the leafstalk is seldom longer than 60 mm and the lower leaflets are reduced to prickles (figure 1a); while in *E. middelburgensis* the leafstalk is well-developed to a length of 100 to 200 mm and the lower leaflets are reduced to spines but hardly a row of prickles. The male cones are however very different, the central facet of the cone scale in *E. dyerianus* being slightly raised (figure 2d) while in *E. middelburgensis* it is conspicuously drawn out into a drooping lip.

CONSERVATION

For a change the conservation status of this species is a happy story. The hill on which these plants were first discovered, contains about 600 plants which produce large amounts of viable seeds during good years. In fact, the plants grow so densely that the sight is only surpassed by that of *E. transvenosus* at Modjadje's. Some years ago hundreds of seedling were raised by the then Transvaal Division of Nature Conservation and sold to the public under the name *E. eugene-maraisii*, so that it is quite well established in older collections, and some of these seedlings have in recent years been planted back amongst their parents. Unfortunately there doesn't seem to be any plans to make seed or seedlings available to latecomers.

One reason for the successful conservation of this species is that practically the whole population is concentrated on a single hill, which made it practical to fence the site and appoint a permanent guard who is on duty 24 hours a day. It is now a nature reserve administered by the Transvaal Chief Directorate of Nature Conservation, as the Lillie Flora Reserve. One can only hope that the Natal Parks Board will follow this example to safeguard *E. aemulans* before it is too late.

CULTIVATION

The then Transvaal Division of Nature Conservation found *E. dyerianus* an easy species to grow from seed. It is fast-growing and without problems once planted out in the open ground; provided that it is in a very well-drained and sunny location.

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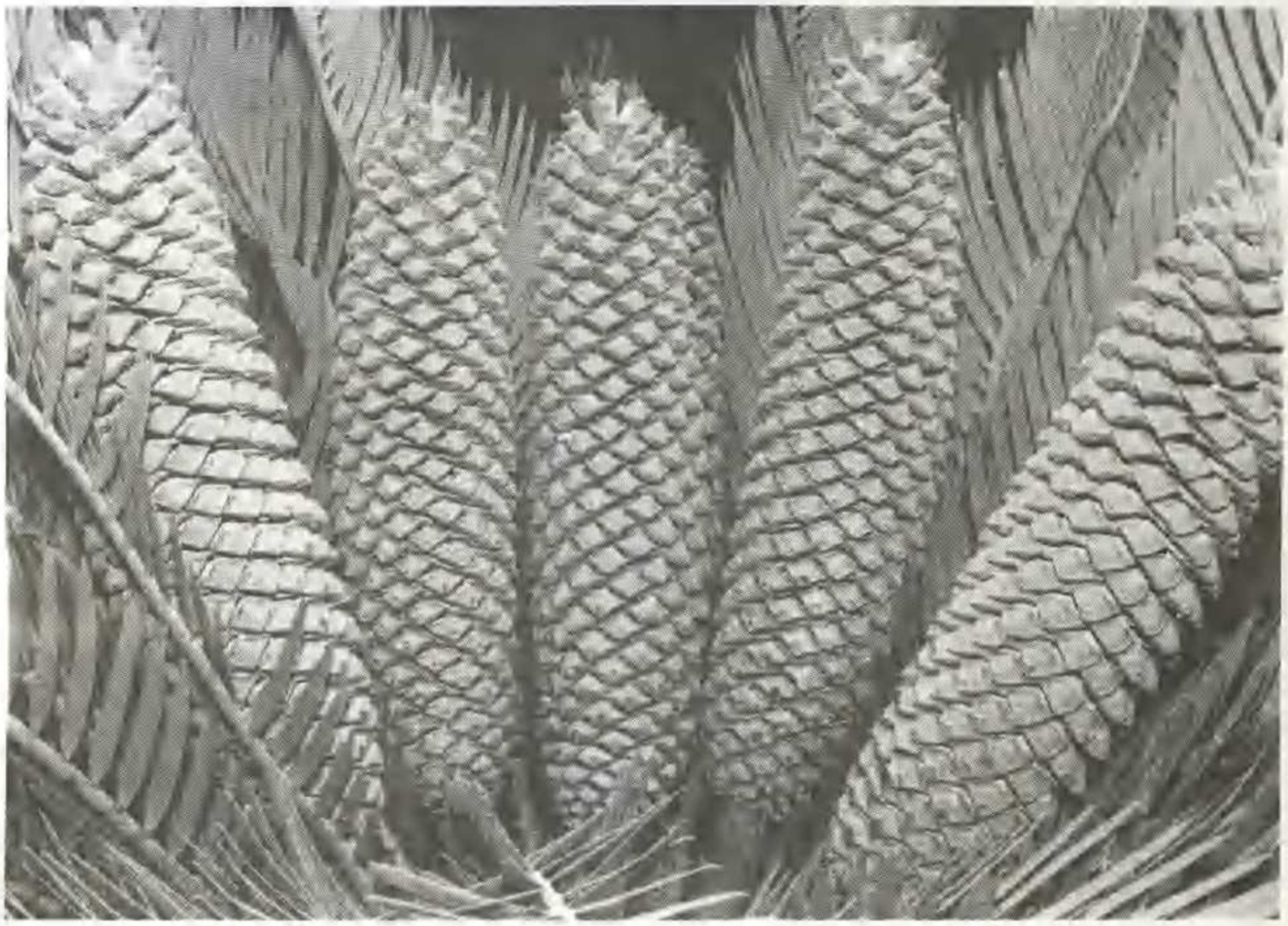


Figure 3 *Encephalartos dyerianus*: a magnificent display of male cones on a cultivated plant, each cone 450 mm long. Photo: P. Vorster.

STEM BULB ON CONE STALK IN ZAMIA FURFURACEA

By W. Tang

In Encephalartos no. 20 I reported the occurrence of what appeared to be a stem bulb growing on top of a cone stalk in *Encephalartos trispinosus*. This cone deformity was unlike any other that had been reported in that no sporophylls (scales) were present. I report here another such case on *Zamia furfuracea* (see photo). This plant is located at the Fairchild Tropical Garden research center in Miami, Florida and appears to be a female. Its deformity differs from the leafed cone reported on *Z. furfuracea* by Debruyne (Encephalartos no. 11) in that it contains no sexual parts (sporophylls or seeds).

SEED PRODUCTION ON TRANSPLANTED CYCAS REVOLUTA

by Stan Walkley

For two years running I have experienced excellent seed production on newly-transplanted *Cycas revoluta*. On the first occasion, a specimen about 1.3 m tall and 0.35 m in trunk diameter, was transplanted into a 200 l plastic planter bag. Some six months later the plant produced a female cone which I hand pollinated. It subsequently yielded 1 100 seed which I felt was most impressive since the plant had had all its leaves and most of its roots removed prior to being transplanted.

The following year, I moved another *Cycas revoluta*, this time from ground to ground. The leaves were left intact on this specimen which was 1.65 m tall and 0.40 m thick. This plant also coned, was hand pollinated and I later collected 1 280 seed (see photo).

The seeds from transplanted specimens usually appear to be smaller than those from undisturbed plants, but the viability does not seems to have been diminished, nor is the seed number reduced.

Most of my younger *Cycas revoluta*, with trunk sizes of 0.40 m x 0.23 m, produce about 300 seed. It would seem possible there that the number of seed capable of being produced is proportional to the volume of starch held in the trunk. The trunk diameter also seems to have a direct bearing on the number of seed produced; stouter trunked plants appear to produce more seeds than taller but thinner specimens. Obviously the stouter cycads produce more leaves per crown and hence more megasporophylls per crown and thus increasing the probability of high seed yields.

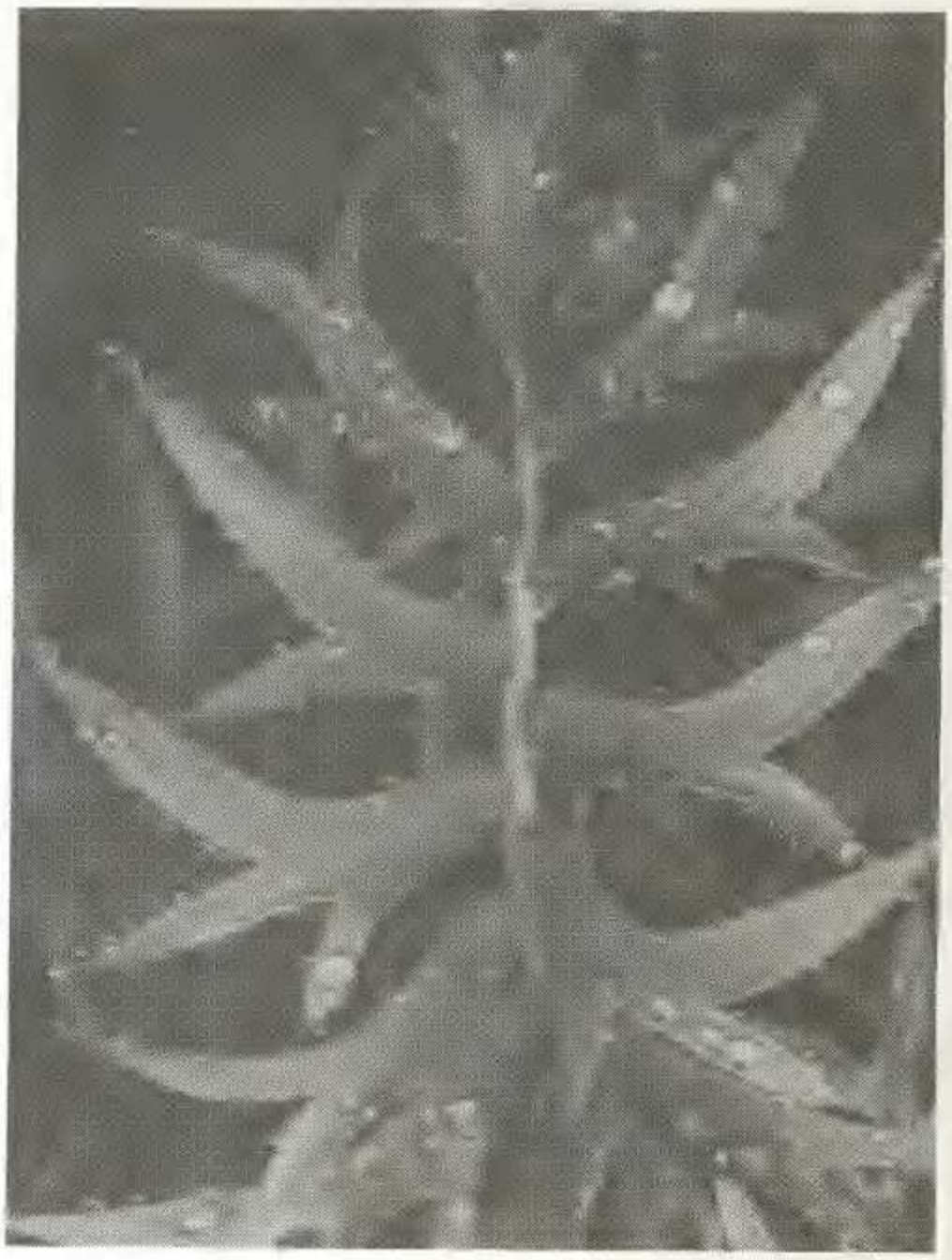
It would be interesting to hear of other people's experiences with seed production following transplanting.

