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NEWS-LETTER OF THE SOUTH AFRICAN ASSOCIATION OF BOTANISTS
NUUSBRIEF VAN DIE SUID-AFRIKAANSE GENOOTSKAP VAN PLANTKUNDIGES

BOTANICAL RESEARCH INSTITUTE, REVIEW OF WORK, April 1983 - March 1984
(continued from last issue):

FLORA RESEARCH SECTION

Flora of Southern Africa (FSA)

Thanks to support from the Department in the form of a research contract and a fellowship the Flora of Southern Africa subproject was further promoted both nationally and internationally. The initiation of a volume on lichens deserves special mention in this context.

A special session on the F.S.A. was held during the S.A.A.B. congress in January and news of this was included in Forum Botanicum.

Three fascicles were published: (1) Vol. 7,2,2 (M.P. de Vos) dealing with Syringodea and Romulea of the Iridaceae; (2) Vol. 21,1 (late Prof. H. Wild) on Tiliaceae, and Vol. 33,7,2 (Prof. O.M. Hilliard) dealing with part of the Gnaphaliinae of the Asteraceae. Two fascicles are in press and will be published during 1985: (1) Vol. 4,2 dealing with Xyridaceae to Juncaceae and (2) Vol. 28,4 on Lamiaceae. The volume on Pteridophyta by Prof. E.A.C.L.E. Schelpe and Vol. 14 on Crassulaceae by Dr. H.R. Tölken are at an advanced stage of editing and will go to press during 1984.

A catalogue of South African green, brown and red marine algae, compiled by Prof. S.C. Seagrief of Rhodes University in Grahamstown, went to press and will be published soon.

Institute members reported as follows on progress made with research fascicles on volumes of the F.S.A.:

Lichens: A volume on lichens is being planned. The project is co-ordinated by Dr. O. Almborn of Lund, who worked in South Africa as a research fellow of the Department. Mr. F.A. Brusse of the Institute and more than 20 overseas researchers are cooperating on the project.

Bryophyta: The major part of fascicle 2, covering Funariales and Bryales was completed by Dr. R.E. Magill before he returned to the Missouri Botanical Garden. Work on the outstanding family Bryaceae was continued by Mr. J. van Rooy and should be completed soon. Work on fascicle 3 is also in progress.

Vol. 2: Poaceae: It was agreed in principle that in a few large families, such as the grasses, it would be permissible to publish Prodromus or Conspectus volumes in advance of the full Flora account.

Register of names and types for Poaceae: Photocopies of original descriptions of about 1 200 grass names were pasted on A4 paper and filed. It was found that in Poaceae (as in Mesembryanthemaceae) there are about four times as many names in literature as there are accepted taxa.

Oryxoideae, Centostecoideae and Bambusoideae: Dr. G.E. Gibbs Russell divided the genus Ehrharta into seven groups and the vegetative and spikelet characters of each group were tabulated. The treatment of species with bulbous bases is largely complete.

Vol. 4: Restionaceae: The generic revision dealing with the 19 genera distinguished in the family has been completed by Dr. H.P. Linder and has been submitted to Bothalia. The paper includes chapters on palynology, culm anatomy, morphology, phytochemistry and testa morphology. A conspectus listing about 320 species and dealing with nomenclature, typification, keys, new descriptions and new combinations is near completion. Descriptions of 55 new species were prepared and 83 new combinations were made.

Xyridaceae, Eriocaulaceae, Commelinaceae, Pontederiaceae and Juncaceae: Fascicle 4,2 dealing with these families, and prepared largely by Mrs. A.A. Mauve, has gone to press.

Vol. 5: Asparagaceae: A revision of Myrsiphyllum, dealing with 12 species, was prepared by Mrs. Mauve and sent to press. Work on Protasparagus was largely completed by the same researcher. The genus is divided into two subgenera and in southern Africa 64 species were found of which 17 are new.

