ENCEPHALARTOS

JOURNAL OF THE
CYCAD SOCIETY OF
SOUTHERN AFRICA

TYDSKRIF VAN DIE
BROODBOOMVERENIGING
VAN SUIDELIKE AFRIKA

NO. 3

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VOORBLAD / COVER

Encephalartos caffer

EDITORIAL

Broodbome is besondere plante - dis waarom u nou hierdie tydskrif lees. Af=hagende van u besondere belangstelling, sal u broodbome beskryf as aantreklik in die tuin, indrukwekkend in die natuur, botanies interessant, ideaal om te ver=samel, winsgewend om te kweek, ens. Al hierdie beskrywings is ongetwyfeld waar, maar daarby kom ook nog die feit dat broodbome besondere plante is omdat hulle die minder-wordende oorblyfsels is van 'n plantgroep wat eens gefloreer het. Baie soorte broodbome het skaars geword; som=miges se voortbestaan word bedreig. Dit beteken dat elkeen wat 'n broodboom han=teer of besit nie met nog maar net 'n plant werk nie - daardie plant is iets baie besonders; uniek en waardevol. En dit geld vir broodbome in enige vorm: ou plante, jong plante, saailinge en saad.

As 'n mens daaraan begin dink hoeveel duisende broodbome, dwarsoor die wêreld, deur die jare as gevolg van menslike op=trede dood is, hou jy gou op met dink. Baie hiervan is as kos gebruik en baie is vernietig tydens die maak van landerye, paaie, ens. Maar baie duisende het on=gelukkig gesterf in die hande van mense

REDAKSIONEEL

Cycads are special plants - that is why you are now reading this journal. De=pending on your specific interest, you will describe cycads as attractive in the garden, imposing in nature, botani=cally interesting, ideal to collect, profitable to cultivate, etc. All these descriptions are undoubtedly true, but added to these is the fact that cycads are special plants because they are the shrinking remains of a plant group which once flourished. Many types of cycads have become scarce; some are threatened with extinction. That means that every=one who handles or possesses a cycad is not dealing with just another plant - that plant is something very special; unique and precious. And that applies to cycads in any form: old plants, young plants, seedlings and seed.

If one starts thinking of how many thou=sands of cycads, throughout the world, have died through the years as a result of human actions, one stops thinking quickly. Many of these were used as food and many were destroyed during the making of lands, roads, etc. Many thou=sands, however, unfortunately died at the hands of people who were interested

EDITORIAL

-CONTINUED-

in cycads as plants and who even loved them. And that we cannot afford. We can no longer afford to lose living cycads as a result of lack of knowledge or incorrect handling.

If you read this journal, you undoubtedly belong to the group of people who are interested in cycads and who love them. You can therefore make a contribution to ensure that cycads are treated with the respect they deserve and that their continued existence is ensured. This you can do, amongst others, by:

-learning as much as possible about cycads by reading about them and by talking to people who know cycads,
-thinking twice before you remove so many plants from a cycad colony that they can no longer reproduce and produce new plants,
-handling cycads carefully to prevent unnecessary injuries and shock,
-treating and preparing plants correctly before they are planted to prevent rotting,
-planting cycads in the correct position, in the right type of soil and in the correct manner,
-if you cultivate plants from seed, treating the fertile seeds and seedlings correctly to ensure that none of them are lost,
-supporting the Cycad Society in its attemps to promote the propagation of cycads by, for example, supporting the Pollen Exchange Scheme and the envisaged Seed Bank.

If you are uncertain about the treatment and handling of cycads, do not hesitate to ask for advice from experts, for example nurserymen, in your area. Experience has taught us that cycad people are helpful people. Let us all co-operate to restrict the loss of cycads to a minimum.

Opinions which are expressed in the editorial are those of the Editor and do not necessarily represent the policy of the Cycad Society. Likewise are opinions expressed in articles published in ENCEPHALARTOS those of the authors and not necessarily those of the Cycad Society or the Editor.

REDAKSIONEEL

-VERVOLG-

wat in broodbome as plante belanggestel het en selfs vir hulle lief was. En dit kan ons nie bekostig nie. Ons kan dit nie verder bekostig om lewende broodbome te verloor as gevolg van onkunde en verkeerde hantering nie.

As u hierdie tydskrif lees, tel u ongetwyfeld onder dié mense wat in broodbome belangstel en vir hulle lief is. Dan kan u 'n bydrae lewer om toe te sien dat broodbome met die respek behandel word wat hulle verdien, en dat hulle voortbestaan verseker word. Dit kan u doen, onder andere, deur:

-so veel as moontlik van broodbome te leer deur oor hulle te lees en met mense te gesels wat broodbome ken,
-twee keer te dink voordat u soveel plante uit 'n broodboomkolonie verwyder dat dit nie meer kan voortplant en nuwe plante produseer nie,
-broodbome versigtig te hanteer om onnodige beserings en skok te vermy,
-plante reg te behandel en voor te berei voordat hulle geplant word, om verrotting te vermy,
-broodbome op die regte plek, in die regte tipe grond en op die regte manier te plant,
-as u plante van saad kweek, die vrugbare saad en saailinge reg te behandel sodat daar nie van hulle verlore gaan nie,
-die Broodboomvereniging te ondersteun in sy pogings om die kweek van broodbome aan te moedig, deur bv. die Stuifmeelruilskema en die beoogde Saadbank te steun.

As u onseker is oor die versorging en hantering van broodbome, moenie huiwer om by kenners in u omgewing, bv. kwekers, raad te vra nie. Die ondervinding het ons geleer dat broodboommense behulpsame mense is. Laat ons almal saam werk om die verlies van broodbome tot 'n minimum te beperk.

Menings wat in die redaksionele artikel uitgespreek word, is dié van die Redakteur en verteenwoordig nie noodwendig die beleid van die Broodboomvereniging nie. Ingelyks is menings uitgespreek in artikels wat in ENCEPHALARTOS gepubliseer word, dié van die skrywers en nie noodwendig dié van die Broodboomvereniging of die Redakteur nie.

THE CUBANS HAVE LANDED

STOP PRESS

IMMEDIATE RELEASE

SECURITY CLEARANCE 3

Although somewhat unwelcome in other parts of Africa, a party of 12 Cubans have recently arrived in Natal. Without fanfare they arrived in Durban on a direct flight from Miami, home of many Cuban refugees.

After all their documents had been in= spected, a welcoming committee hustled them into their new home where they were bedded down within hours. After three months many have already taken root and are basking in the pleasant 30° C, humid greenhouse atmosphere at a local cycad nursery.

These very important immigrants are the extremely rare and endangered Microcycas calocoma from Cuba.

"With this heat and humidity, we may as well be in Havana, Comrade" a seedling, clad in green, assured the ENCEPHALARTOS reporter.

Previously only six botanic gardens in the world boasted of a specimen, namely the Hortus Botanicus at the University of Amsterdam, Foster Botanic Garden in Honolulu, the Komarov Botanical Institute in Leningrad, Ewanrigg Botanic Garden in Harare, the New York Botanic Garden and Fairchild Tropical Garden in Miami.

Fairchild Botanic Garden in Miami is fortunate in having both a mature male and female plant. When they coned last year, they were hand-pollinated and the seed distributed worldwide. Three hundred seeds were sent to institutions in 16 countries as part of Fairchild's research programme. Regular reports will be required on their progress. The Microcycas are a return gift from Fair= child for seedlings of rare South African cycads sent to them by Cynthia Giddy who would welcome a Spanish phrasebook to assist her in the care of her charges.

(News supplied by SAPA (South African Plant Association) and the Botanische Plante Agentur.)

TOUR OF QUEENSLAND

The Palm and Cycad Society of Australia has advised us of their plans for a tour of Queensland, Australia, over the period 9 to 23 August, 1986. The tour has been arranged in conjunction with South Pacific Tours/Tourplan Pacific.

The tour commences on arrival at Bris= bane, Queensland, on Saturday, 9 August, with an evening function by the host Society. Four days will be spent ex= ploring from Brisbane, seeing local nurseries, habitat groups of local palms and cycads and general sight= seeing. This will be followed by a flight to Townsville in northern Queens= land, where two days are set aside for similar local activities. On 16 August the tour moves on to Cairns, where six days will be spent on various palm/cy= cad options and general touring. The tour terminates back at Brisbane on Saturday, 23 August.

The inclusive local cost depends on the final number of participants, but is estimated at about 1000 Australian Dollars, based on twin-share accommo= dation at first class establishments. Air flights from South Africa to Bris= bane would have to be arranged by par= ticipants privately.

A similar tour was arranged in 1984 for American visitors and was most success= ful. Further details can be obtained from: The Secretary, Palm and Cycad Society of Australia (Mr Greg Cuffe), 42 Queenscroft Street, Chelmer, Queensland 4068, Australia.

HOW ABOUT YOU?

Have you considered contributing some= thing to ENCEPHALARTOS? Anything of interest will be welcome: a letter, a photograph, an interesting experience, an article, a question, a suggestion. Remember, ENCEPHALARTOS is YOUR publi= cation.

FROM THE CHAIRMAN

I am delighted to continue to report good news for the Society. In a little over 12 months, membership has grown to 328, distributed as follows:

Transvaal	137	OFS	13
Cape	82	Other, Africa	6
Natal	71	Other, Overseas	19

Particularly significant is the overseas interest in ENCEPHALARTOS, with subscription requests from persons in New Zealand, Australia, Israel, Continental USA, Hawaii, the UK, Germany and Austria. Once again: a cordial welcome to all our new members and thanks to those who have been active in recruiting them.

The success of ENCEPHALARTOS is due to the continued hard word of your editor, Maans Kemp, as well as those who have been active in contributing the many features, letters and news items which have been so well received. But there is no room for complacency - a continuous flow of material is vital. Please write to Maans with any contribution which you think might be of interest.

Another step forward has been the formation of the Pollen Exchange which will be vital in creating viable seed reserves where plants might otherwise have produced cones only for short-term decorative purposes. Please continue to support Cynthia Giddy in this important work.

Your committee is presently dealing with proposals for the operation of a viable seed bank and these should be finalised shortly.