Stan Walkley writes from: Australian Rare Palm Supplies, Buckley Road, Burpengary, Queensland, 4505 Australia.

The cluster of megasporophylls on Stan Walkley's recently transplanted *Cycas revoluta* which lead to a crop of 1 280 seed.

ENCEPHALARTOS LEAF WAXES

Further evidence has come forward that the alkane component of cycad leaf waxes is species-specific. B.Sc. Honours student of the University of Natal, **Mahomed Rawat,** has completed a project in which he analysed the leaf waxes from *Encephalartos natalensis* and *E. villosus* from 11 different localities. In all cases the *E. villosus* leaves gave high levels of odd-carbon-atom numbered alkanes, principally C-29 and C-31, while the *E. natalensis* specimens consistently gave a more regular spread of alkanes centred about C-26 but with high levels of the C-24 compound. The observations confirm and extend the earlier findings of **Roy Osborne** who supervised the project (see ENCEPHALARTOS 12: 26-26 and ENCEPHALARTOS 21: 20). Mr Rawat was recently awarded the prize as "best runner-up" in the 1991 South African Chemical Institute's Natal Postgraduate Seminar series for his poster presentation on his research project.



Right: The beading of water droplets on a young leaf of *Encephalartos horridus* shortly after rain, testify to the water-repellant properties of the leaf wax layer. Photo: R. Osborne.

SPRAY CAUSES "MUTATION"

Cycads planted in the grounds on the Westville Town Hall have been favourite targets for attack by the Leopard Moth. In the 1991 summer season it was decided to use the insecticide "Ripcord" to counter this menace. The treatment certainly kept the moths from doing their damage - but it's use resulted in an odd "coiled-leaflet" effect on all the newly-emergent foliage. This appears to be almost identical to the "mutant" pattern on certain leaves previously reported in ENCEPHALARTOS 17: 26-30.

Right: The coiled leaflet effect on a specimen of *Encephalartos villosus* in the grounds of the Westville Town Hall. Photo: R. Osborne.

ENCEPHALARTOS ALTENSTEINII - THE OLDEST POT PLANT IN THE WORLD?

By: Julius Brunner

With much interest we have read Craig Munro's report on the cycad collection housed in the Temperate House of the Royal Botanic Gardens Kew, which is well known to us from several visits. Craig Munro states that an Encephalartos altensteinii which has been in Kew Gardens since 1775 is the oldest pot plant in the world. However, we are of the opinion that this is not true.

In Schönbrunn, the seat of the management of the Österreichische Bundesgarden (Austrian Federal Botanic Gardens), a myrtle (Myrtus communis L.) has been cultivated since the year of 1736. (!). This plant was Queen Maria Theresia's (1717-1780) bridal myrtle. Emperor Francis Stephen of Lorraine brought the myrtle from Padau (Italy) to Schonbrunn on the occasion of his wedding with Maria Theresa in 1736. The plant, which is cultivated in a wooden pot, is still growing very well - even after 255 years!

The greenhouses in Schönbrunn also house very old Cycadaceae. In this context, it is interesting to learn that part of the cycads grown in Kew Gardens were originally destined for Schönbrunn. Emperor Joseph II (1741-1790) sent his two court gardeners, Franz Boos and George Scholl, to South Africa because he wanted to enlarge his collection of plants. They embarked for South Africa in 1785. From their expedition they brought 280 (!) crates of living plants to Cape Town in 1788. As the ship waiting to take them home turned out to be too small for loading the enormous quantity of plants, Scholl decided to stay in Cape Town with the rest of the plants. Now something almost unbelievable happened. The Austrian court gardener was forgotten in South Africa for 14 years!. Or, what appears more likely, Scholl felt at home there, or could not find a ship suited for transporting the plants.

In 1799 he finally decided to return to Austria. As he could not take along all the plants he had been cultivating with loving care for 14 years, he confined himself to the most valuable ones, among them some cycads. Scholl left Cape Town on a French ship which was attacked by a British warship near the coast of England and grappled after a short one-sided naval action. Like many english captains (among them the famous Captain Bligh of the "Bounty"), the captain of the British ship proved a good botanist and realised the value of Scholl's plants.

Thus, the Austrian gardener and his plants were taken to England where Scholl found himself in a delicate situation. He was released only after purchasing his liberty by giving a large part of his collection. He was finally allowed to continue his journey to Hamburg, from where the plants were transported to Schönbrunn by horse-drawn vehicles. In his reports Scholl particularly regrets the loss of an Encephalartos caffer which had been confiscated in London.

Only a few plants from Boos' and Scholl's expedition are still being cultivated in Schönbrunn as eg. a Fockea capensis. According to an inventory from the 19th century Schönbrunn was housing 26 species of 8 genera of Cycadaceae in those days. Many of these unique plants were destroyed during an air raid in World War II on February 7, 1945.
At present, 16 species of 5 genera of Cycadaceae are being cultivated in Schönbrunn and great efforts are being made to enlarge the collection.

Wherever Boos' and School's cycads may be growing today - wether in Kew Gardens or in Schönbrunn, it is a very important mission for us to protect and propagate these outstanding plants both in greenhouses and in their natural habitats. In doing so we will hopefully succeed in preserving these "living fossils" for the following generations.

CYCADACEAE IN THE RENOVATED "PALMENHAUS" OF THE ÖSTERREICHISCHE BUNDESGÄRTEN IN SCHÖNBRUNN (VIENNA).

By: Julius Brunner

The "Palmenhaus" in Schönbrunn (see photo 1), a big greenhouse specifically designed for the cultivation of palms, was built from 1880 to 1882 on the initiative of Emperor Francis Joseph I. (1830 - 1916). The court architect F. von Segenschmid was charged with planning this building.

He was assisted by Ing. S. Wagner, static calculations engineer, and I. Gridl, designing engineer. On June 19, 1882 the huge greenhouse was inaugurated by the Emperor. The building consists of 3 houses and is 111 metres long, 28 metres broad and 35 metres high at its peak. 5000 square metres of glass panes were necessary to cover its surface, and the floor space amounts to 2500 square metres.

Since the year of 1882 cycads have been cultivated in the "Palmenhaus". Accordinging to an inventory from the last decades of the 19th century there were many cycads among the plants housed in Schönbrunn's greenhouses. Many reports inform us about a very old Encephalartos horridus of enormous size.

At the end of the Austro-Hungarian monarchy in 1918, the palm house, which had always been privately owned by the Austrian Emperor's family was taken over by the newly founded republic and cultivated during the economic crises after World War 1 with great care. Despite all difficulties, such as shortages in fuels, the cycad collection could be preserved up to World War II.

Towards the end of this war, on February 7, 1945, the "Palmenhaus" was hit by three U.S. bombs. The panes were completely destroyed, and as the temperature was below 0^{o} Centograde (32^{o} Fahrenheit) on that day, many plants froze to death.

Only a few Cycas circinalis, a Cycas revoluta, a Dioon edule and the Encephalartos horridus mentioned above could be saved by being quickly moved to another greenhouse They, as well as a couple of palms, survived the air raids. The stems of Cycas circinalis still show traces of this disaster (see photos 2 and 3). Today these plants form the base of the new cycad collection housed in the renovated palm house.

After its destruction the "Palmenhaus" had to be completely renovated and was re-opened on January 14, 1953. In November 1976 it had to be closed because of dangerous defects of its iron construction due to corrosion. Plants growing in the ground had to be transferred to pots and tubs in order to be transferred to other greenhouses (photo 4). Unfortunately, the only Encephalartos horridus did not survive this procedure. All other cycads are still growing very well.

The renovation of the palm house turned out to be highly difficult and expensive and took 14 years. Total costs amounted to AS 212 million (= about US $ 19.3 million). Since November 30, 1990 the "Palmenhaus" has been open to the public again. Before transferring the plants into their new habitats the soil was thoroughly loosened and enriched with coarse grained sand from primary rocks. Among the newly arranged plants there is also a clump of cycads consisting of the old Cycas circinalis and Cycas revoluta that have been in Schönbrunn for about 120 years, a huge Encephalartos, probably Encephalartos longifolius, and some other small cycads, as eg. Encephalartos villosus, Zamia pumila and Macrozamia spiralis. All plants are doing very well in their new habitats in the palm house and have grown a lot since they were planted there.

It is particularly the cycads which attract visitors with their bizarre appearance. We all hope that they have now found a place where they can keep growing for good without being disturbed by unfavourable circumstances so that the following generations may delight in these marvellous plants too.