Vol. 8: Orchidaceae: The genus Disa, revised by Dr. Linder, was adapted to Flora format.

Vol. 11. Mesembryanthemaceae: Draft revisions of the minor genera Astridia, Acrodon, Bergeranthus, Disphyma, Carruanthus, Cerochlamys, Eberlanzia and Rhombophyllum were drawn up by Dr. H.F. Glen.

Vol. 16. Fabaceae-Desmodieae: An account of this group is being written up in thesis form by Mr. B.D. Schrire.

Vol. 21. Tiliaceae: The revision compiled by the late Prof. H. Wild and updated by Dr. L.E. Codd was published as fascicle 21,1.

Vol. 25. Ericaceae. Mr. E.G.H. Oliver completed the revision of Scyphogyne in which he recognizes 11 species. Ericinella with three species in the Cape outside Capensis and one in Malawi was finalized. Philippia was also finalized and a start was made on the revision of Salaxis and Coccosperma. Some work was done on Erica.

Vol. 28. Lamiaceae: An account of the family, written by Dr. Codd, was sent to press as fascicle 18,4. Leonotis was contributed by Mr. M. Iwarsson of Uppsala.

Vol. 30. Acanthaceae - Justicia. The final write-up of the genus was completed by Miss K.L. Immelman and submitted to the editor. Twenty-two species and six subspecies are distinguished in Southern Africa. Siphonoglossa and Aulojusticia, two small closely related genera, have also been investigated and it is planned that they, together with Justicia and Monechma (recently completed by Mrs. J. Munday of Witwatersrand University), form a fascicle of the F.S.A.

Ceropegia and related genera

A semi-popular account of Ceropegia, Brachystelma and Riocreuzia by Dr. R.A. Dyer was published by A.A. Balkema.

History of plant collecting

Dr. Codd has collected biographical notes on a total of 44 collectors whose names appeared in Botanical Exploration of Southern Africa without supporting information. In addition, 27 biographies have been gathered of collectors not originally included in the book. It is proposed to publish this supplementary information in Bothalia.

Pretoria Flora

A further 93 pages (57 English, 30 Afrikaans) of camera-ready copy were produced at the Institute. Some 50 typeset pages were sent to the Language Bureau for translation into Afrikaans.

Palaeoflora of Southern Africa

The first volume on the Molteno Formation, written by Drs. J.M. and H.M.

Anderson, which deals with the ubiquitous gymnosperm genus Dicroidium, was published by A.A. Balkema. Volume 2 on the other gymnosperms of the formation is nearing completion. A companion volume, Prodromus of Southern African fossil floras (Devonian to Lower Cretaceous), will go to the printers shortly.

Liaison Officer, Kew

The present incumbent, Dr. Linder, furnished information on taxonomic and related subjects to researchers in Southern Africa and overseas. His research centred mainly on the Restionaceae.

PLANT STRUCTURE FUNCTION SECTION:

This section is still accommodated in Velcich House and the laboratories are functioning efficiently despite early problems. Mrs. R. Botha left us during October 1983 after completing her studies on applied grass leaf anatomy. She is to be replaced by Mr. P.P.J. Herman who is to concentrate on wood anatomy. Miss A. Alberts successfully completed her National Diploma in Agriculture.

Comparative grass leaf anatomy

During August 1983, Dr. T.R. Soderstrom of the Smithsonian Institution, Washington, spent three weeks with Dr. R.P. Ellis discussing and evaluating their joint work on bamboo leaf anatomy. Over 275 bamboo taxa have been studied anatomically and the indications from this study are that the classification of the Bambusoideae is in need of revision. Anatomical criteria appear to be very useful at the tribal and sub-tribal levels but do not yet contribute significantly to generic delimitation as the sample is still too small.