Cycad enthusiasts are becoming more aware of conservation aspects. There is a welcome trend for collectors to plant several specimens of any one species in attractive landscaped settings, with not only the aesthetic advantage, but also the added benefit of ensuring longer-term seed resources. It is also pleasing to see that more public gardens are making use of indigenous cycads on a similar basis. Several universities and both public and private corporations are realising the decorative potential of cycad groupings; these again add to the overall future seed supplies. Let us initiate and encourage such projects wherever possible.

VAN DIE VOORSITTER

Dit is vir my baie aangenaam om voort te gaan om goeie nuus vir die Vereniging te rapporteer. In net meer as 12 maande het die lidmaatskap gegroei tot 328, wat as volg versprei is:

Transvaal	137	OVS	13
Kaap	82	Ander, Afrika	6
Natal	71	Ander, Oorsee	19

Besonder betekenisvol is die oorsese belangstelling in ENCEPHALARTOS, met intekening-aansoeke van persone in Nieu-Seeland, Australië, Israel, Vasteland-V.S.A., Hawaii, die Verenigde Koninkryk, Duitsland en Oostenryk. Weer eens: 'n hartlike welkom aan al ons nuwe lede en dankie aan diegene wat daarby betrokke was om hulle te werf.

Die sukses van ENCEPHALARTOS is te danke aan die volgehoue harde werk van u redakteur, Maans Kemp, sowel as aan diegene wat aktief bygedra het deur die baie artikels, briewe en nuus-items in te stuur wat so goed ontvang is. Daar is egter geen ruimte vir gerustheid nie - 'n aaneenlopende vloei van materiaal is noodsaaklik. Skryf asseblief aan Maans en stuur enige bydrae wat u dink moontlik van belang mag wees.

Nog 'n stap vorentoe was die stigting van die Stuifmeelruil, wat baie belangrik sal wees in die daarstelling van lewensvatbare saadreserwes, waar plante andersinds slegs keëls vir korttermyn-dekoratiewe doeleindes sou geproduseer het. Hou asseblief aan om Cynthia Giddy in hierdie belangrike werk te ondersteun.

U komitee is tans besig om voorstelle te oorweeg vir die bedryf van 'n lewensvatbare saadbank en dié behoort binnekort gefinaliseer te wees.

Broodboom-entoesiaste word al meer bewus van natuurbewarings-aspekte. Daar is 'n welkome neiging onder versamelaars om verskeie plante van dieselfde spesie in 'n aantreklike landskap-omgewing te plant, wat nie net estetiese voordele inhou nie, maar ook die addisionele voordeel het dat dit langtermynsaadreserwes sal verseker. Dit is ook verblydend om te sien dat meer openbare tuine van inheemse broodbome op dieselfde basis gebruik maak. Verskeie universiteite en openbare,

In the immediate future, your Society is concerned with the ratification of a final constitution and the establishment of a properly-elected committee to take over from the steering committee which has been responsible for our progress to this stage. All members are earnestly requested to participate actively in these stages of our development. Our thanks are due to Dr Piet Vorster for his conscientious committee work on these aspects.

Despite the adverse economic climate, I am pleased to say that your Society continues to be financially sound. Careful budgeting and minimisation of expenditure have been our policy. The kind donations from Mrs E. Mercado (R10,00), Mr F.J. Steyn (R10,00) and Mr J.H. Jonker (R20,00) are acknowledged with thanks.

Roy Osborne
CHAIRMAN

sowel as privaat-korporasies besef die dekoratiewe potensiaal van broodboom=groeperings, wat weer op hulle beurt bydra tot algemene toekomstige saadvoor=rade. Laat ons sulke projekte aanvoor en aanmoedig, waar ook al moontlik.

In die onmiddelike toekoms is u Vereni=ging besig met die daarstelling van 'n finale grondwet en die vestiging van 'n behoorlik-verkose komitee om die leisels oor te neem van die reëlingskomitee wat vir ons vordering tot dusver veantwoor=delik was. Alle lede word ernstig ver=soek om aktief aan hierdie stadiums van ons ontwikkeling deel te neem. Ons is dank verskuldig aan Dr. Piet Vorster vir sy pligsgetroue komiteewerk in hierdie verband.

Nieteenstaande die swak ekonomiese kli=maat, is ek bly om te kan sê dat die Vereniging steeds finansieel gesond is. Sorgvuldige begroting en die minimalise=ring van uitgawes was deurgaans ons be=leid. Die vriendelike skenkings van mev. E. Mercado (R10,00), mnr. F.J. Steyn (R10,00) en mnr. J.H. Jonker (R20,00) word met dank erken.

Roy Osborne
VOORSITTER

AUSTRIAN STUDENTS JOIN SOCIETY

Alois Holzbauer and Günther Nograsek, two Austrian students with enormous in=terest in cycads, have joined the Cycad Society.

Besides carrying out a major investiga=tion into cycad taxonomy, Alois and Günther are undertaking the task of documenting all cycads presently esta=blished in European Botanic Gardens, with a view to establishing a pollen bank at the Botanic Garden in Graz. In addition, they aim to extend a col=lection of hardy species which are able to survive the severe winters of Central Europe. They point out that Encephalar=tos villosus, E. altensteinii and E. longifolius are already quite exten=sively cultivated in Mediterranean parts.

In their own collection, Alois and Günther have an impressive number of plants: 42 Cycas in 10 species, one Stangeria, 2 Bowenia, 22 Macrozamia in 6 species, 21 Encephalartos in 18 species, 65 Zamia in 4 species and 6 Lepidozamia in both species. They are keen to make contact with anyone who may be able to supply seed/seedlings/ suckers of Encephalartos cupidus, E. eugene-maraisii, E. ghellinckii, E. heenanii, E. humilis, E. inopinus, E. laevifolius, E. lanatus, E. latifrons, E. ngoyanus and E. paucidentatus.

Their address is: Rohr 15,
8413 St. Georgen/Stiefing
AUSTRIA

FOCUS ON... FOKUS OP...

In each edition of ENCEPHALARTOS, we focus on one South African cycad species, in the form of an in-depth article in layman's language. In this edition the spotlight falls on the second South African cycad to be "dis=covered" by botanists, although they did not realize it at the time.

In elke uitgawe van ENCEPHALARTOS fokus ons op een Suid-Afrikaanse broodboomspesie, in die vorm van 'n in-diepte-artikel in leketaal. In hierdie uitgawe val die kollig op die tweede Suid-Afrikaanse brood=boom wat deur botaniste "ontdek" is, al het hulle dit nie destyds besef nie.

ENCEPHALARTOS CAFFER

by Maans Kemp

INTRODUCTION

Encephalartos caffer occupies a special position amongst South African cycads. It shares the honour with E. longifolius of being the first South African cycads to be noticed and described by botanists. In addition, it is the cycad species which occurs the furthest south in South Africa, and therefore in Africa.

DISCOVERY

E. caffer was botanically discovered by the Swede, Carl Peter Thunberg. Thunberg was a student of the famous Carl Linnaeus, professor in botany at the University of Uppsala in Sweden. He visited the Cape of Good Hope between April 1772 and March 1775 and travelled the country exten=sively. He collected more than 3000 specimens during his stay and is often referred to as the father of South African botany. He started the longest of his journeys into the interior at the end of 1772; a journey which took him as far as the present Coega, near Port Elizabeth. On this journey he was accom=panied by a Scotsman, Francis Masson. Masson was a gardener at the Royal Gar=dens at Kew in England and was sent to the Cape of Good Hope by Sir Joseph Banks, scientific advisor of Kew, to collect plants and seeds for the gardens. He arrived in October 1772 and stayed until 1774.

During this journey, probably in the vicinity of the present Kareedouw, Thunberg came accross the cycad which is now known as E. longifolius and which he mistook for a species of palm. In the same vicinity, probably closer to the present Humansdorp, he also noticed small cycads but thought them to be young plants of the same kind as the tall-growing ones. He collected material from both forms. It is evident from his later descriptions that the small plants were the cycads we now know as E. caffer.

NAME

E. caffer, like E. longifolius, has had its fair share of different names, mainly resulting from Thunberg's mistake in thinking that the tall and the short plants he saw were of the same species. When he first saw the tall plant, he thought it was a species of palm and called it Zamia caffra. In his descrip=tion he made use of material collected from both the tall and the short plants and his record therefore contains fea=tures of the present E. longifolius and E. caffer.