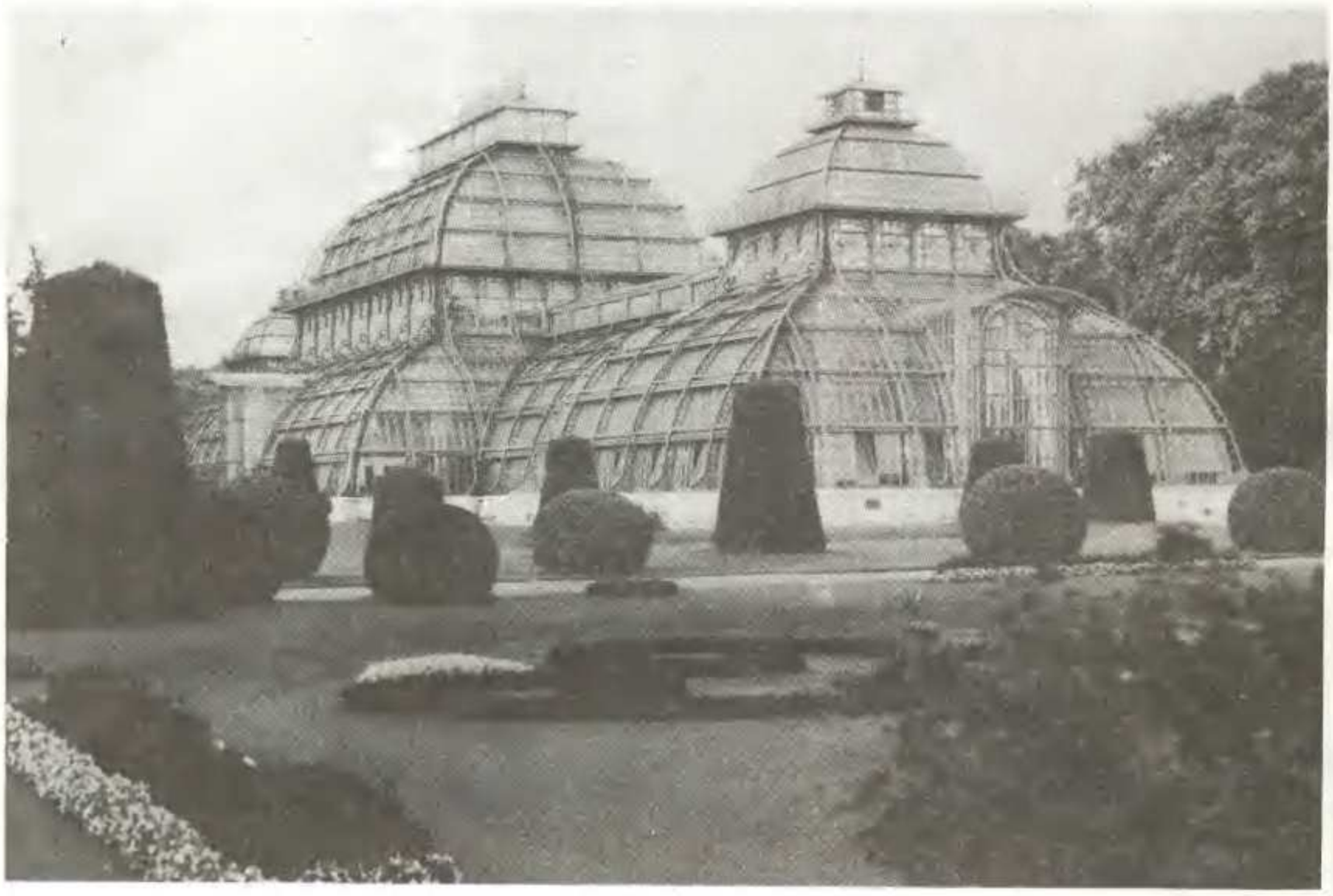


PHOTO 1

PHOTO 2

PHOTOS BY WALTER WEXBERG

PHOTO 3

PHOTO 4

MACROZAMIAS OF QUEENSLAND

David L. Jones, taxonomist with the Australian National Botanic Gardens (GPO Box 1777, Canberra, ACT 2601, Australia) has spent the last three years investigating taxonomic problems with certain Queensland *Macrozamia* populations. The results of his work have now been published in *Austrobaileya*, Volume 3: 481-487 of 1991. Four important changes are recorded:

1. *Macrozamia fearnsidei* D. Jones, from the Expedition Range north of Injune, previously regarded as within the *M. pauli-guilielmi* complex, is described as a new species. A particularly robust plant, it is named in honour of Geoff Fearnside, owner of Wallaroo Station.

2. *Macrozamia lomandroides* D. Jones, from an area south of Bundaberg between the Elliott and Isis Rivers, and related to *M. fawcettii*, is described as a new species. The name is choosen for the resemblance of clumps of this species to plants of the genus *Lomandra*.

3. A revision is made of Johnson's division of *Macrozamia pauli-guilielmi* into three subspecies. David Jones now classifies each as a true species: viz. *M. pauli-guilielmi* W. Hill & F. Mueller, *M. flexuosa* C. Moore and *M. plurinervia* (L. Johnson) D. Jones. He maintains that each is isolated, habitat-specific, has unique characters and that no intermediate forms exist.

4. Finally, *Macrozamia mountperriensis* Bailey, a taxon which Johnson in 1959 sunk into *M. miquelii*, is now restored as a species in its own right.

Included in the publication of the above is a key to the Queensland species of *Macrozamia*.

This latest advance in cycad taxonomy brings the total number of cycad species to 185, viz: *Bowenia* (2), *Cycas* (33), *Stangeria* (1), *Ceratozamia* (10), *Chigua* (2), *Dioon* (10), *Encephalartos* (52), *Lepidozamia* (2), *Macrozamia* (19) and *Zamia* (53).

The plant shown above (photo by Grant Hawley) is a specimen of *Macrozamia plurinervia*, now a species in its own right following the revision by David Jones. Known sometimes as the "blackfellow's pineapple", it occurs in the northern New South Wales tablelands and just across into southern Queensland. Like several other section *Parazamia* representatives, the twisted leafstalk gives an impression of leaflets radiating in all directions. A characteristic feature of *M. plurinervia* is the presence of reddish glands at the base of the broad, stiff, grey-green leaflets. [Source: Len Butt's "Zamiaceae in Australia", Palms & Cycads 31, April-June 1991.]

CYCAD SEEDS FOR SALE IN AUSTRALIA

A wide selection of palm and cycad seeds and seedlings is offered for sale by **Grant Hawley**, trading as Werona Holdings Pty Ltd (P O Box 512, Aitkenvale, Queensland 4814, Australia). Some species available are *Cycas cairnsiana, C. calcicola, C. circinalis, C. furfuracea, C. kennedyana, C. media, C. revoluta, C. thouarsii, C.* sp. "Marlborough Blue", *C.* sp."Mt. Surprise", *Lepidozamia hopei, L. peroffskyana, Macrozamia communis, M. douglasii, M. fawcettii, M. lucida, M. miquelii, M. moorei, M. mountperriensis,* and *M. plurinervia*.

Readers are invited to write to Grant Hawley for a free catalogue with full details.

NEW SCIENTIFIC REPORTS

New cycad-related reports which have appeared in the scientific literature are:

*Byrne, Margaret & James, S.H. 1991. Genetic diversity in the cycad *Macrozamia riedlei*. *Heredity* **67:** 35-39.
Biochemical studies show a level and distribution of diversity which contrasts sharply with that reported for Macrozamia communis.
[*Author's address: Division of Forestry, C.S.I.R.O., P.O. Box 4008, Queen Victoria Terrace, Canberra, ACT 2600 Australia.]

Caputo, Paolo; *Stevenson, Dennis W. & Wurtzel, Eleanore T. 1991. A phylogenetic analysis of American Zamiaceae (Cycadales) using chloroplast DNA restriction fragment length polymorphisms. *Brittonia* **43:** 135-145.
Use of modern biochemical techniques has confirmed the phylogeny previously proposed on morphological grounds. Dioon *appears to be the most primitive of the American genera while* Chigua *is closest to* Zamia.
[*Author's address: c/o New York Botanical Garden, Bronx, NY 10458-5126, USA.]

***Santiago-Blay, Jorge A. & Virkki, Niilo.** 1991. On the XO sex chromosome system of *Aulacoscelis melanocera* Stål (Aulacoscelinae: Chrysomelidae: Coleoptera). *Hereditas* **111:** 99-102.
The insects examined in this study were collected from cycads growing in San Salvador, Central America.
[*Author's address: Department of Entomological Sciences, University of California, Berkeley, CA 94720 USA.]

Stevenson, Dennis Wm. 1991. Cycadaceae & Zamiaceae. In: Flora of the Guianas, Series A, Fascicle 9, pp. 3-11. Edited by A.R.A. Görtz-van Rijn. Koeltz Scientific Books, USA/Germany.
The introduced species Cycas circinalis *and* C. revoluta *and the (probably) indigenous* Zamia lecointei, Z. muricata *and* Z. ulei *are described.*
[Author's address: c/o NYBG, as above.]

CYCAD CENTRE OPENS

WORLD CYCAD CENSUS

Good progress is being made with the data collection and processing for the **World Cycad Census**. By the end of 1991, estimates of habitat numbers of plants had been obtained for 142 different species and the collections in 77 international botanic gardens had been counted. Unfortunately only about 50 private owners/collectors had submitted returns from the survey form issued with ENCEPHALARTOS 27 (pp.39-40). It is vital that a much more representative sample of private collections is included if the survey is to have statistical significance. **Please will <u>you</u> take the time to fill in the form and post it off?** Even if you have only a few plants, each return adds to the information.

There has been an indication that some private owners, for security reasons, do not wish to have their cycad collection data made public. **I repeat the earlier assurance that individual returns are entirely and strictly confidential; only the overall summary data will be published.**

Your assistance would be much appreciated.

Roy Osborne
Secretary, World Cycad Census.