Grass identification by epidermal structure for herbivore food preference studies

Mrs. Botha has completed her studies on the epidermal variation of three widely distributed South African grasses. Her results were submitted as a thesis for which she was awarded an M.Sc. degree by the University of Pretoria. This work clearly demonstrated that the abaxial leaf blade epidermal features are not representative of the epidermis of the whole plant and that the adaxial leaf blade epidermis, the leaf sheath and culm epidermis differ considerably from the abaxial leaf epidermis which is usually used as a reference. This observation, therefore, questions one of the basic assump= tions for the technique of microscopic faecal analysis.

Cytogenetic sutdies

The cytotaxonomic study of Lantana camara has been completed by Mr. J.J. Spies. The results of this study show that this species is still actively evolving and it was found to be impracticable to define infraspecific taxa. Any such classification will be artificial with continual hybridization occurring between the groups. A group of plants was identified which are more advanced and may possibly represent the basis for the formation of subspecific taxa.

Mrs. H. du Plessis is now giving her attention to a similar study of Rubus. Chromosome numbers of 11 of the 17 species, found in South Africa, have been determined. Five of these species have been found to be polyploids. This high incidence of polyploidy probably results from hybridization.

Mr. Spies and Miss Alberts have just commenced a study of the chromosome numbers of the Poaceae and have tested various techniques. Seed of most of the species of Sorghum has been received and a cytotaxonomic study of this genus will be undertaken. Co-operation with the Institute for Ecological Research (Potchefstroom University for C.H.E. and the National Transport Commission) continues with the study of reproduction of Eragrostis curvula. Mrs. J.C.P. Spangenberg has been seconded to the Botanical Research Institute to assist with this work.

DATA SUB-SECTION:

Data Sub-Section serves the needs of the Institute for electronic data processing, using the Burroughs 7800 computer of the Department of Agriculture and a Hewlett-Packard 9845B microcomputer belonging to the Institute. Dr. G.E. Gibbs Russell is Data Officer and is responsible for liaison between Data and the needs of individual Sections of the Institute, as well as for broad applications of the Herbarium database, PRECIS. The datametrician, Mr. N.P. Barker, is seconded to the Institute from Biometry and Datametrical Services. He supervises the entry of new specimens into PRECIS, the correct running of all the PRECIS programs, and provides information from the system, both for routine Herbarium applications and for special research requests. Mrs. J.C. Mogford is in charge of quality control for PRECIS, in both newly-entered and in backlog specimens. Encoding and punching new specimen information and updates to existing specimens is done by Mrs. J.H. Jooste, Mrs. E.B. Evenwel and Mrs. H.P. van der Westhuizen.

VEGETATION ECOLOGY SECTION

The full-scale significant recent development concerning ecological research has been the division of the former Ecology Section into two Sections, viz.

the Vegetation Ecology Section and the Experimental Ecology Section. The activities of these two sections are, accordingly, reported on separately.

Transvaal bushveld studies

The full-scale study of the plant ecology of the Waterberg bushveld by Mr. R.H. Westfall is in the planning and reconnaissance phase. Messrs Westfall, M.D. Panagos and J.F. van Blerk have developed a method for field identification of taxa. Computerized field-data capture has also been developed and is nearly operational. A technique being tested for pattern recognition in vegetation-enhanced satellite imagery shows promise for the Waterberg area, which should greatly facilitate stratification of the area for sampling.

Transvaal forest survey

Mr. G.B. Deall has refined the results of his study in the Sabie area. He has distinguished a total of 62 syntaxa (plant communities and variants) occurring throughout eight broad physiographic zones. These syntaxa are grouped into four ecological-formation classes on the basis of physiognomic and ecological criteria, thus:

(a) Forest and mesic Thicket of the Mistbelt and Low Country (20 syntaxa);
(b) Woodland and xeric Thicket of the Low Country (22 syntaxa);
(c) Woodland of the Humid Mistbelt (7 syntaxa); and
(d) Grassland of the Humid Mistbelt (13 syntaxa).