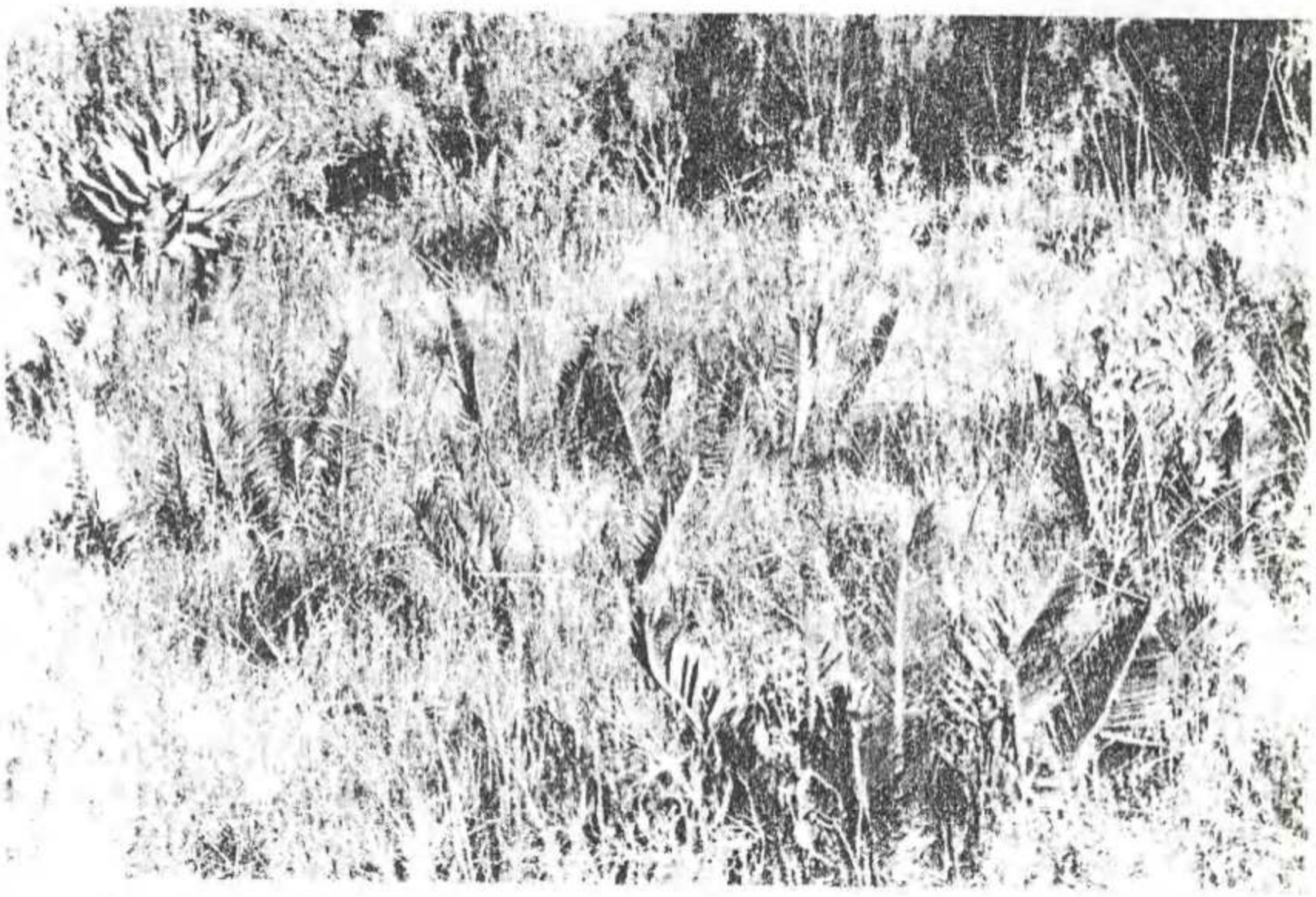
The confusion continued for many years. In 1809 Jacquin called the species Zamia longifolia and described another species, Z. lanuginosus which was later reduced to E. longifolius. In 1834, when he introduced the genus name, Encephalartos, Lehmann simply changed Thunberg's C.caffra to E. caffer. In 1836 Lehmann also described a species which he called E. brachyphyllus and which corresponded to the present E. caffer. In 1933 J. Hutchinson and G. Rattray finally sorted out the name problem and distinguished between E. caffer and E. longifolius. E. brachyphyllus was at the same time reduced to E. caffer. Plants in Zululand which up till then were classified as E. caffer, were segregated as a separate species in 1949 by Verdoorn, who called the new species E. ngoyanus.

DISTRIBUTION

E. caffer occurs in the Eastern Cape Province in the districts of Humansdorp, Albany, Bathurst and East London and in Transkei in the district of Kentani, as far east as Willowvale. Specimens have been recorded from the Uitenhage and Steytlerville districts. No reports of plants in the Uitenhage district have been received in recent years, while there is some doubt about the accuracy of the report on the occurrence in the Steytlerville district. The presence of this species in these two districts is highly unlikely.

E. caffer grows infrequently in the coastal belt, usually in sour grassveld, where plants are often difficult to see in the surrounding grass. It is often found growing amongst rocks. This may be the result of the protection offered by the surrounding rocks against the effects of veld fires on young plants.

The rainfall in its distribution range varies from about 1000mm per year at the coast to 750mm and less further inland. The summers in these areas are hot and no frost occurs. Rain in the north-western parts of the distribution area occurs mainly in summer. In the Humansdorp district it is more evely spread, with some winter rain and fairly dry summers.



Encephalartos caffer in its grassy habitat

DESCRIPTION OF PLANT

1. STEM

E. caffer has an underground stem. Occasionally a small portion of the stem may be above ground level. The stem resembles that of other Encepha= lartos species and is covered by old leaf-bases. The stem in older plants may be of considerable size; as much as 40cm long and 25cm in diameter. The stem is always woolly on top and is usually unbranched. Branching occurs occasionally, probably as a result of damage to the stem. Cha= racteristic of this species is its tuberous root system, consisting of numerous short, thick roots.

Photograph of an uprooted old E. caffer specimen, showing its tuberous roots, stout stem, sometimes curled leaves and old male cone. (Reproduced from Bothalia Vol.VIII, Part 4, 1965, with kind permission from the editor and the Botanical Research Institute.)

2. LEAVES

The leaves of E. caffer are quite characteristic. They are 40cm to 1m in length and fresh light green. New leaves are brown-woolly at first but most of the hair is lost as they mature, although they never become completely smooth or glossy. The rachis of the leaf is usually straight, but may sometimes be cur= ved or twisted. When the leaves are very numerous, the lower leaves may be spread out almost horizontally. The petiole is about $\frac{1}{4}$ to $\frac{1}{3}$ as long as the rachis. The leaf base is covered with pale brown wool.

The leaflets at the middle of the leaf are usually 8 to 10cm long and approximately 1cm broad, gradually becoming narrower from the base and ending in a sharp tip. The leaflets become smaller towards the leaf base, eventually ending in one or two prickles. These reduced leaves may be forked, but the other leaf= lets are usually without teeth, es= pecially in mature plants. In young plants one or two teeth may occur on both margins. Seedlings are charac= terized by up to four teeth at the tip of the leaflet.

A characteristic of E. caffer is the ruffled appearance of the leaves, caused by the numerous, crowded leaf= lets and the fact that the leaflets arise from the rachis in different planes and may be irregularly twisted from the rachis.

3. CONES

Both male and female plants bear sin= gle cones which are greenish-yellow when mature. The cones are borne on short, thick stalks, up to about 15cm long in the case of the male and 7cm long in the female.

The male cone itself is approximately 20 to 30cm long and 6 to 12cm in diameter. The cone is cylindrical, but becomes narrower towards its tip.

Male cone of E. caffer. (Reproduced from Bothalia Vol.VIII, Part 4, 1965, with kind permission from the editor and the Botanical Research Institute.)

The male cone has a number of spirals of roughly triangular scales. At the middle of the cone the scales are about 3cm long and 2,5cm broad at its widest end. The faces of these median scales are slightly projected to form beaks, 5 to 6mm long, with the lower margin sometimes toothed. The whole of the under-surface of the scale, except for the narrow end, is covered by sporangia - small sacs in which the yellow pollen is formed.

The female cones are up to about 30cm long and 15cm in diameter. The cone is more or less cylindrical but be=comes narrower towards the rounded tip. The scales are arranged in 6 to 8 spirals. The scales at the middle of the cone are approximately 5,5cm long and 5,5cm wide at its widest part. The scale is about 3,5cm thick and ends in a flat face. The rim of this flat surface is slightly raised and the lower margin projects somewhat and may be irregularly toothed.

On top of each female cone scale two seeds are formed, each up to about 3,8cm long and 2,5cm in diameter. The fresh seed is bright red or scarlet in colour and glossy in appearance. Occa=sionally pale pinkish-yellow seeds are found.

Female cone of E. caffer.
(Reproduced from Bothalia Vol.VIII, Part 4, 1965, with kind permission from the editor and the Botanical Research Institute.)

HYBRIDIZATION

Although specimens of E. caffer occur close to some other species, for example E. trispinosus, in the Grahamstown and Bathurst areas, no signs of hybridiza=tion have been reported.

PLANTS IN THE GARDEN

E. caffer grows well in cultivation. If mature plants are transplanted, it may take a few years for new leaves to form. Such mature plants should be planted with the top of the stem below ground level. The soil should be well-drained, slightly acid and rich in organic matter. Well-established plants should receive enough water. Plants may be grown in full sun or light shade. They are fairly resistant to frost, although frost seldom occurs in their natural habitat. E. caffer is very attractive when planted amongst well-placed, natu=ral-looking rocks.

CONSERVATION

A number of years ago E. caffer, E. lati=frons and Stangeria eriopus were the first Cape cycads to be declared endan=gered species by the Cape provincial nature conservation authorities. It has subsequently been discovered that E. caffer is not quite as rare as origi=nally thought, although it is in need of strict protection. In certain areas, especially where it grows in easily-accessible terrain, the numbers of E. caffer have been severely depleted by collectors. In some areas, in the Humansdorp and Albany districts, large numbers were destroyed when farmers ploughed the land for the planting of wheat and other crops.

Fortunately a few viable colonies occur on state-owned land, where the plants are protected. Probably the largest colony occurs in the Cape provincial cycad reserve near Grahamstown, where the plants are inspected regularly and where many seedlings can be seen amongst the mature plants. Other smaller colo=nies occur on land which belongs to the Department of Environmental Affairs (formerly the Department of Forestry), where they are also well looked after. It seems, therefore, that E. caffer is in no immediate danger as a species. It is essential, however, for this attrac=tive species to be cultivated from seed as much as possible to ensure its long-term survival.

Female E. caffer with numerous seedlings at left.

Specimens of E. caffer planted in rockery.

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BITS AND PIECES STUKKIES EN BROKKIES

POLLEN EXCHANGE

Cynthia Giddy reports a poor response to date to the introduction of the pollen exchange scheme, which was announced in ENCEPHALARTOS no. 2 (June 1985). Members who have mature plants of known gender are once again invited to complete and send the green form, which was enclosed with ENCEPHALARTOS no. 2, to Cynthia. Let us help each other in this way. Cynthia has already received requests for pollen, so please send in your form without delay.

STUIFMEELRUIL

Cynthia Giddy rapporteer 'n swak reaksie tot dusver op die instelling van die stuifmeel-ruilskema wat in ENCEPHALARTOS no. 2 (Junie 1985) aangekondig is. Lede wat volwasse plante van bekende geslag besit, word weer eens genooi om die groen vorm wat by ENCEPHALARTOS no. 2 ingesluit was, te voltooi en aan Cynthia te stuur. Laat ons mekaar op hierdie manier help. Cynthia het al reeds versoekę vir stuif= meel ontvang, so stuur asseblief u vorm dadelik in.