TV 50/50 PROGRAMME

The popular "50/50" Sunday night television programme broadcast a 16-minute cycad feature on October 20, 1991. Given that there was some 22 hours of recorded video tape in the preparation, producer **Teri Læppan** and "star" **Jonathan Rands** are to be congratulated on a balanced, if somewhat sanitised, presentation. Several members of the Society featured prominently on the programme, including **Cynthia Giddy, Nat Grobbelaar, Edgar Wohlberg** and **Sam Markram**. The feature opened with the newsitem on the move of the plants from the Transkei to the Umtamvuna Reserve (see **ENCEPHALARTOS 27:** p 16 and pp 17-19) - with regrettably little credit to **Tony Abbott** and **Braam van Wyk**, prime "movers" in the project. The story developed with habitat shots of *Encephalartos ghellinckii* (at Oribi Gorge), *E. natalensis* (at Elandskop) and *E. villosus* (at Krantzkloof) and a rather unfortunate condemnation of cycad collectors as being generally selfish and obsessive. The point was made that large scale commercial propagation of robust plants would help to satisfy collector demand and would thus reduce the pressure on "wild" collecting. The fact that the Society was mentioned by name on several occasions gives some credence to its existence and influence.

Cycad toxin research

Julie Lake

Queensland veterinary pathologist Professor Alan Seawright says any question of a link between cycad pollen and motor-neuron or any other diseases humans is "pure speculation" at this stage.

It should not affect the suitability of cycad species as pot or garden plants.

Professor Seawright of the University of Queensland's veterinary pathology department, is currently studying toxins found in cycad pollen and possible effects if it is inhaled by humans and animals.

The pollens of about 50 native Australian and exotic cycads are being tested.

Early media reports that the research indicated cycad pollen could be responsible for motor-neuron problems in human beings has caused concern, not only among some members of the public but among nurserymen who say the reports are misleading.

International research to end speculation

The research program is being undertaken in collaboration with the Mayo Clinic in Minnesota, US which has for some years been studying a suspected (but as yet unproven) link between the motor-neuron disease amyotrophic lateral sclerosis (ALS) and *Cycas circinalis* among the Chamorro people in Guam.

In the past this research has centred on the seed of *C. circinalis* but as no direct link has been discovered between the seed and the high incidence of ALS in certain areas of Guam, Japan and New Guinea — where the seed is eaten — emphasis has now shifted to the pollen.

Although Prof. Seawright says that cycad pollen has not been proved to have any ill effect on humans, he suggests those working or living in proximity with cycads should not unnecessarily expose themselves to high levels of pollen.

Many species of cycads, he points out, have cones which are very large and pollen-productive.

He also points out that other parts of several cycad species (such as the leaves) can contain high levels of potentially harmful toxins which makes it quite likely that the pollen will contain similarly high levels Some toxins in cycad pollen are already known and further research is expected to identify others.

The first part of Prof. Seawright's research, which should be completed by the end of this year, is to discover which pollens contain what amounts of toxins.

An integral part of the research is to look for any differences in pollen chemicals between the areas where the disease is found and where it is not.

The future

Next year the program will continue with interactive study to see what effect the toxins safe on the nasal mucosa, thereby ascertaining whether there is a hazard to humans and animals through inhalation.

There have been no reported cases of cycad or any other pollen poisoning in Australia, either by inhalation or ingestion, although pollen from many plants is responsible for a number of allergy problems which includes asthama.

AUSTRALIAN HORTICULTURE
June 1991.

WILD LIFE SOCIETY ISSUES CYCAD PAMPHLETS

The Wildlife Society of Southern Africa has recently published a series of three cycad-orientated pamphlets. These pamphlets, prepared by Roy Osborne, of the University of Natal, in consultation with the WLS cycad action group, comprise 16 pages of text illustrated with line drawings and photographs. The objective is to provide up-to-date accurate information which will be of interest to conservationists, botanists, farmers, commercial growers, cycad hobbyists and interested laymen.

The WLS cycad posters are available at R2.50 each (or R7.50/set of three) inclusive of VAT and local postage. Overseas purchasers must add R5.00 to cover airmail postage costs. Monies raised through the sale of these pamphlets will be placed in the WLS Cycad Fund.

The three cycad information leaflets are:
CIL1: Southern African Cycads and their Conservation
CIL2: Cycad Seed Production and Germination
CIL3: Conservation Management of Cycads in Habitat

Enquiries to:
The Wildlife Society of Southern Africa (Conservation Division),
100 Brand Road, Durban 4001 - or use the form below of a photocopy thereof.

To: The Wildlife Society of Southern Africa, Conservation Division, 100 Brand Road, Durban 4001

Please send me the following cycad information leaflets:

Title of pamphlet	Quantity	Price	Total
CIL1: Southern African cycads CIL2: Cycad Seed Production and Germination CIL3: Conservation Management of Cycads in Habitat		R2.50 2.50 2.50	
Overseas orders add R5.00 for postage costs:			
TOTAL ENCLOSED HEREWITH:			
Name:		Date:	
Postal Address:			

MACROZAMIA SPIRALIS

By: Paul Kennedy
21 Sierra Road
Engadine
N.S.W. Australia

Macrozamia spiralis is one of the smaller (Section Parazamia) Macrozamia species which can be found growing in both coastal and inland areas of New South Wales. M. spiralis is thus somewhat unique as only one other New South Wales cycad (M. communis) has a coastal plains belt over the Great Dividing Range to inland areas of New South Wales.

M. spiralis grows plentifully near Richmond, west of Sydney, on flat, poor quality sandy soil under a eucalypt canopy. Although I have not seen the plants which grow on the western slopes of the Great Dividing Range, I would assume that such habitat locations would have been severely diminished by the clearing of land for cultivation and would not, consequently, be easily accessible.

Richmond (elevation 20 metres) has an annual average rainfall of 799mms (spread over 112 rain days) with winter minimum and summer maximum daily temperatures (reached at least once per week during July and January) of -0.4 and 35.6 degrees C respectively. Richmond has frost on an average of 43 days per year.

This species is the subject of some confusion, even in Australia, for two reasons:

First, prior to the 1959 revision of the nomenclature of Australian Zamiaceae by L A S Johnson, what is now known as M. communis used to be known as M. spiralis and;

Secondly, a locally occurring dwarf M. communis species which grows in the same general habitat locations areas as M. spiralis has been mistakenly identified by some enthusiasts as M. spiralis.

That such confusion still exists is demonstrated by the fact that one of Sydney's larger Seed Merchants until very recently listed M. communis seeds as "M. spiralis (communis)".

The general characteristics of M. spiralis are as follows

* *A subterranean caudex*
* *Spirally twisted fronds:*
  - *Which reach an average above ground height of 0.6m ranging up to a maximum above ground height of approximately 0.9m and;*
  - *Which have an average spread of fronds of approximately 0.6m in diameter ranging up to a maximum spread of fronds of approximately 0.9m in diameter.*
* *An average of 8/12 fronds per plant, with some plants having as few as 2 fronds, but ranging up to a maximum (which I have seen) of 17 fronds.*
* *Pinkish/red callouses where the pinnae (leaflets) join the rhachis, though these callouses change colour with age from pinkish/red to a creamy-white colour.*
* *Juvenile plants having apical toothed pinnae, but mature plants having entire pinnae (though the tips on some of the pinnae on mature plants can be found to have from one to three minute needle-pointed spines).*
* *Normally one, though sometimes two male/female cones per plant, and;*
* *Reddish coloured seeds.*

The pinnae are angled forward on the rhachis and are normally upswept at an angle of approximately 30 degrees from the Rhachis - to form a very broad "V" shape.

The largest M. spiralis plant which I have seen had 17 fronds standing 0.9m above ground level with a spread of fronds of approximately 0.9m in diameter.

To further illustrate the difference between M. communis and M. spiralis, a M. communis plant which I saw recently at Batemans Bay on the south coast of New South Wales had an above ground trunk standing 0.6m high and measuring 0.5m in diameter with the tallest of 50+ fronds reaching a height of approximately 2.4m above ground level.

M. spiralis (along with most other small Section Parazamia species) produces new fronds very infruently in habitat locations. New fronds when produced, invariably after a fire, are a very attractive blue/grey colour with a distinctive pinkish/red callouses where the pinnae joins the rhachis. Over a period of time however, the frond colour changes from blue/grey to green. Likewise, the pinkish/red callouses change to a creamy-white colour after going through stages of first turning pink then yellow then creamy-white.

M. spiralis plants in habitat locations are extremely attractive when new fronds are produced, though they become less attractive as the frond colour changes with the passage of time and a deterioration in the condition of numerous pinnae occurs (obviously as a result of insect depredation).

M. spiralis tends to grow in a pattern of scattered individual plants, though it is not infrequently found in small clumps of 10/12 plants growing within a 2.0m diameter area. The reason for this variation is somewhat intriguing though I suspect that the clumping tendency may be due to the result of seeds germinating and growing to maturity in close proximity to the parent plant, while the reason for the scattered individual plants could be attributed to seed dispersal by marsupial animals.

The largest such clump of plants which I have noticed contained approximately 40 plants growing within an area of approximately 2.5m x 5.0m.

In very rare cases a plant will be found with multiple heads - no doubt due to damage to the upper part of the caudex. One such plant which I have seen had 7 separate heads of fronds, giving the effect of a very leafy specimen (albeit with reduced sized fronds).

M. spiralis is a very slow growing cycad both in terms of juvenile plants (when grown from seed) and in terms of the production of new fronds on mature plants in habitat locations.

Coning seems to occur every 3/4 years with a large percentage of plants within the population taking part in the coning cycle. In intervening years few cones, either male or female are produced.

Macrozamia spiralis

Photo: Paul Kennedy

CYCAD- INSECT RELATIONSHIPS DESTRUCTION

By: Paul Kennedy
21 Sierra Road
Engadine
N.S.W. Australia
2233

Whilst I have indicated in Issue No 27 of "Encephalartos" Page 22 how I consider that weevils are directly involved in the pollination of cycads, I am equally convinced that weevils are paradoxically also involved in the destruction of cycads.

This latter conclusion is based on observations made in my home garden during the past 2 years, in connection with the loss of a number of cycad plants and seedlings growing in community pots in a greenhouse and also garden planted.

When I first noticed the loss of several garden planted E. caffer seedlings, I assumed that they had not coped with the Sydney climate and its average annual rainfall of 1250mms.