Coastal studies

The suitability of aerial photographs for monitoring emergent and submerged macrophytes has been studied by Dr. P.J. Weisser, using material from the Wilderness Lakes. He has also revised the manuscript on conservation priorities in the dune area between Richards Bay and Mlalazi Estuary which is nearing completion for publication. He completed a reconnaissance of conservation priorities in Reserve 7, Zululand (between Tugela River and Mlalazi Estuary) and has submitted his report to the Committee for Controlled Utilization of Natural Resources (Zululand Coast).

Data collected on the Cape south and west coasts have been prepared for a book on Dry Coastal Ecosystems in the Ecosystem of the World series. In one chapter, Messrs H.C. Taylor and C. Boucher describe the main communities of the dunes and cliffs between Cape Town and Port Elizabeth, discuss their relationships and summarise information on exploitation and conservation of the coastal ecosystems. In another chapter by Mr. Boucher and Miss A. le Roux, the strand zone plant communities found along the Cape coast between Algoa Bay and the Orange River mouth have been described and their distributions

have been mapped. The communities form natural groups which can be correlated with major inland vegetation boundaries, despite the expected overriding influence of the close proximity to the sea.

During this year, Mr. M.G. O'Callaghan undertook field trips to eight estuarine systems and published articles on three systems under the auspices of the Estuarine and Coastal Research Unit (CSIR). He also conducted much field work at Kleinmond, sampling the aquatic and semi-aquatic vegetation. He is preparing two articles discussing the vegetation of the rivers entering False Bay.

Cape Fynbos studies

(a) Vegetation survey of the Cape of Good Hope Nature Reserve. The data gathered in monitoring the encroachment of invasive alien woody plants over the period 1966-1980, have been analysed and written up as two papers by Mr. Taylor and Mr and Mrs I.A.W. MacDonald. In 1966, three Australian acacias (Acacia cyclops, A. saligna and A. longifolia) and Pinus pinaster were the most serious invaders. In 1976-1980 P. pinaster, which had been selectively cleared in the interim, was less serious, but the other invaders had increased both their densities and distribution ranges.

(b) The vegetation of the Cedarberg. Mr. Taylor started work on an ecological study of the mountain fynbos vegetation of the Cedarberg State Forest and the adjoining Mountain Catchment Areas at a semi-detailed scale to establish the practical significance of these communities.

(c) Structural classification of mountain fynbos. Mr. B.M. Campbell is finalizing the research facet to develop a structural-functional classification of mountain fynbos. A series of research papers emanating from this work has been published during the recent past. The definitive publication is being prepared as a Botanical Survey Memoir.

(d) The vegetation of Swartboschkloof, Jonkershoek. Mr. D.J. MacDonald has completed his study of the fynbos and forest communities of Swartboschkloof. He used the TABSORT computer programme package to analyse the data. Sixteen Mountain Fynbos communities, grouped into three groups, and five Forest communities grouped into two groups have been identified. The data of a previous study of the same area have been re-analysed and interpreted in the context of this study. Two publications on this work are being prepared.

(e) A semi-detailed regional ecological study of the western lowland fynbos. Mr. Boucher has analysed and mapped the plant communities found along east-

west aligned transects through the western Cape coastal foreland on 46 maps with a scale 1:10 000. These maps have been reduced to a scale of 1:50 000 for comparison with the land-type survey maps of the area, when these become available during 1984.

Monitoring vegetation change

Long-term monitoring of bushveld vegetation, under various treatments, has begun at the Matimba Power Station, near Ellisras in the north-western Transvaal, where a 4 ha plot has been set aside for observation. Two 10 x 10 m permanent plots have been selected (one in the open, the other in more dense vegetation) and surveyed by Messrs Panagos and Westfall using 1 m² quadrats.

Misses A. Stadler and A.P. Backer are monitoring vegetation of the Siyaya Catchment near Mtunzini, Natal, by marking 392 trees and laying out 21 permanent plots. After one year of monitoring about 15% of the marked trees had died, mainly because of the effects of the cyclones Demoina and Imboia. Tree growth rates over the last year range from 0,28 to 2,06 m in height.