TRANSVAALSE STUIFMEELBANK

Lede mag geinteresseerd wees om te ver= neem dat 'n stuifmeelbank by die Hart= beeshoek-kwekery van die Tranvaalse Provinsiale Natuurbewaringsdepartement te Pretoria-Noord bestaan. Volgens die hoof van die kwekery, mnr. J.C.Oosthuyzen, is persone welkom om bydraes tot die stuifmeelbank te maak en word stuifmeel gratis aan die publiek verskaf. Stuif= meel kan persoonlik, per brief of tele= fonies aangevra word en, indien die stuifmeel beskikbaar is, sal dit verskaf of gepos word. Die kwekery se adres is: Posbus 16120, Pretoria-Noord, 0116.

RESEARCH ON E. LAEVIFOLIUS

Mr Kevin Zunckel, Planning Officer in the regional office of the Department of Environmental Affairs at Nelspruit, is conducting research on Encephalartos laevifolius, including the occurence of a fungus which seems to attack the seeds. He will appreciate any information which may assist him in his research. He is also looking for pollen of this species. Please contact him at Private Bag 11201, Nelspruit, 1200; tel. no. 01311 - 23244.

NEW MEMBERSHIP OFFICER

We are pleased to announce that Mrs Marion Debruyne has kindly taken over duties as Membership Officer of the Society. Thank you, Marion! All enquiries in respect of membership matters should be directed to Marion, at 18 Jakkalsbessie Crescent, Palabora, 1395.

The membership year of the Society runs from January to December. New members who join at this stage of the year will receive all the 1985 copies of ENCEPHALARTOS.

NUWE LIDMAATSKAPBEAMPTE

Dit is vir ons aangenaam om aan te kondig dat mev. Marion Debruyne goed= gunstiglik die taak van Lidmaatskapbe= ampte oorgeneem het. Dankie, Marion! Alle navrae insake lidmaatskapaangeleent= hede moet aan Marion gerig word, by Jakkalsbessiesingel 18, Palabora, 1395.

Die lidmaatskapjaar van die Vereniging strek van Januarie tot Desember. Nuwe lede wat op hierdie stadium van die jaar aansluit, sal al die 1985-uitgawes van ENCEPHALARTOS ontvang.

KORREKSIES/CORRECTIONS

-In die artikel oor Encephalartos longi= folius in ENCEPHALARTOS no. 1 (Maart 1985) - die eerste in die FOKUS OP-reeks - word in die inleiding op bladsy 6 gesê dat E. longifolius die Suid-Afri= kaanse broodboomspesie is wat die verste Suid voorkom. Soos genoem in die FOKUS OP-artikel elders in hierdie uitgawe, kom hierdie eer E. caffer toe.

-In the Article "Sex change in Cycas revoluta" on page 24 of ENCEPHALARTOS no. 2 (June 1985), the date at the start of the third paragraph should read February 1978 and not 1984.

A WORLD LIST OF CYCADS

by Roy Osborne and John Hendricks

INTRODUCTION

Taxonomy is that discipline of botany which provides a rational basis for the naming of plants. It is an objective science in that set procedures work toward developing a meaningful systema= tic genealogy. However, problems re= lating to the selection of criteria of rank result in subjective judgement and opinion; this is especially true in the order Cycadales.

Most cycad species names originated from studies of isolated plants or habitats. When descriptions of these species were later compared on a broader regional basis, many appeared to by synonomous or less differentiated than others, thus names and classifications had to be reassigned. This process may repeat as often as justified, the most recent properly-published names and ranks being accepted as valid. (See Piet Vorster's "Why Plant Names Change", ENCEPHALARTOS No. 1, March 1985.)

Apart from the as yet unresolved confu= sion of the early literature over the identification of some taxa, there are also problems of judgement and of opinion. In addition, there are the problems of known but undescribed new species (e.g. the Encephalartos from the vicinity of Voi in Kenya) and there are problems of botanically invalid names applied by collectors to taxa that differ from or have not been reconciled with valid taxa.

Another im= portant factor is that the Zamia, Cycas and Ceratozamia have yet to be fully explored and properly classified. For= tunately, Dion, Encephalartos and Macrozamia are largely defined, although some changes are anticipated. Only Bowenia, Lepidozamia, Microcycas and Stangeria are considered taxonomically complete at this time.

Major advances have recently been made in Zamia taxonomy by information from chromosome karyotyping. Biochemical studies too are being used to define genera and give promise of differentia= tion at lower taxonomic rank. Other modern analytical techniques may have application in future years. Taxonomy in its purest form reflects evolution; the best advances will be made by com= bining the knowledge from the many rele= vant interacting scientific disciplines.

The list which follows itemises the currently valid taxonomic ranking at or below the species level to the best of our present knowledge. It is not a listing of all validly published species, nor does it represent our opinion as to 'good' species or suitable classifica= tion. Indeed, our opinions and those of many others are at considerable variance from this list, particularly in assign= ments in the Cycas, Zamia and Ceratozamia genera. Work is proceeding toward an improved cycad taxonomy, though perhaps not of the scope nor at the rate which might be desired. In the interim, it is recommended that labelling of specimen plants is supplemented with any additio= nal appropriate information.

The preparation of this list would not have been possible without the kind assistance of numerous workers; we should mention specifically Willie Tang, John Popenoe, Piet Vorster, Denis Heenan, Paola De Luca, Sergio Sabato and Dennis Stevenson. Final responsibility for the list is, however, ours alone.

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John Hendricks
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BOWENIA (2 species)

B. serrulata (W. Bull) Chamberlain	Queensland, Australia
B. spectabilis Hooker ex Hooker f.	Queensland, Australia

CERATOZAMIA (9 species)

C. euriphyllida V-Torres, Sabato & Stevenson	Mexico
C. hildae Landry & Wilson	San Luis Potosi, Queretaro, Mexico
C. kuesteriana Regel	Tamaulipas, Mexico
C. matudai Lundell	Chiapas, Mexico
C. mexicana Brongniart	Mexico
var. latifolia (Miquel) Schuster	
var. longifolia (Miquel) Schuster	
var. longifolia forma fuscoviridis D. Moore ex Schuster	
var. longifolia forma tenuis (Dyer) Schuster	
var. miqueliana (Weiland) Schuster	
var. robusta (Miquel) Dyer	
var. tenuis Dyer	
var. vulgaris Schuster	
C. microstrobila Vovides & Rees	San Luis Potosi, Mexico
C. miqueliana Weiland	Veracruz, Mexico
C. norstogii D. Stevenson	Chiapas, Mexico
C. zaragozae Medellin-Léal	Tamaulipas, Mexico

Note: The taxonomy of C. mexicana may be subject to significant revision.

CYCAS (15 species)

C. buguanheensis L.K.Fu & S.Z. Cheng	China
C. cairnsiana F. Mueller	Queensland, Australia
C. calcicola J.R. Maconochie	N. Territory, Australia
C. chevalieri Leandri	Vietnam
C. circinalis (Linnaeus) Schuster	Asia, Africa
forma glauca (Miquel) Schuster	
forma gothanii Schuster	
forma undulata (Desfontaines) Schuster	
subsp. madagascariensis (Miquel) Schuster	Madagascar
forma trigonocarpoides Schuster	
subsp. papuana (F. Mueller) Schuster	New Guinea
subsp. ruiminiana (Porte) Schuster	Philippines
var. curranii Schuster	
forma apertorum Schuster	
forma chamberlainii (W.H. Brown & Keinholz)	
forma maritima Schuster	
var. scratchleyana (F. Mueller) Schuster	New Guinea
subsp. vera Schuster	
var. beddomei Dyer	India
var. pectinata (W.Griffith) Schuster	Widespread, S.E. Asia
C.hainanensis C.J. Chen ex C.Y. Chen	Hainan Island, China
C. media R. Brown	N. Territory, Australia
var. basaltica (C.A. Gardner) Schuster	Western Australia
var. furfuracea (W.V. Fitzgerald) Schuster	Western Australia
var. lane-poolei (C.A. Gardner) Schuster	Western Australia
C. micholitzii Dyer	
var. micholitzii Dyer	Vietnam, China
var. simplicipinna Smitinand	S.E. Asia
C. nathorstii Schuster	Sri Lanka
C. panzihuanensis L. Zhou & S.Y. Yang	China
C. pruinosa J.R. Maconochie	Western Australia

C. revoluta Thunberg	China, Japan, Ryukyu Is.
var. robusta	
var. taiwaniana (Carruthers) Schuster	China, Taiwan
C. rumphii Miquel	S.E. Asia & Pacific Is.
var. subinclusa Schuster	
forma palauica Kaneh	Palau
forma papuana (F. Mueller) Kaneh	New Guinea
forma seemannii (A. Braun) Kaneh	Fiji
subsp. normanbyana (F. Mueller) Schuster	Queensland, Australia
subsp. zeylanica Schuster	Sri Lanka
C. siamensis Miquel	S.E. Asia
subsp. balansae (Warburg) Schuster	Vietnam
C. wadei Merrill	Philippines

Note: The taxonomy of Cycas needs extensive revision, including assignment of species, subspecies and variety status. Several deletions and new insertions may be anticipated.