These particular Encephalartos seedlings had been planted adjacent to a large potted Cycas media specimen (before I moved it and planted it in another part of the garden, as it seemed to be growing poorly in the pot). This C. media plant, which had a 0.4m trunk, had been acquired for me by a friend about 6 years ago, from a land clearing project near Rockhampton.

At about the same time as the loss of the E. caffer seedlings, I also noticed the loss of a number of individual seedlings planted in community pots in my greenhouse and concluded that I had, in all probability, overwatered them. I did not (then) connect the losses of the potted seedlings and the garden planted seedlings.

Over a period of time, I continued to lose a number of seedlings (both potted and planted-out specimens), but could find no reason to alter my initial conclusions as to the reasons for their demise.

Eventually, when an apparently healthy 6 years old garden planted E. villosus plant suddenly collapsed at ground level, I examined the remains of the semi-rotten caudex and discovered indications of "borer" holes in the external surface. I also found a number of what I identified as weevil larvae in the internal remains of the caudex.

I then recalled having read an article which appeared in one of the very early issues of the U.S. Cycad Society Newsletter about the "Tranes Beetle". This article described in identical detail the sudden death syndrome which I outlined above in respect of the E. villosus plant.

Australian Museum entomologist, Clarry Chadwick and I subsequently examined the caudices of the E. media plant which I had relocated in my garden and an adjacent "sick" M. diplomera specimen. We found that about 60% of the C. media trunk had rotted away, but found no evidence of any (then) current insect infestation. On the other hand, when we examined the M. diplomera plant we found indications of "borer" holes on the external surface of the 20mm diameter caudex and both weevils and weevil larvae inside the caudex.

These weevils were identified by Chadwick as Tranes internatus - the same species of weevil which had been identified in the United States according to the Cycad Society Magazine article and which was suspected of being introduced into the U.S. in imported Australian caudices.

Chadwick indicated that he had encountered Tranes internatus around the caudices of habitat plants during his research into M. communis, but that

he had not found any evidence to indicate that they were attracted to male and female cones in the same manner as Tranes lyterioides.

In retrospect, I concluded that the weevils had been introduced into my garden in the trunk of the C. media plant (which had been taken from the wild) and that over a long period of time they had survived and multiplied. Furthermore, being nocturnal and living in and around the caudex of host plants, they are all but invisible yet have an AIDS type effect on the plants and seedlings which they choose to invade.

An indication that plants are being subjected to such insidious attack usually only becomes evident when a plant suddenly dies. The "borer" holes in the outer surface of caudex, which appear to be the only visible evidence of the presence of Tranes internatus, are virtually impossible to detect as they are usually at or below ground level.

It would appear that the reproductive cycle of Tranes internatus involves the adult weevil creating - by drilling or eating - a small hole in the external surface of the caudex of a seedling or a mature plant. Eggs are then laid in a small cavity and the resulting larvae survive by eating their way through the caudex, making small tunnels as they proceed, until a honeycomb pattern of tunnels eventuates and the surrounding areas of the caudex begin to rot - with the ultimate effect, on the plant, being terminal.

In some obviously "sick" Macrozamia and Lepidozamia plants which I have examined, larvae was found inside hollowed-out frond bases and also in varying parts of the frond stems (after having obviously eaten their way up the inside of the stem).

There is a significant difference in the effect of the weevil infestations on Encephalartos plants compared with Macrozamia and Lepidozamia plants, in that the larvae appears to be able to easily penetrate the 'softer" frond bases and stems of the Australian plants as opposed to the much stiffer and 'harder' frond bases and stems of Encephalartos plants.

In the Australian species the larvae, as well as tunnelling through the caudex, eat out the frond base and sometimes the frond stems, whereas in Encephalartos plants the larvae seem to have difficulty in penetrating the leaf bases and there is sometimes a small hollowed-out cavity, or more often, a tunnel which enters and exits the frond base. I have photographed the dissected base of an E. longifolius frond with three tunnels evident (plus a larva emerging from one of the tunnels).

The result is that the fronds on Lepidozamia and Macrozamia plants which are attacked by the larvae seem to die gradually, thus perhaps, signalling a warning of the presence of weevil larvae. Conversely, as the larvae are seemingly unable to penetrate the frond bases and stems of Encephalartos plants to the same extent, Encephalartos species generally do not show any external sign of weevil infestation until a plant suddenly collapses at ground level due to the systematic destruction of the caudex by the larvae.

The only solution to counteract the activities of Tranes internatus seems to be the use of a powerful systematic insecticide which, for personal health reasons, I only advocate with the greatest reservation.

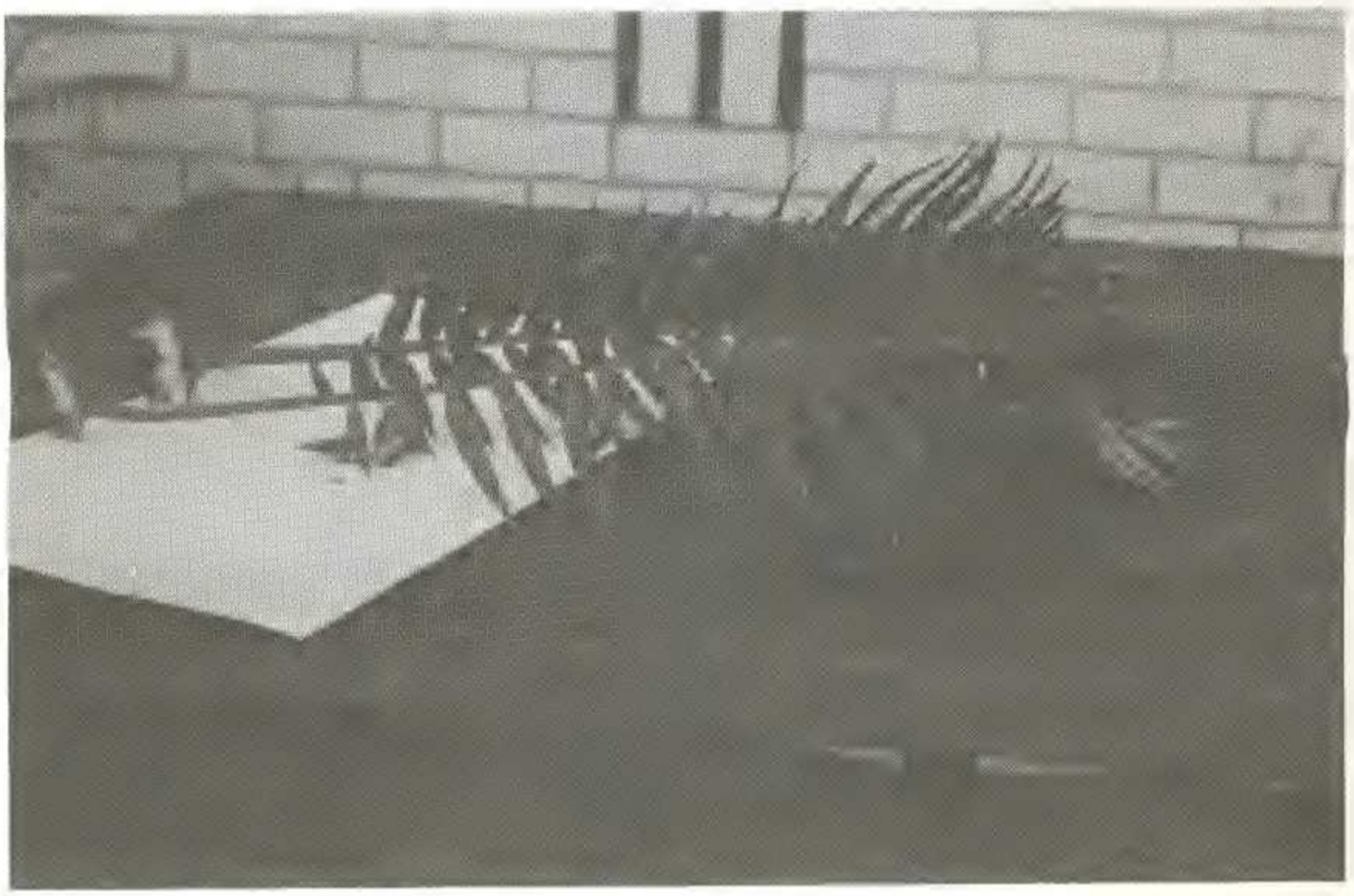
The lesson to be learnt from my experiences is that the introduction of plants from the wild into a home garden environment is fraught with danger as the caudices from the wild could bring with them an unwelcome predator in the form of Tranes internatus - with potentially long-term disastrous effects to existing cycads in the garden.

The role and purpose of Tranes internatus in the insect world is completely unknown to me, but I suspect that it could be responsible for the occasional dead cycad which is seen in the bush (in much the same fashion as older animals become the prey of predators in the animal world).

Similarly, I consider that it is conceivable that the activities of Tranes internatus may play some part in controlling the natural growth of the prolific numbers of seedlings which are quite often found surrounding female parent plants, in habitat locations of both M. communis and L. peroffskyana plants (which could also explain why the overwhelming majority of such seedlings never grow to maturity).