DEPARTEMENT PLANTKUNDE, UNIVERSITEIT VAN STELLENBOSCH:

1. Junior Kaptein Scott-medalje: Die president van die Suid-Afrikaanse Biologiese Vereniging het sopas bekend gemaak dat die Junior Kaptein Scott-medalje aan mnr. Ben-Erik van Wyk toegeken is. Hierdie medalje word twee=jaarliks toegeken vir die beste M.Sc.-tesis in plantkunde wat die afgelope twee jaar aan 'n Suid-Afrikaanse Universiteit ingedien is. Die beoordeling word gedoen deur 'n paneel wat deur die raad van die vereniging aangewys word. Mnr. Van Wyk het verlede jaar die M.Sc.-graad (cum laude) in plantkunde by die Universiteit van Stellenbosch behaal met die tesis "'n Monografiese studie van die genus Virgilia Poir." (Virgilia is die geslag waaraan die keurboom behoort). Prof. J.J.A. van der Walt, voorsitter van die Departement Plantkunde, het as studieleier opgetree. Dit is die tweede keer dat hierdie medalje aan 'n M.Sc.-student van die Departement Plantkunde toegeken word: mnr. R.O. Moffett het in 1980 ook hierdie eer te beurt geval.

2. Besoekende Israelse Plantkundige/Tuinboukundige: Dr. Michael Avishai van die Hebreeuse Universiteit in Jerusalem, het 'n toekenning van die NCRD/WNNR ontvang om vanaf 15 September vir 'n tydperk van twee maande 'n studiebesoek aan Suid-Afrika te bring. Hy sal in die grootste gedeelte van sy besoek die gas wees van prof. J.J.A. van der Walt, voorsitter van die Departement Plant=

kunde. Dr. Avishai stel belang in fynbosplante wat in die nuwe Botaniese Tuin van die Hebreeuse Universiteit van Jerusalem aangeplant kan word.

3. Besoekende plantkundige uit Nieu-Seeland: Dr. B.A. Fineran van die Universiteit van Canterbury, Christchurch, sal vanaf 1 Oktober 1984 tot 30 Maart 1985 aan 'n navorsingsprojek in die Departement Plantkunde werk. Hy spesialiseer in die ultrastruktuur van parasitiese plante en hy sal saam met prof. J.H. Visser, wat ook 'n outoriteit op parasitiese plante is, werk. Dr. Fineran sal van sy gesin vergesel word.

4. Besoekende Duitse Tuinboukunde-student: Mnr. Frank Horleman van Nürtingen-Hardt, Wes-Duitsland, wat besig is om hom as tuinboukundige te kwalifiseer, sal praktiese werk as deel van sy kursus in die Botaniese Tuin van die Universiteit van Stellenbosch kom doen. Hy sal vanaf 1 Oktober 1983 tot 28 Februarie 1985 in Stellenbosch wees.

PROTEA EVENT OF MAJOR INTERNATIONAL IMPORTANCE, AUGUST 1985: In 1985 a major event in the world of proteas will take place in South Africa. This will be a joint effort combining the Third International Protea Con= ference and the First International Research Symposium.

Every two years the International Protea Association, formed in 1981 with the aim of developing the Proteaceae plant and cutflower industry, holds an international conference. 1981 saw the First Conference take place in Melbourne, Australia and 1983, the Second Conference in Hawaii, U.S.A. Both these countries originally introduced the protea from South Africa and having suitable climatic and soil conditions in some areas have been very successful in promoting its cultivation and laying the foundation for a new branch of floriculture. Similar developments have taken place also in New Zealand, Israel and elsewhere.

This is the first time the Conference will take place in the country of origin of this flower and its main emphasis will be placed on viewing the protea in its true habitat with visits to natural areas, a flower market, and protea farms where comprehensive growing techniques, handling and marketing techniques will be observed.