DION (previously DIOON) (10 species)

D. califanoi De Luca & Sabato	Oaxaca, Mexico
D. caputoi De Luca, Sabato & V-Torres	Puebla, Mexico
D. edule Lindley	Mexico
var. angustifolium (Miquel) Miquel	Nuevo Leon, Tamaulipas, Mexico
var. imbricatum (Miquel) Miquel	
forma lanuginosum (Wittmack) Schuster	
var. latipinna Dyer	
D. holmgrenii De Luca, Sabato & V-Torres	Oaxaca, Mexico
D. mejiae Standley & L.O. Williams	Honduras
D. merolae De Luca, Sabato & V-Torres	Chiapas, Mexico
D. purpusii Rose	Oaxaca, Mexico
D. rzedowskii De Luca, Moretti, Sabato & V-Torres	Oaxaca, Mexico
D. spinulosum Dyer	Vera Cruz, Oaxaca, Mexico
D. tomasellii De Luca, Sabato & V-Torres	Mexico
var. tomasellii De Luca, Sabato & V-Torres	S.W. Coast, Mexico
var. sonorense De Luca, Sabato & V-Torres	N.W. Coast, Mexico

ENCEPHALARTOS (43 species)

E. altensteinii Lehmann	E. Cape, Transkei
E. arenarius R.A. Dyer	E. Cape
E. barteri Carruthers ex Miquel	
subsp. barteri	Benin, Ghana, Nigeria, Sudan, Togo
subsp. allochrous L.E. Newton	Nigeria
E. bubalinus Melville	Tanzania, Kenya
E. caffer (Thunberg) Lehmann	E. Cape
E. chimanimaniensis R.A. Dyer & Verdoorn	Mocambique, Zimbabwe
E. concinnus R.A. Dyer & Verdoorn	Zimbabwe
E. cupidus R.A. Dyer	Transvaal
E. cycadifolius (Jacquin) Lehmann	E. Cape
E. eugene-maraisii Verdoorn	Transvaal
E. ferox Bertol f.	Zululand, N. Natal, Mozambique
E. friderici-guilielmi Lehmann	E. Cape, Transkei
E. ghellinckii Lemaire	Transkei, Natal
E. gratus Prain	Malawi, Mozambique
E. heenanii R.A. Dyer	Swaziland, S.E. Transvaal
E. hildebrandtii A. Braun & Bouché	
var. hildebrandtii	E. Africa
var. dentatus Melville	Tanzania, Uganda
E. horridus (Jacquin) Lehmann	E. Cape
E. humilis Verdoorn	E. Transvaal
E. inopinus R.A. Dyer	Transvaal

E. laevifolius Stapf & Burtt Davy	E. Transvaal, Swaziland
E. lanatus Stapf & Burtt Davy	Transvaal
E. latifrons Lehmann	E. Cape
E. laurentianus De Wilden	Angola, Zaire
E. lebomboensis Verdoorn	N. Natal, S.E. Transvaal, Swaziland, Mozambique
E. lehmannii Lehmann	E. Cape
E. longifolius (Jacquin) Lehmann	E. Cape
E. manikensis Gilliland	Mozambique, Zimbabwe
E. marunguensis Devered	Zaire
E. munchii R.A. Dyer & Verdoorn	Mozambique
E. natalensis R.A. Dyer & Verdoorn	Natal
E. ngoyanus Verdoorn	Zululand, N. Natal S.E. Transvaal , Swaziland
E. paucidentatus Stapf & Burt Davy	E. Transvaal, Swaziland
E. poggei Ascherson	Angola, Zaire, Tanzania
E. princeps R.A. Dyer	E. Cape, Transkei
E. pterogonus R.A. Dyer & Verdoorn	Mozambique
E. schmitzii Malaisse	Zaire
E. septentrionalis Schweinfurth	Zaire, Sudan, Uganda, Central AfricanRep., Rwanda
E. tegulaneus Melville	Kenya
E. transvenosus Stapf & Burtt Davy	N. Transvaal
E. trispinosus (Hooker) R.A. Dyer	E. Cape
E. umbeluziensis R.A. Dyer	Swaziland, Mozambique
E. villosus Lemaire	E. Cape, Natal, S.E. Trans= vaal, Transkei, Zululand, Swaziland, Mozambique
E. woodii Sander	(Extinct in nature)

Note: Several species are yet to be described

LEPIDOZAMIA (2 species)

L. hopei Regel	Queensland, Australia
L. peroffskyana Regel	N.S.W. & Queensland, Australia

MACROZAMIA (14 species)

M. communis L.A.S. Johnson	N.S.W., Australia
M. diplomera (F. Mueller) L.A.S. Johnson	N.S.W., Australia
M. fawcettii C. Moore	N.S.W., Australia
M. heteromera C. Moore	N.S.W., Australia
M. lucida L.A.S. Johnson	Queensland & N.S.W., Australia
M. macdonnellii (F. Mueller ex Miquel) A. De Candolle	Central Australia
M. miquelii (F. Mueller) A. De Candolle	Queensland & N.S.W., Australia
M. moorei F. Mueller	Queensland & N.S.W., Australia
M. pauli-guilielmi W. Hill & F. Mueller	
subsp. pauli-guilielmi	Queensland, Australia
subsp. flexuosa (C. Moore) L.A.S. Johnson	N.S.W., Australia
subsp. plurinervia L.A.S. Johnson	Queensland & N.S.W., Australia
M. platyrachis F.M. Bailey	Queensland, Australia
M. riedlei (Fischer ex Gaudichaud) G.A. Gardner	S.W. Australia
M. secunda C. Moore	N.S.W., Australia
M. spiralis (Salisbury) Miquel	N.S.W., Australia
M. stenomera L.A.S. Johnson	N.S.W., Australia

Note: Some revisions or additions are feasible

MICROCYCAS (1 species)	
M. calocoma (Miquel) A. De Candolle	W. Cuba
STANGERIA (1 species)	
S. eriopus (Kunze) Baillard	E. Cape, Natal, Transkei & Zululand
ZAMIA (33 species)	
Z. acuminata Oersted ex Dyer	Nicaragua, Panama
Z. boliviana (Brongniart) A. De Candolle	Bolivia
Z. chigua Seemann	Colombia
Z. cupatiensis Ducke	Colombia, Brazil
Z. fairchildiana L.D. Gomez	Costa Rica, Panama
Z. fischeri Miquel	Mexico
Z. furfuracea Linnaeus f. in Aiton	Mexico
Z. inermis Vovides, Rees & V-Torres	Mexico
Z. jirijirimensis R.E. Schultes	Colombia
Z. lawsoniana Dyer	Oaxaca, Mexico
Z. lecointei Ducke	Brazil
Z. lindenii Regel ex Andrè	Ecuador
Z. lindleyi Warszewicz ex A. Dietrich	Panama
Z. loddigesii Miquel	Mexico
var. angustifolia (Regel) Schuster	
var. cycadifolia (Dyer) Schuster	
var. latifolia (Loddiges ex Miquel) Schuster	
var. leiboldii (Miquel) A. De Candolle	
var. longifolia Schuster	
var. spartea (A. De Candolle) Schuster	
Z. madida R.E. Schultes	Colombia
Z. montana A. Braun	Colombia
Z. monticola Chamberlain	Mexico
Z. muricata Willdenow	Venezuela
var. picta Van Houtte	Guatemala
Z. obidensis Ducke	Brazil
Z. obliqua A. Braun	Colombia
Z. paucijuga Weiland	Mexico
Z. poeppigiana Martius & Eichler	Peru
Z. pseudomonticola L.D. Gomez	Costa Rica
Z. pseudoparasitica Yates in Seemann	Panama, Costa Rica
var. latifolia Schuster	
Z. pumila Linnaeus	Caribbean
subsp. pygmae (Sims) Eckenwalder	
Z. purpurea Vovides, Rees & V-Torres	Mexico
Z. skinneri Warszewicz ex A. Dietrich	Panama
Z. splendens Schutzman	Mexico
Z. tuerckheimii J. Donnell Smith	Guatemala
Z. ulei U. Dammer	Brazil
Z. verschaffeltii Miquel	Mexico
forma latifolia Schuster	
forma verschaffeltii	
Z. wallisii Hort. Veitch ex A. Braun	Colombia
Z. wielandii Schuster	

Note: The Taxonomy of Zamia is in need of substantial revision with input from further field and analytical studies.

REGIONAL NEWS STREEKNUUS

NATAL

VISIT TO MONTESEEL RESERVE

On Sunday, 7 July, members of the Natal Branch organised an outing to the Monte= seel Reserve near Inchanga. The original owner, Dr A. Seele, donated the area in which the cycads occur as a reserve and the tallest cycad specimen was proclaimed a National Monument in 1951. The terrain was fairly difficult but after scrambling down the steep cliffside, members were rewarded when they came upon a magnificent clump of Encephalartos natalensis. This female plant is in fact the one on which Drs Dyer and Verdoorn based their original description of the species in Bothalia 6:205(1951).

The original main stem has since become recumbent and as a result several smaller stems have developed. Due to the pro= longed drought of the past few years there was no evidence of coning this year or last year but members raised a cheer when one solitary seedling was spotted.

The members then continued along the base of the cliff and viewed another clump. Never before has a cycad been photographed so meticulously from all angles by so many. Time did not permit a thorough search of the rest of the terrain, but members indulged in a bit of bird watching, tree spotting and plantlore swapping, surely the essence of a nature outing. One awed new mem= ber was heard ro remark: "this is the first time I have seen a real cycad"! When pressed to explain, he elucidated that previously he had only seen cycads in gardens. There may be a moral in this....!

Back at the picnic site those present heldthe first Natal election and George Walters, Danie Nel and Cynthia Giddy were elected as office bearers. They have chosen to function as a triumvirate and not to elect one chairman.

OUTING TO SHONGWENI

The next meeting of the Natal Section will be an outing for members and friends to the Shongweni area on Sunday, 6 October 1985. This part of the country is the type locality for Encephalartos villosus which is particularly abundant there. Details about the time and meeting site will be sent separately to Natal members.

Natal members on their outing to the Monteseel Reserve

OOS-KAAP

VERGADERING, NUWE ORDONNANSIE

Ongeveer 60 Oos-Kaapse lede van die Vereniging en ander belangstellendes het op 13 Junie 'n vergadering by die Port Elizabethse Technikon bygewoon, waartydens hulle deur mnr. A.P. Basson, Natuurbewaringsbeampte van die Kaaplandse Departement van Natuur- en Omgewingsbewaring in Port Elizabeth, ingelig is oor die nuwe ordonnansie waarvolgens alle Suid-Afrikaanse broodboomspesies as bedreigde spesies in Kaapland verklaar is. Permitte is nou in Kaapland nodig om enige broodboom te besit, as skenking te ontvang, te skenk, te koop, te verkoop of te vervoer.

UITSTAPPIE NA RESERVAAT

Twaalf belangstellendes het op 3 Augustus die koue en wind getrotseer om broodbome in die Grahamstad-omgewing in hulle natuurlike staat te gaan besigtig. Die eerste besoekpunt was die Broodboomreservaat naby Grahamstad waar waarskynlik die grootste oorblywende kolonie van Encephalartos caffer beskerm word. Dit was vir almal 'n opwindende ondervinding om so baie plante van hierdie pragtige klein broodboomspesie tussen die gras en bossies te sien. Dit was opmerklik dat, alhoewel daar verskeie plante met ou manlike keëls was, net een plant met 'n vroulike keël gevind is. Moontlik het die afgelope droë seisoen iets daarmee te doen. Baie interessant en bemoedigend was egter die groot getalle saailinge; soms 'n hele klompie rondom 'n moederplant. Twee baie vriendelike beamptes van die Kaaplandse Departement van Natuur- en Omgewingsbewaring, menere Marthinus Jordaan en Brad Fike, het die uitstappie begelei.