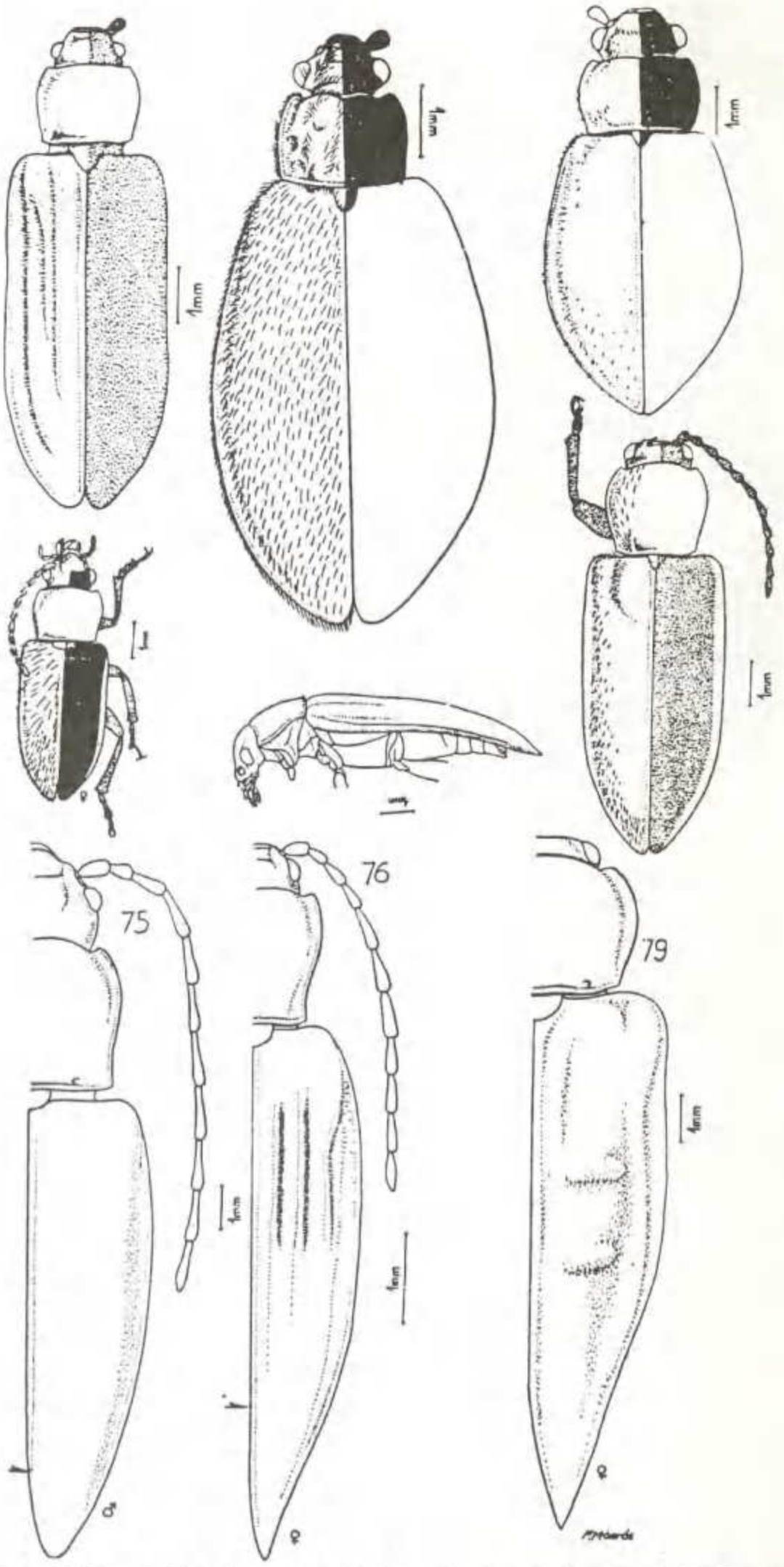
Frond base of E. longifolius showing emerging larva.

Photo: Paul Kennedy



Frond base E. longifolius showing signs of rot after weevil infestation.

Photo: Paul Kennedy



Figs. 72-79. 72-74. Metacoxae ♀ from the inner side in *Janbechynea s. str.*; position of femur indicated by dotted lines. 72. *J.* (*J.*) *elongata* (Jac.). 73. *J.* (*J.*) *inverosimilis* n. sp. 74. *J.* (*J.*) *paradoxa* Monrós. 75. *Janbechynea* (*s. str.*) *elongata* (Jac.); the arrow indicates length of abdomen. 76. Same, allotype ♀ in USNM. 77. Same, genitalia ♂ from the side. 78. Same from above. 79. *J.* (*J.*) *inverosimilis* n. sp. holotype ♀ in MCZ

Jorge A. Santiago-Blay is revising the neotropical beetle group Aulacoscelinae (Coleoptera : Chrysomelidae). Two genera Aulacoscelis and Janbechynea with about a dozen species have been described. According to the literature, species of this group feed on cycads.

Cycadologists should be on the look out for these beetles and Jorge would welcome any specimens. To preserve them use 70 percent ethyl alcohol, or 40 percent isopropanal work fine. The specimens should be sent:

Jorge A. Santiago-Blay
218 Wellman Hall
University of California
Birkeley, CA 94720-0001
United States of America

The illustration is reproduced with permission from the Museum Bulletin of Comparatize Zoology of Harvard University.

LETTERS BRIEWE

LETTERS BRIEWE

I read about the plunder of African cycads in every issue of Encephalartos. Recently I felt the impact of cycad plunder personally. Every year I visit Thompson Park here in Miami, Florida to examine the general condition of the wild zamias in their pine forest habitat. This year, to my horror, I noticed that someone had dug up dozens of these plants and left their leaves and cones to decay by the roadside. Although the south Florida zamia was once very abundant, numbering in the millions, uncontrolled development has left only fragments of this cycad's natural habitat. It is now threatened and its few remaining populations need to be preserved. Thompson Park is one of the few "protected" patches left. I support your journal's effort in reporting cycad theft and plunder. How else can we fight this problem unless it is made known to those who care?

Willie Tang
Fairchild Tropical Garden
Miami, Florida

Dear Editor,

I read with great interest the article by Martin Schwellnus (Encephalatos No. 27 page 28) on his observations on root contraction of E. cycadifolius. I have had similar results with fertile seed I obtained from plants in my garden. I experimented with a batch of fertile E. horridus seed I reaped in 1989, after the normal drying out period I planted half the seeds in plastic trays (see photo one). The other half I planted in plastic bags 200mm x 160mm (4.0L).

I was amazed to see that the seeds in the plastic trays were the first to produce leaves. Thinking that the seed in the plastic bags had rotted, I emptied a few out and found that a long tap root had developed instead of leaves, (see photo two). This puts me in a quandary with my next harvest, do I go for quick leaves and stunted roots, or a strong tap root and leaves later?

Mike Kipling
Kew
Johannesburg

PHOTO 1

PHOTO 2

Attached is a photo of a E. villosus from my garden. If you look carefully you will see leaves pushing out the top of the cone. The leaves have stayed virtually the same size all the time. Before coning all the leaves went brown and died off - I took fright thinking that perhaps the plant was sick and had began to dig it up, when I noticed that it was starting to push out a cone. The cone was almost full size before the plant began to push a full new set of leaves.

Is there any explanation why the small leaves are on top of the cone? Maybe one of our members can help.

Colin & Charmaine Pinker
112 Columbus Street
Nelspruit
1200

POLLENBANK NATAL MEMBERS

I request that all Cycad enthusiasts in the Natal area, who are serious about cycads, their survival, be so kind as to mail me a list with the following information.

1. *Your name, address & telephone no.*

2. *The species.*
   (a) No of male -
   (b) No of female plants that have coned before and might cone again within the next year or two.

Often plants grow in Parks, a friends' garden, or at public places i.e. churches etc. Please try to get permission to utilise these cones and include them on your list.

I would then be able to draw up a list and help members with pollination requirements. Remember the pollination can only be as good as you help us to be.

ACT NOW!

Thank you

Ollie Minnie
Pollenbank Natal
P O Box 137
Mtubatuba
3935

Tel: (035) 5500646 (H)
(035) 5500129 (W)

During September of 1991, I was fortunate as a member of the Society to visit South Africa to see cycads both in habitat and in cultivation - an experience which I enjoyed tremendously.

May I now take this opportunity to thank all the people whom I met during my stay, for their help and friendship - there are far too many of them to list individually.

I would however, especially like to thank Roy Osborne for making so many arrangements for me both prior to and during my visit, and for sharing his cycad expertise with me.

I am most grateful also to the Martin Trust of the Leeds University Biology Department and to my family for their support, without which the whole project would never have taken place.

I sincerely hope to return to South Africa for the Cycad '93 Conference.

Many thanks once again.

Andrew Shaw
15 Ancona Avenue
Darfield
Barnsley
South Yorkshire
S73 9PS England

LETTER TO THE EDITOR

Dear Sir

re: Trade in cycad seeds: CITES regulations

The CITES regulation which prohibits trade in Appendix I plants, including *Encephalartos, Stangeria, Ceratozamia* and *Microcycas* now appears to be extended to cover seeds of those plants (see ENCEPHALARTOS 27:10-12). Although the provision refers specifically to wild-collected seeds, in practice it is not possible for inspecting authorities to determine whether a batch of seeds is or is not wild-collected. Hence the net effect, at least by the CITES authorities in this country, has been an increasing tendency to prohibit all imports and exports of seeds of Appendix I plants.

We are concerned that this extension of regulations appears to have been made without due consultation. Have the views of the Cycad Specialist Group ever been properly canvassed on this issue? We think not. In Australia we were given the impression that there was a move in the reverse direction, i.e. to list seeds of all cycad genera on Appendix II. Were we incorrect? But let us put aside those questions and rather explore the pros and cons of this legislation.

In favour of the prohibition.
Large scale commercial exploitation of wild populations for seed has certain occurred - e.g. Cynthia Giddy (pers. comm.) has some statistics of enormous quantities of *Encephalartos friderici-guilielmi* being exported from South Africa. Local nurserymen are undoubtedly using wild-collected seeds for large-scale propagation too, but that is not an issue in the import-export context. It is unquestionable that extensive seed collection is detrimental to the normal regeneration processes of the plant population.

Against the prohibition.
Several points can be made here.

1. The success rate, measured as a % of seeds which do germinate, take root and eventually grow to maturity, with respect to most species, is pitifully low. By contrast proper management under nursery conditions can give 100% success for viable seeds.

2. Many of the cycad species are narrowly endemic in countries, CITES signatories or not, where there may be a question mark to future stability. e.g. Zaire. Cycad conservation will not feature prominently in future government agendas in these countries. From which it must be concluded that stocks outside the country may well become the only stocks.

3. The populations of the most threatened species, e.g. *Encephalartos latifrons*, are not producing viable seed crops due to paucity of synchronous coning. Wild stands of *Encephalartos laevifolius* are not producing seeds due to an endemic pathogen. The only hope of seeds of these species lies in artificial pollination of *ex-situ* plants. The restriction thus serves no purpose for the most endangered of the species.