Hiervandaan is die belangstellendes na die Staatsbos naby Bathurst, waar middagete in die pragtige omgewing op die walle van die Kowierivier, naby die beroemde "Horseshoe Bend", genuttig is. Na ete het die bosbouer, Paul Gobetz ('n lid van die Vereniging), die teenwoordiges vergesel om eers pragtige voorbeelde van E. altensteinii en toe E. trispinosus te gaan besigtig. Die verwantskap tussen E. trispinosus en ander spesies in die omgewing het almal aan die praat en aan die raai gehad. Op een plek staan binne 'n straal van ongeveer 10m broodbome met algeheel uiteenlopende soorte blare. Een plant het gryserige blare met ongetande blaartjies ("leaflets") wat wyd-gespasieer is en wat soos dié van E. lehmanii lyk. 'n Paar ander plante lyk feitlik net soos die ander E. altensteinii in die omgewing, terwyl daar ander is wat in 'n wisselende mate soos E. trispinosus met sy gekrulde blaartjies lyk. Ongelukkig was geen keëls aanwesig om moontlik 'n bietjie lig op die raaisel te werp nie.

Die lede wat die uitstappie meegemaak het, was dit eens dat dit 'n wonderlike ondervinding was.

Oos-Kaapse lede ontmoet E. caffer

BOTANICAL HISTORICAL MONUMENTS

by Roy Osborne

The South African National Monuments Council, previously the Historical Monuments Commission, was created in order to preserve important aspects of our country's heritage. Not only important buildings are within its control, but also such diverse items as significant geological formations, archaeological and palaeontological sites, caves, examples of prehistoric rock art, Bantu settlements, battlefields, mountains, waterfalls, picturesque villages and certain specimens of the National flora. For details of the Council's work, readers are referred to the excellent volume by Professor J.J. Oberholster, "The Historical Monuments of South Africa", published by the Rembrandt van Rijn Foundation for Culture at the request of the Council in 1972. The information which follows is drawn largely from that source.

The proclamation of an object as a "National Monument" is not simply a way of advertising it to the public so that it can be appreciated; rather it is to enable the Council to ensure proper preservation and to exercise some degree of control over the future of the object. Clearly the desecration of any proclaimed monument becomes an offence against the State and appropriate legal action can follow.

Of the numerous National Monuments in South Africa, a surprising number are living plants or groups of plants. Many large oak trees, at George, Stellenbosch, Swellendam and Potchefstroom are National Monuments; Jan van Riebeeck's bitter almond hedge planted in 1660 is similarly proclaimed and the magnificent camphor trees from W.A. van der Stel's farm, 'Vergelegen', near Somerset West have also been listed. Two milkwood trees have been honoured: the 'Post Office' tree at Mossel Bay and the Fingo milkwood tree near Peddie.

In the Orange Free State, President Steyn's wild olive 'Tree of Conspiracy' will be remembered, while the Transvaal commemorates the site of formation of the Reformed Church of S.A. under a syringa tree in Rustenburg, the stump of which remains to mark the location. The largest trees in the central Transvaal are a group of 'apiesdoring' trees (Acacia albida) near Potgietersrus, under which David Livingstone is said to have rested on one of his travels.

Also a monument on the large side are the characteristic baobabs (Adansonia digitata) of the Messina area - these having been proclaimed to save them from being made into paper during the last war.

Natal's National Monuments include a giant Acacia at the Administrator's Residence in Pietermaritzburg, thought to be the site of Colonel Cloete's capitulation to the British Forces in 1842, while known to every shcoolchild in the Province is the Ultimatum Tree near the Tugela River, a large Ficus where Sir Bartle Frere's ultimatum was delivered to Cetshwayo in 1878. Our friends in the Palm Society will be pleased to know that their favourites are on the list of honoured plants: the grove of Jubaeopsis caffra discovered by Charles Ross in 1910 just north of Port St. John's is listed as the 'Mkambati Palms' and the plantation by a former magistrate at Mtunzini of Raffia vinifera has been proclaimed under the title 'The Raffia Palms'. More recently, the wellknown mangrove plantation at Beachwood (near Durban), has been included on the list.

Moving to South-West Africa/Namibia, one finds the petrified forest of the Kaoko and the "Kokerboom" (Aloe dichotoma) forest near Keetmanshoop on the natural monuments schedule.

Several of the country's botanic gardens have been proclaimed under the Act. These include the Old Company Gardens in Cape Town, Kirstenbosch Gardens and the O.F.S. Botanical Gardens.

The original type specimen of E. natalensis in the Monteseel Reserve, now a National Monument. (Reproduced from Bothalia Vol. VIII, Part 4, 1965, with kind permission from the editor and the Botanical Research Institute.)

But, what about our cycads? So far we can claim only two National Monuments, the Monteseel Cycads and the Modjadji 'Palms'.

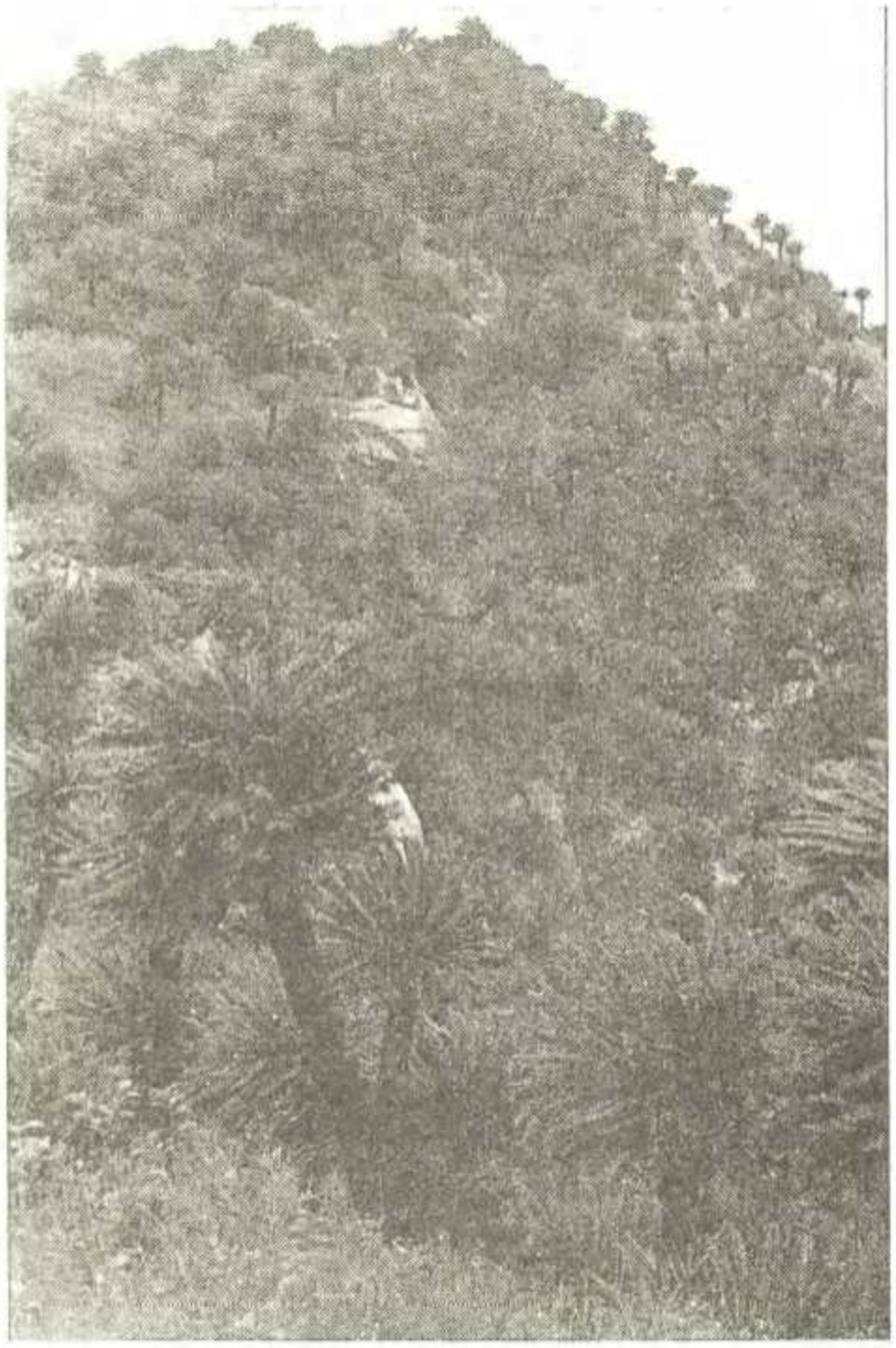
THE MONTESEEL CYCADS

This National Monument comprises a group of three female Encephalartos natalensis plants in the Monteseel reserve, off the 'old' road from Durban to Pietermaritz=burg near the Valley of a Thousand Hills. The largest specimen is the one on which Drs. Dyer and Verdoorn based their des=cription for the species (see "Bothalia" 6 : 205 (1951)). At that time the tallest stem was about 6 m high with a diameter of 38 cm; this main stem has since fallen to a prostrate position and as usual in this situation, several smaller stems have developed. Dyer and Verdoorn put the age of the main stem at 250 years plus, and that of the rootstock at pos=sibly more than 1000 years. The plants grow in difficult terrain and are not readily located by visitors. The Natal Section of the Society will organise an excursion to see these plants at a future date.

When the Monteseel township was deve=loped, Dr. A. Seele, who owned the property, had the foresight to reserve the area in which the cycads are found as a park; in 1951 the largest of the plants was proclaimed as a National Monument.

THE MODJADJI 'PALMS'

Perhaps the most remarkable 'collection' of cycads in the world is the forest of E. transvenosus under the protection of the Rain Queen of the Lovedu people at Modjadji's Kraal near Duiwelskloof in the Northern Transvaal. These majestic plants often exceed 10 m in height and may bear female cones with a mass of 30 kg or more. The effect of the Rain Queen's protection, over numerous gene=rations, is obvious to any visitor, and perhaps the National Monuments Council's declaration of this forest as a Natio=nal Monument in 1936 might be taken as a gesture of solidarity with the Rain Queen's conservation philosophy.