4. Over the past few years there has been a vigorous effort made by our Society, through magazine articles, exhibitions, public lectures and the establishment of pollen and seed bank facilities, to encourage interested laymen to grow cycads from seed. This effort appears to have had some success and we are bold enough to maintain that this "Conservation through Cultivation" philosophy is having at least some effect on reducing "collector" pressure on mature specimens in the wild. Restricting seed trade is contrary to this philosophy.

5. Prohibition is not strictly enforceable. Indeed, we predict that a blanket ban on seed import and export will lead to a completely unmonitored commerce in packets labelled "fruitcake", "candied nuts", "gifts for the kids", "reading matter" and other more imaginative descriptions. These shipments will of course bypass phytosanitary inspection services (which most people seem to be quite good about at present). Some of these parcels will be intercepted and destroyed, some might even result in prosecutions, but we daresay that many will arrive at their various destinations.

So where does that lead us? We believe that, on balance, *the restriction will not lead to better conservation of cycads* and surely that alone must be the criterion for judgment? If our belief is shared, then we must consider what to do and who should do it.

What to do?
Our suggestion is that we must search for a compromise between the extremes. Thus we put foward the following for consideration:
"*No person shall import or export more than 500* (or any other number that might be agreed) *seeds of any cycad species annually*".

Who should take action?
We believe that this matter is principally within the orbit of the Cycad Specialist Group. A letter silimar to this has thus been sent to Dennis Stevenson as CSG Chairman, with copies to officials in the IUCN's Species Survival Commission. We believe this matter warrants their serious and urgent attention. We hope, too, that any South African nature conservation officials reading this letter will support us in our endeavours.

Signed

Nat Grobbelaar
Roy Osborne
Piet Vorster

During the period 1991-08-28 to 1991-09-01 the Natal Section Committee had a stall at the Wild Life Exhibition, located in the Exhibition Hall, Durban.

This stall was once again an "Eye Catcher". The cycads which were exhibited, were carefully selected from the Durban Botanic Gardens and some of the best species were shown. These plants were loaned to the society from the Botanic Gardens.

A number of new members have joined the Society as a result of this exhibition.

Many thanks to all the members who offered up their free time to man the stall, there were thousands of questions from the public which had to be answered by these patient people.

Special thanks go to Roy Osborne, Brian Chadwick and spouse, Roy Shooter, Gary Camp, Dennis Byron, Robert Campbell and spouse, George Walters and spouse, Danie Nel and Avis Meresman.

Last of all, thanks to the Chairman of Natal, Harry Gerber, who made the necessary arrangements.

CYCAD 93 CONFERENCE

With just over a year to go to the CYCAD 93 Conference, there is a growing interest from both local *and* overseas delegates. Two requests are made of readers:

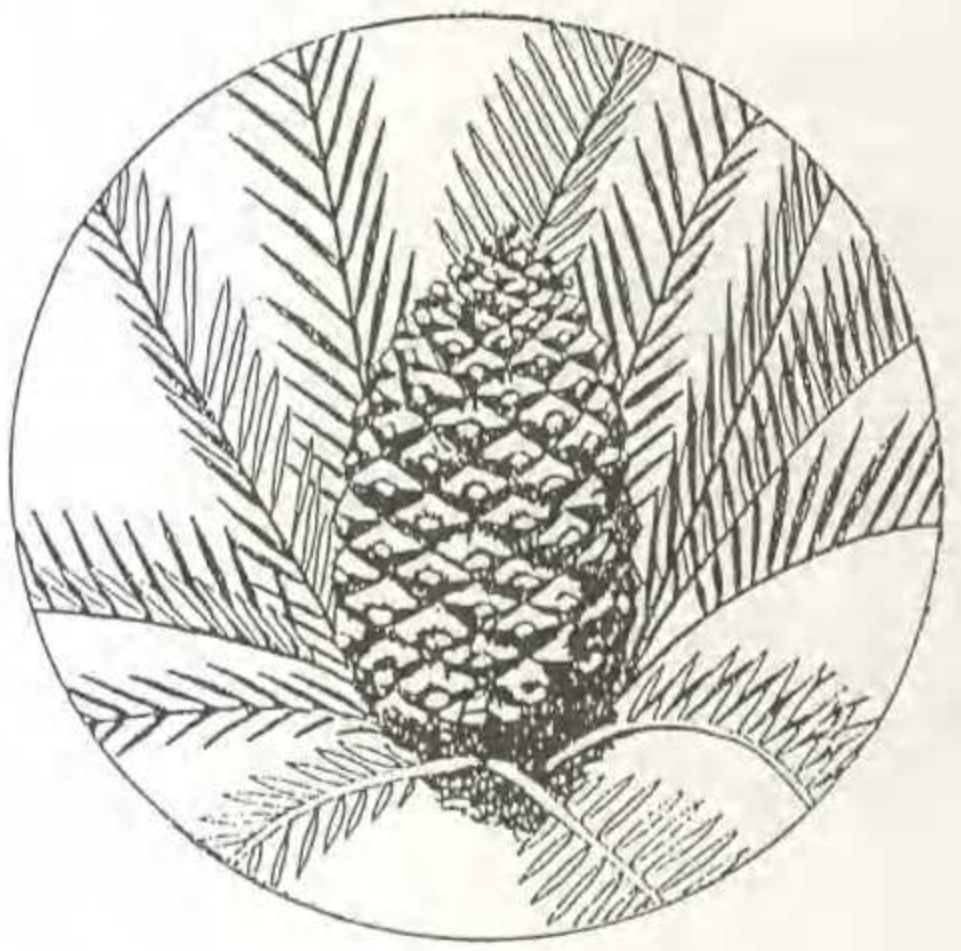
If you wish to attend CYCAD 93 but have not yet sent off your response form (as circulated with ENCEPHALARTOS 28) **please do so immediately.**

If you know of, or have contacts with, <u>any</u> business organisation which may make a donation towards the CYCAD 93 funds, please let us know so that we can approach them.

Roy Osborne, Finance and Publicity Officer.
(tel: 031-866953).

NATAL SECTION NEWS: 1991 YEAR END FUNCTION

The 1991 year end of the Natal Section was celebrated by a braai at the home of **Ted** and **Cynthia Giddy** on Sunday 17 November. A typical Natal summer's day saw a record gathering of 64 members and guests, including Mr & Mrs **Errol Scarr**, Durban's Director of Parks. Chairman **Harry Gerber** presented his annual report in which he highlighted the various activities in the Natal branch's fairly busy year and expressed thanks to the many persons who had contributed to its success. A particularly important development this year had been the initiation of the **Durban Botanic Gardens Cycad Fund** and the close interaction between the Gardens and the Natal Branch. The afternoon was spent in an inspection of the Giddy's nursery and viewing of cycad-orientated videos. **Harry Gerber** was re-elected Natal Section Chairman for the 1992-93 term of office.



This is the official emblem of the Society to which the name of the Society will be added around its periphery - the English version at the top and the Afrikaans version at the bottom. The emblem was designed by Andrew Shaw of England.

'Palm' may affect brain

By higher education editor
TERRY O'CONNOR

A UNIVERSITY of Queensland professor is trying to find out if a popular pot plant can cause a condition similar to Alzheimer's disease.

Professor Alan Seawright, of the university's veterinary pathology department, is researching the pollen from cycads — trees which look like palms.

They are commonly used as pot plants and are found in many Queensland gardens.

Professor Seawright is working in association with an epidemiologist at the Mayo Clinic in Minnesota.

He said yesterday: "These palms grow naturally on Guam and medical researchers there and in the United States are linking them to a chronic neurodegenerative disease in humans similar to Alzheimer's disease."

Professor Seawright, who is also head of Queensland's Environmental Toxicology Unit, said the disease was 50 to 100 times more common in Guam, and in parts of Japan and Papua New Guinea, than in the rest of the world.

Professor Alan Seawright . . . researching cycad pollen.

The form of motor-neuron disease in humans had elements of dementia.

"The Mayo Clinic has also found that one of the first symptoms is a loss in the sense of smell, which is why we're particularly interested in the nasal cavity," he said.

Professor Seawright said the link between cycads and motor-neuron disease was tentative but the research was worthwhile because the disease was serious in Guam, with a high proportion of the population involved.

Cycads, once found all over Queensland, were almost eradicated because of their toxins.

Types of cycad found in Australia include pineapple palm, zamia palm, Byfield fern and sago palm.

Professor Seawright said: "Cycads cause a neuro-degenerative disease in cattle so we are working to see if pollens from the palms, breathed in by humans, can find a way through the back of the nose to the brain.

"We are looking for differences in the pollen chemicals between areas where the disease is not found and areas where it is."

He would also approach the problem from another angle: looking at cattle, which were known to be susceptible to cycads.

Earlier research involving cattle had isolated a toxin in cycads.

But when this was used experimentally on cattle it produced a form of motor-neuron disease that was different from the forms found previously in both humans and cattle.

Professor Seawright was appointed to a personal chair in veterinary pathology and public health last year.

He has previously researched the effects of lantana poisoning and chronic vitamin A toxicity.

He was appointed an associate professor in 1968. In 1980 he was made a Fellow of the Royal College of Pathologists in London.

The Queensland Turf Club asked him in the 1970s to work on the detection of racehorse doping.

Spare cycads

AS a plant lover I must comment on " 'Palm' make affect brain" (C-M, May 9).

Professor Seawright has cycads by the throat on the grounds of a most tenuous link between cycads on Guam and a form of motor-neurone disease. Are cycads a more dominant part of the flora on Guam than elsewhere? I doubt it. They are found worldwide in tropical and sub-tropical regions.

It has long been known that they have poisonous properties. Graziers found last century that stock died after eating young shoots. On the other hand, Aborigines co-existed with these ancient plants, even using them as food.