The forest of E. transvenosus at the Modjadji's kraal. (Reproduced from S.A. Panorama, March 1983, with kind permission from the editor.)

(I am indebted to Dr C.J. Loedolff, Director of the National Monuments Council, for his helpful suggestions in the preparation of these notes - Roy Osborne)

MEMBERS ARE ADVISED THAT THE SOCIETY WILL CONSIDER SUBMITTING A MOTIVATION FOR THE PROCLAMATION OF ANY SPECIALLY SIGNIFICANT CYCAD TO THE NATIONAL MONUMENTS COUNCIL FOR THEIR ASSESSMENT.

CONSTITUTION

During the past year the Committee of the Cycad Society has given continual attention to the drawing up of a proper constitution for the Society. Under the leadership of Dr Piet Vorster, one draft after the other was considered. The third draft constitution is enclosed with this edition of ENCEPHALARTOS, for the information and approval of the members of the Society. It is the product of thorough consideration, and it is recommended that members approve it in its present form. If you are not satisfied with it, however, it is your right as a member to bring your objection to Piet's attention by writing to him at the Department of Botany, University of Stellenbosch, Stellenbosch, 7600. If not more than one third of the Society's members reject the draft constitution in the above-mentioned manner by 21 October 1985, it will be accepted that it has been approved by a two-thirds majority of members, and it will come into effect immediately. Elections for the new committee will then be held, as prescribed in the constitution.

GRONDWET

Gedurende die afgelope jaar het die Komitee van die Broodboomvereniging voortdurend aandag geskenk aan die opstel van 'n behoorlike grondwet vir die Vereniging. Onder leiding van dr. Piet Vorster is die een konsep na die ander oorweeg. Die derde konsep-grondwet word by hierdie uitgawe van ENCEPHALARTOS ingesluit vir die inligting en goedkeuring van die lede van die Vereniging. Dit is die produk van deeglike oorweging, en dit word by lede aanbeveel dat dit in sy huidige vorm goedgekeur word. Indien u nie daarmee tevrede is nie, is dit egter u reg as lid om u beswaar onder Piet se aandag te bring, deur aan hom te skryf by die Departement Plantkunde, Universiteit Stellenbosch, Stellenbosch, 7600. Indien nie meer as een-derde van die Vereniging se lede die konsep-grondwet op bogemelde wyse teen 21 Oktober 1985 verwerp nie, sal aanvaar word dat dit deur 'n twee-derde meerderheid van die lede goedgekeur is, en sal dit onmiddellik van krag word. Verkiesings vir die nuwe komitee sal dan gehou word, soos in die grondwet bepaal.

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 offers 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.

- Danie Nel (Durban, tel.no. 031-442505) het saailinge van Encephalartos villosus en E. natalensis beskikbaar aan "beginners", verkieslik in die Durban-omgewing.

- Mr Len Forrester (PO Box 26, Cathcart 5310; tel.no. 04562-2003) has water-tested fertile seed of Encephalartos friderici-guilielmi. His charge is R25 per 100, with 10% discount available on orders of 500 or more. Export prices are by negotiation.

- Curt Butterfield (PO Box 74, Port Douglas, 4871 Australia) wants seed of any Encephalartos species for Australian species of Macrozamia, Cycas, Lepidozamia hopei and L. peroffskyana, Bowenia spectabilis and B. serrulata. Seed are available now. He will also be prepared to purchase reasonable quantities of viable, correctly-identified seed of Encephalartos species.

- Mr H.M. Anderson (GPO Box 2557, Darwin, NT 5794, Australia) offers seeds of Northern Territory and Western Australian cycads, e.g. Cycas armstrongii, C. armstrongii var lane-poolei, C. angulata, C. basaltica, C. calcicola, C. pruinosa and C. furfuracea. He would like seeds of Southern African cycads in exchange.

-Willie Tang, a keen member from Florida, U.S.A., has kindly arranged the donation of a parcel of Zamia furfuracea seed to the Society. Any members who wish to obtain some of this seed should contact the Chairman, Roy Osborne, at 20 Maryvale Road, Westville, 3630.

CYCADS AS BONSAI?

by Brian Collins

Presumably every member of the Cycad Society has one or more specimens grow=ing in their garden, but how about having one as a conversation piece in the centre of your dining-room table? Ridiculous as this may sound, it is quite possible by employing the tech=niques of Bonsai culture.

Purists might dispute whether a cycad can be accepted as a true Bonsai be=cause traditionally hardwood trees only are used and also because it is not possible to apply the criteria which distinguish Bonsai from mere potted trees, or "Hachi-ue". The masters insist that Bonsai must have had train=ing to conform to one of the classic styles and they must obey the rules pertaining to that particular style.

The "Tachiki" or informal upright is probably the only style suitable for cycads and the rules for this dictate branch placement, trunk shape and taper and even the position of areas of foliage. It is seldom that a tree is found growing naturally in obedience to these rules and the master of Bonsai will painstakingly re-shape the tree. Excess branches are removed and the remaining ones carefully bent to the grower's will. The trunk might be induced to curve appealingly and pri=mary, secondary and even tertiary branches are skilfully wired and trained to conform. It would be a very strange cycad that could be re-fashioned in this manner!

On the other hand, a literal translation of the word Bonsai is "tree planted in a shallow pot". Nobody will deny that a cycad is a tree; ergo, a cycad planted in a shallow pot must be a Bonsai!

C. revoluta as Bonsai

Cycas revoluta is probably the most suitable for growing as a Bonsai, partly because it is not as rare as some of the other species and also because the fronds are relatively small to start with and miniaturise further when the roots are confined, thus preserving the proportions of height, trunk diameter and foliage. This is essential if the potted cycad is to give the illusion of a fully-grown mature tree seen through the wrong end of a telescope.

This species, also known as the sago palm, is grown in containers in the warmer regions of Japan and other parts of Asia and has also been grown as Bonsai in America. A further advantage of C. revoluta is that it can adapt to indoor living, providing it receives

sufficient light and fresh air.

It would be impertinence on the part of the writer to attempt to give any hints on the care of cycads to members of the Cycad Society; nevertheless a few general tips applicable to Bonsai in general might not come amiss. Bonsai pots always have one or more drainage holes; if you modify a florist's bowl to accommodate your tree, make sure that you drill holes for drainage. Bonsai pots also have legs to raise the base of the pot from the surface on which it stands, thus allowing air to circulate under the container, so, if you use a substitute, it is wise to glue legs on to it. A layer of gravel at the bottom of the pot assists in the drainage.

Remember that your pot only contains a handful of soil and this will be all that the tree can feed on. In a year or so, all the nutrients in the soil will be exhausted - and in any case your cycad will probably have become potbound - so it will be necessary to re-pot it using fresh soil. Should you decide to fer=tilise, do this sparingly, using a liquid fertiliser at half the strength you would use it on a tree in open ground.

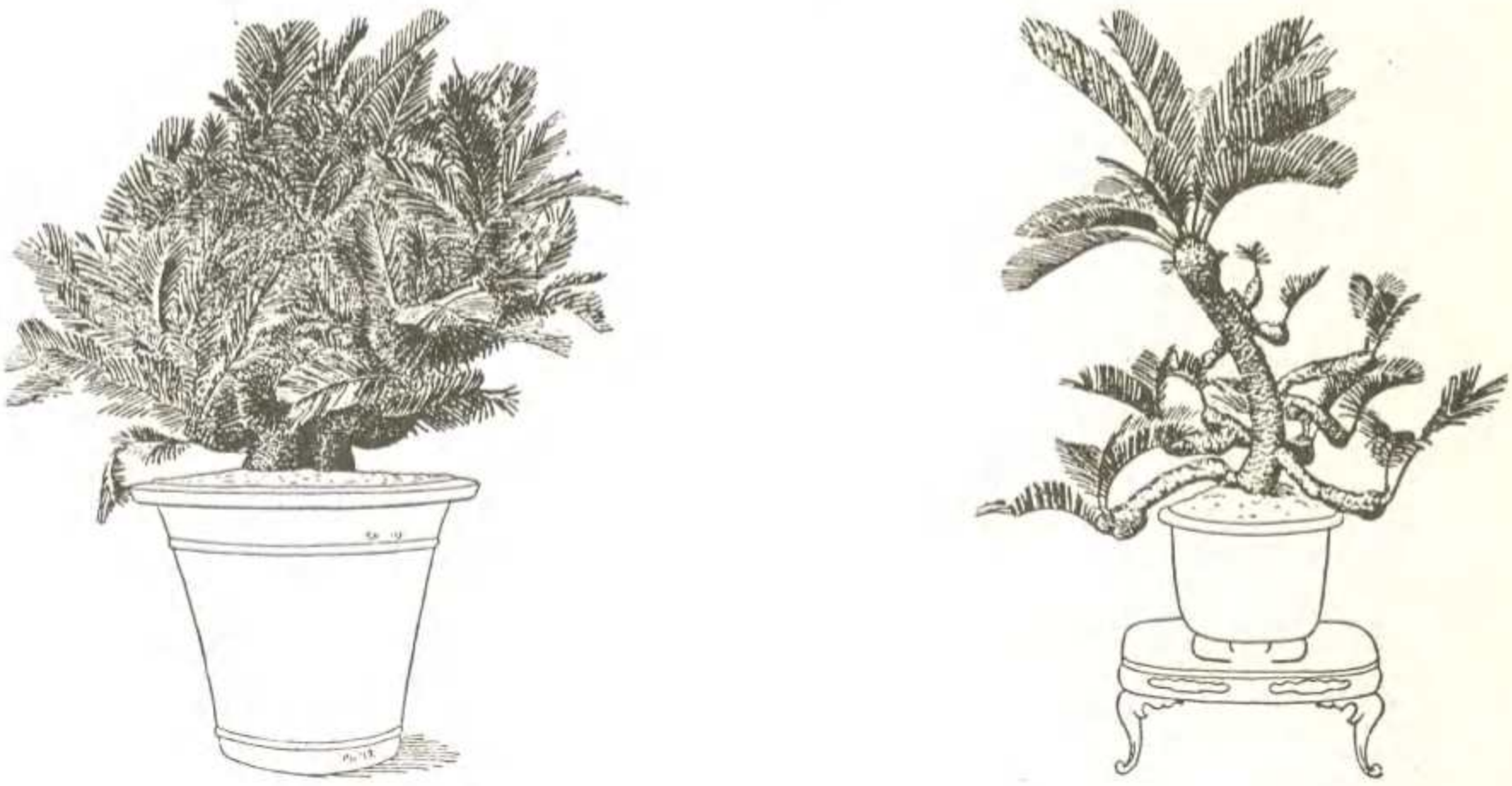
(Brian is Chairman of the Natal Section of the Bonsai Society of South Africa.)