The 180-million-year history of cycads makes them an enduring form of land vegetation. Are we to be responsible for their eventual destruction?— **Dr D.J.M. Smith, Kelks Hill Rd, Nambour.**

Above: COURIER MAIL,
Brisbane, Australia, 9 May 1991

Left: COURIER MAIL,
Brisbane, Australia. 17 May 1991

THE DAILY NEWS, THURSDAY, DECEMBER 12, 1991

Man in court on 10 counts relating to cycads

BOB FREAN
Pietermaritzburg Bureau

BUSINESSMAN Mr Leon Scholtz of Bloemfontein, formerly of Port Shepstone, appeared in the Port Shepstone Magistrate's Court yesterday on 10 counts of possessing and dealing in cycads, which are specially protected plants.

He appeared before Mr Johan Bester, the chief magistrate for Port Shepstone. He was not asked to plead and the case was postponed to May 11.

The charges are:

- That in August 1986 he unlawfully possessed 25 cycads and was unable to furnish a satisfactory explanation for them.
- Fraud, in that in April and May, 1987 he misrepresented to Natal Parks Board officials that he was lawfully in possession of three plants by virtue of a valid export permit; he had lawfully bought 21 separate species of cycads at an auction from Mr Christo Botha; and that Mr Piet van Rensburg had given him 50 small plants and five broken plants.

The State alleges that an export permit had been fraudulently issued to him; Mr Botha did not sell him 21 species of cycads and Mr van Rensburg had not donated the plants to him.

- From April to June 1990 he unlawfully had 322 specially protected indigenous plants and was unable to give a satisfactory account of such posssession. Alternative charges are that he unlawfully bought the plants and that he unlawfully imported them into Natal without a permit.
- On June 8 1990 at Sportweni Nursery, Port Shepstone, he exported 50 cycads without authority from Natal.
- He sold 50 cycads to the Lowveld Botanical Gardens, Nelspruit, without a licence.
- He imported 50 cycads from KwaZulu into Natal without a permit.
- He had 50 cycads without being able to explain his possession satisfactorily.
- He unlawfully gathered a cycad at Smedmore, near Port Shepstone, without a Natal Parks Board permit.
- He unlawfully had 216 cycads from June 22 to 24 this year at Sportweni Nursery and Sportweni Lodge without giving a satisfactory explanation. Alternatives are that that he unlawfully bought and imported specially protected plants into Natal.
- On June 17 1990 he unlawfully possessed 680 cycads without giving a satisfactory explanation for his possession. An alternative charge is that he unlawfully bought nine cycads in Durban district.

THE DAILY NEWS, THURSDAY, NOVEMBER 28, 1991

Cycads handed over to NPB after court case

Pietermaritzburg Bureau

CYCADS valued at R20 000 to R25 000 were handed over to the Natal Parks Board by a Port Shepstone magistrate yesterday after convicting a man for not giving a satisfactory explanation for possessing the plants.

The man, Robert Ernest Foggan (49), of Sea Park, was also sentenced to a fine of R800 (or four months' jail) for the offence by magistrate Mr P.A. Coetzer.

About 160 mature cycads were found on his property, some planted between banana plants.

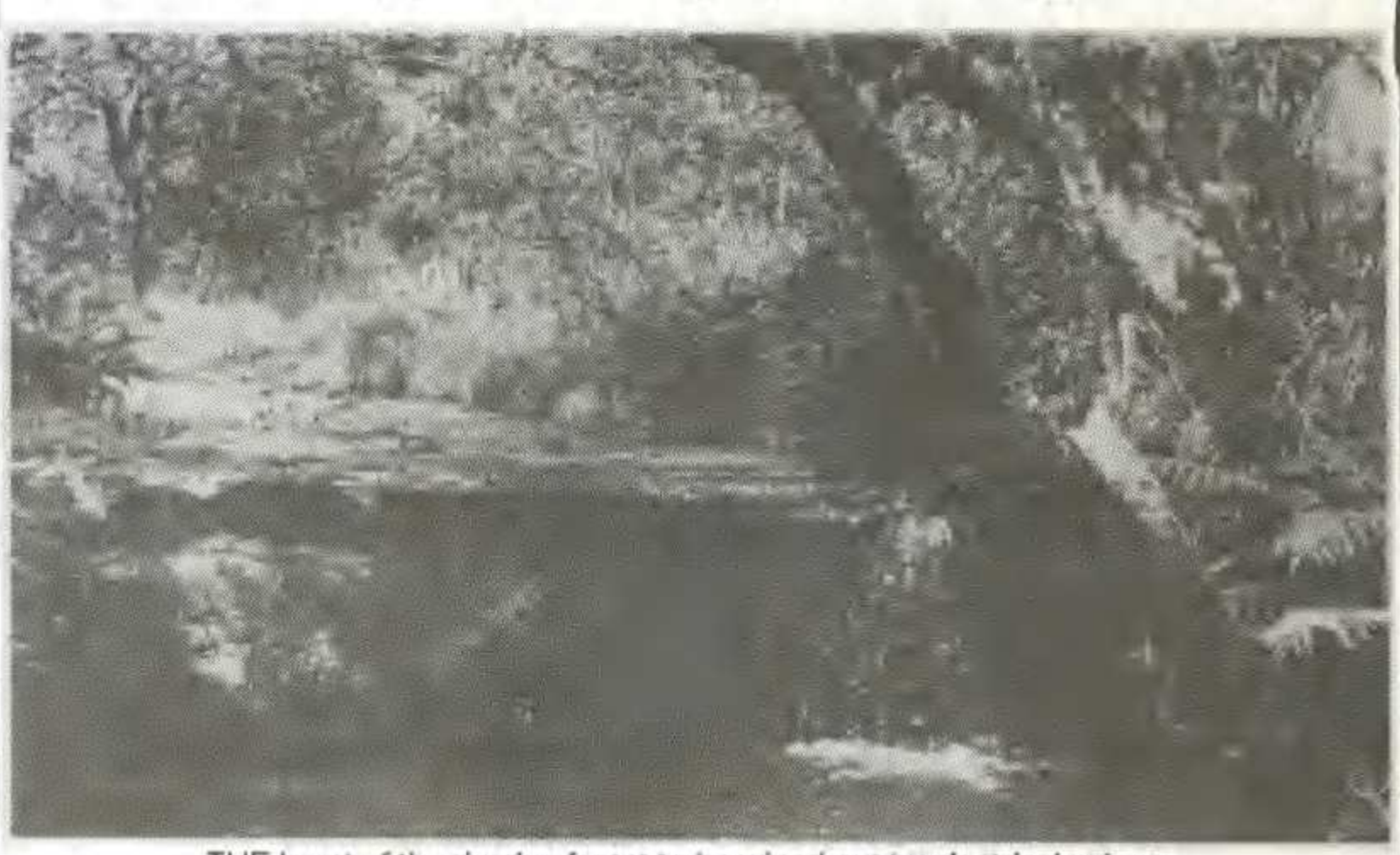
Cycad expert Mrs Cynthia Giddy said that some of the plants were burned and others had no roots.

In another cycad case Mr Justice Squires said that legislation aimed to protect Natal's plants by controlling their acquisition and possession.

Legislation seeks to prevent the plunder of plants, or parts of them, from their natural habitat and to prevent trade in the plants which have been removed. Cycads can only be kept under licence. Whether growing wild or cultivated, cycads may not be picked, and may only be acquired by people licensed to sell them or donate them. A cycad donation must be officially recorded. The importation of specially protected indigenous plants into Natal is prohibited except if it is done against an official permit.

'Death Row'

SCS fighting for reprieve



THE heart of the riverine forest to be wiped out by electrical pylons.

By JEAN REYNOLDS

GIANT ferns, and cycads stand on "death row" awaiting the axe from the Durban Corporation, as they are growing in the path of the powerlines to be erected by the City of Durban.

However, the Provincial Conservation Authority of Site Conservation Significance (SCS) has found Utopia Valley at Gillitts significant to the preservation of South Africa's natural diversity.

Herman van der Merwe, whose request to the corporation to lay the powerlines underground, said it was ironical that the flora and fauna on his property, some of which is on the Red Data list, have been declared a natural heritage on the one hand, while the Durban Corporation, hiding behind an archaic Act, declare they have the authority to eliminate any vegetation in the path of the powerlines.

According to a letter received by Mr van der Merwe from Mr A A Bruce Brand, Acting Associate Town Clerk of the City of Durban, the survey of his property was carried out in terms of Section 44(1) of the Lan Survey Act No 9 of 1927, which authorises unavoidable damage to wild vegetation.

Mr van der Merwe pointed out that the Act was archaic.

More than 30 years ago, he said, precious plants, animals and riverine areas were in abundant supply. Progress had eliminated this heritage and the meagre pieces left should be protected for future generations.

The dangers to health have already been expressed, and the recent deaths of two children by electrocution from overhead powerlines are added factors to promote the laying of underground cables.

Property owners affected by the powerlines, which are being erected to serve the Langefontein Industrial area, have submitted an alternate route for underground cables. The route is more direct and does not affect any properties as it travels along boundaries and avenues.

The excuse that the underground cables are too expensive was considered by property owners as flimsy. The City of Durban, they say, has reaped remunerative benefits from the outlying areas, and some of the profit should be ploughed back to retain the rural atmosphere of Gillitts and Hillcrest.

The maintenance of underground cables is negligible and the dangers to health and electrocution minimised.

Parks Board officials, the Wildlife Society, the Pteridological Society and the Ornothological Society are also up-in-arms about the proposed destruction of the forest.

Director of the Wildlife Society, Mr Keith Cooper said "the most important area, ecologically speaking, is the riverine forest which is the rarest forest type in the entire South Africa".

On the Red Data list, the broadtailed warbler flourishes in Utopia Valley. There are an estimated 200 mature birds in the republic which are decreasing at a rate of 30 percent. The powerlines will destroy one of their few strongholds.

Ferns more than 200 years old will be destroyed by the 132 kV overhead lines, and the heart of the forest, a clear waterfall, will have a pylon erected on top of it.

A spokesman for Natal Parks and Gardens and members of the Durban University Biology Department said overhead powerlines would be the death of the wonderful rare species of natural vegetation.

CYCAD SOCIETY OF SOUTH AFRICA

BROODBOOMVERENIGING VAN SUID-AFRIKA

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