I AM A CYCAD

- You did not know me in the triassic epoch of the mesozoic era, one hundred ninety million years ago. I evolved more than one hundred eighty million years before your ancestors.
- I saw the appearance of the dinosaurs, and their death. I saw the appearance of the early mammals and your kin, the primates.
- I was one hundred sixty million years old when the Alps, Andes, and Himala=yas were infants, striving to become giants on my Earth.
- My numbers were many when the Plei=stocene Age of Ice one million years ago decimated my relatives in Europe and North America.
- Your mind cannot comprehend my anti=quity. Yet, your mind - that which evolvement set you above other ani=mals - gave you an appreciation and even reverence for me and others of my kingdom.
- My strength is in my antiquity and tenacity - and in you.

Charles A. Williams
Florida, USA

(Reprinted from the Cycad Newsletter (USA) by kind permission of the author.)



Sketches of specimens of C. revoluta treated as Bonsai in Japan

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.

Sir

Having recently read ENCEPHALARTOS no. 1, and with regard to the "burning of cycad" question, I would like to tell you of my experiences.

I planted several different varieties in my garden and the "stompies" as we called them showed no signs of life - some gummed a bit, others firred a bit but no leaves showed.

Then towards October last year, I gently burnt the tops of the cycads by placing a steel ring around the plant with one sheet of newspaper and allowing the sheet to burn out completely. Within six weeks all the cycads were pushing new leaves - and in time out came beautiful brand new leaves!

Only two cycads burnt did not push leaves - but I am confident that these will in Spring when I try again.

"CYCAD LOVER"
JOHANNESBURG

Geagte Redakteur

Ons het onlangs broodbome in die Middelburg-omgewing gaan besigtig. Op die Botshabelo-wandelpad het ons groot getalle van Encephalartos lanatus gesien wat hoofsaaklik teen die Oostelike hang van die Klein-Olifantsrivier groei. Daar is van reuse-grotes tot klein saailinge. Hulle groei tussen die kranse sowel as op die grasvlaktes, waar veldbrande bykans jaarliks voorkom. Hulle maak egter jaarliks weer nuwe blare en groei welig.

Op die Broodboom-voetslaanpad groei E. lanatus ook welig. Hierdie voetslaanpad is egter die enigste waar ons voorbeelde van E. eugene-maraisii gesien het; ongeveer vyf plante wat sowat 10m uit mekaar staan. Hierdie bome het omgeval, uitgespruit, vertak en reuse-grotes van ongeveer 6m lank geword. Om hulle te beskryf is onmoontlik.

Wat my opgeval het is dat, in teenstelling met die lanatusse, hier geen jong boompies of saailinge te bespeur is nie. Daar lê wel baie doppe van sade wat half-gevreet is, blykbaar deur knaagdiere. Die doppe lê in hope gedra tussen die klipskeure. Wat kan dit wees wat die voortbestaan van hierdie pragtige erfenis in die wiele ry? Kan daar moontlik ingegryp en iets daaraan gedoen word?

Weet iemand miskien van ander plekke in die Middelburg - Loskopdam-omgewing waar ons meer van hierdie rare spesie te siene kan kry? Indien wel, skryf asseblief aan my - of kom stap saam.

MEV. E.F. GRUNDLING
POSBUS 615, GROBLERSDAL

Miskien kan u by die Transvaalse Natuurbewaringsowerheid navraag doen oor wat gedoen word om die voortbestaan en voortplanting van E. eugene-maraisii te verseker (sien Roy Osborne se antwoord op Colin Pinker se brief). Laat ons asseblief weet. - REDAKTEUR

Dear Sir,
I am currently preparing a manuscript on the stability of genetic and somatic mutations in cycads with regard to microclimatic variability. I have a number of variegated cycads which I grow for these purposes and any extras I have, I make available to collectors on a trade basis only.

I am presently interested in any information regarding variegation of fasciation in any cycads. Do you know anyone who has ever reported having grown or even seen a sexually viable, mature variegated cycad? If so, I would be very interested in exchanging information.

DAVE GORDON
3054 N. SHADYPARK DRIVE
LONG BEACH, CALIFORNIA 90808 U.S.A.

LETTERS BRIEWE LETTERS BRIEWE

Dear Sir,

Congratulations on an excellent first issue of your newsletter. My only regret is that I can't read Afrikaans! The research project by M. Huntley, N. King and R. Osborne on the effects of fire on coning in Encephalartos ghellinckii is very interesting. The local Zamia in Florida also lives in fire-prone habitats. Dr Robert J. Whelan (current address (?): Botany Dept., University of Western Australia, Nedlands, Australia 6009) did some soon to be published work which showed that fire promotes coning in a north Florida population of this species. I also did some work on this subject in some pine-woods in the Miami region. However, the fire at my particular site was so intense, it destroyed the apices of most of the plants so that the first two years after fire were dominated by vegetative regrowth.

My present research, forming my mas=ter's thesis, includes a wind/insect exclusion pollination experiment on the local Zamia and a study of its pollinator attractants (e.g. chemical composition of its pollination drops). The results strongly support beetle pollination. Also forming part of my thesis is a survey of heat production in cycad cones. Virtually all of the 35 species (from all 10 genera) I have examined have male cones which produce heat rythmically. The one striking exception is Stangeria. This heat production appears to be associated with the volatilization of odors that I believe function to attract insect pollinators. I am just beginning to start chemical analyses of these scents with Olle Pellmyr, a Swedish botanist with access to a gas chromatograph-mass spectrometer. We are interested in identifying the scents chemically and eventually in testing them on sus=pected cycad pollinators. I would like to know if there is anyone in South Africa who would be interested in pos=sibly collaborating on testing odors on the cycad beetles there.

A side project I am also pursuing is the spatial and temporal seed dispersal pattern of the local Zamia. These research projects should be published sometime next year.

WILLIE TANG
DEPARTMENT OF BIOLOGY, UNIVERSITY OF MIAMI, FLORIDA, USA

Sir,
Could you please advise me of the names and countries of origin of the non-South African Encephalartos species? Where can one find literature on these species?

HERMANN KISTNER
GREYTOWN

Roy Osbornereplies:

According to the information we have available, there are 43 different species of Encephalartos, of which 15 do not occur in South Africa. These are listed in "A world list of cycads" elsewhere in this edition of ENCEPHALARTOS, with the areas from which they have been reported.

In addition, there are at least two more species yet to be described. We know of one from Kenya and one from Mozambique which are presently under investigation.

As far as the literature is concerned, the best I can do is to tell you of those publications I know of personally; there certainly are others. I have found the various National Herbarium libraries very helpful in looking for publications of this sort, and have come across the following:

J.B. HALL &J.JENIK (1967), "Observa=tions on the West African Cycad in Ghana", The Nigerian Field, Vol. 32(2) :75-81.

M.J. KIMBERLEY (1979), "Cycads in Zimbabwe", Excelsa No. 9: 11-17.

LETTERS BRIEWE LETTERS BRIEWE

D. HEENAN (1977), "Some observations on the cycads of Central Africa", Bot. J. Linn. Soc. 74(3) : 279-288.

R. MELVILLE (1957), "Encephalartos in Central Africa" , Kew Bulletin 12: 237-257.

R.A. DYER & I. VERDOORN (1969), "Encephalartos manikensis and its near allies", Kirkia 7 : 147-158

Finally I should point out that Denis Heenan, in the paper referred to above, reported the occurrence of three other species of Encephalartos which he called 'A', 'B' and 'C'. These however have not been validly described and are thus not included in the list of species given. It is almost certain that future field work will lead to the discovery of yet more species - especially from the more remote and less accessible areas of the continent.

Dear Sir

The Lowveld area has numerous well esta= blished plants at government buildings. It appears that nobody tends to or tries to cultivate these plants. Their re= production potential is negated and all plants are basically sterile. I have approached a few government departments with the idea of collecting seed and pollen, with little response. Can I get written permission to carry out such a task?

COLIN PINKER
NELSPRUIT

Roy Osborne replies:

I suggest you contact your provincial nature conservation authorities. In your case this is the Division of Nature Conservation in Pretoria. The person to contact is Mr J.L. Erasmus (Private Bag X209 or tel. no. 2802348). I have found the authorities most helpful with nearly all such enquiries.

FROM THE BOOKSHELF

'THE CYCAD GARDEN OF UNISA / DIE BROOD= BOOMTUIN VAN UNISA'
BY PROFESSOR B.P. BARKHUIZEN, PUBLISHED BY UNISA, 1975

This bilingual publication followed the decision of the University of South Africa in 1973 to establish a major indigenous garden at Muckleneuk Ridge, overlooking Pretoria, with a special area devoted to an extensive cycad col= lection. Twenty-three of the seventy-seven pages of text deal with cycads; the first few are generally descriptive with a leaflet key of rather limited usefulness. Twenty-eight Encephalartos species are described fairly briefly and - the main feature - illustrated with some excellent (and some rather familiar) colour plates, for which the Botanic Research Institute is given credit.

The book may be ordered from the Director of Publishing Services, University of South Africa, PO Box 392, Pretoria 0001, at a retail price of R14,55 plus GST. Alternatively, if one just wants to glance through the pictures, it is quite readily available from most municipal libraries.

Another publication by Professor Barkhuizen has recently been published by Unisa. This is 'Bome, Struike en Voëls van Unisarand / Trees, Shrubs and Birds of Unisarand'. I am told by Unisa that this is a prestige book with 66 colour plates, available at the same address as given above, at a price of R35,70 plus GST.

Roy Osborne