The Research Symposium on the other hand will be held under the auspices of the International Society for Horticultural Science (ISHS). A Protea Research Working Group recently formed under the Ornamentals Section of the ISHS will meet at that time and hold this first research symposium on the subject. In this instance the emphasis will be placed on formal

sessions at which papers will be presented and discussions held on all the most recent research aspects of growing proteas, from breeding and propagation to post-harvest handling.

A wide international attendance by prominent growers and researchers is expected at these two events which will run concurrently from 25 August to 1 September 1985, starting in Johannesburg and proceeding to the Cape. Pre and post congress tours to places of protea and tourist interest are also planned.

All practical arrangements have been placed in the hands of a local organising committee and a First Circular containing detailed information can be obtained by writing to the Conference Secretariat, Private Bag X5013, 7600 Stellenbosch, Rep. of South Africa, or by telephoning Mrs. M. McNamara at 02231-2001 (telex 57-24147 SA).

PUBLICATIONS:

Ceropegia, Brachystelma & Riocreuxia in Southern Africa by R. Allen Dyer. 1983, 250 x 180 mm, 274 pp. 20 colour plates, R.40-00.

The appearance of illustrated works on the Flora of Southern Africa is always to be welcomed especially if they are well produced and authoritative. Books on our very rich succulent flora have been numerous. Therefore it is with great interest that we see this book appear, yet another from Balkema.

There is no better person qualified to deal with these fascinating plants than Dr. Dyer who has made a special study of them over a number of years. He was the first botanist to receive S.A.A.B.'s prestige Gold Medal in recognition for his great contribution to South African Botany in many fields over so many years.

Firstly despite this wealth of 'succulent' books, some good some poor, this book is important because it deals with a fascinating group of plants that have received very little attention so far, perhaps because most of them are not all that succulent despite belonging to the famous Stapelieae. Many of them are extremely rare or difficult to find and are seen only by the real specialist (unfortunately some unscrupulous collectors as well).

This book represents the popular account, which I am sure will attract botanists as well, of Dr. Dyer's revision of the three genera published recently in the Flora of Southern Africa. The main addition is the wealth

of drawings, a few in colour but most as line drawings or black & white photographs. Most of the 19 excellent colour paintings are by Auriol Batten of East London, the rest by various other wellknown botanical artists thus giving quite a range of styles of painting. It is a pity that so few colour plates are included but at R40 one would not have wanted the price of the book any higher.

It is unfortunate that these colour plates are so haphazardly (for the reader) arranged, sometimes far from the text covering the relevant species. For example the colour plate of Brachystelma ngomense is on p. 118 with the text on p. 78 and this is surprising seeing that it is a tipped in page and not part of a binding section - mine of course came away in my hand!

For those species not in colour a black & white line drawing by Rosemary Holcroft is provided in most cases. Black & white photographs of colour plates, live cultivated plants and herbarium specimens are also provided - in fact the whole spectrum of types of illustration. The line drawings are clear and give a good impression of the species but (through no fault of the artist) are poorly set out with the wrong format producing large spaces of white paper next to each one, pp. 202 and 203 being good examples. They look very much like full page drawings reduced to two-thirds as reference to the artist's initials and labelling will show.

Each species is provided with its known geographical distribution on a map, often several per map. Here I find distinguishing distribution ranges very trying with rather similar symbols being used. Reference to a number of maps such as those on pp. 47, 107, 216 and 232 will show what I mean. The map on p. 58 appears to leave one species, B. occidentale out and does not show the localities of B. thunbergii in the S.W. Cape.

Let me not detract from a very worthwhile book. Although Dr. Dyer in the Epilogue bemoans the fact that this account is inadequate, it does provide a wealth of information on some very fascinating and unusual plants, 69 spp of Brachystelma, 51 spp of Ceropegia and 8 spp of Riocreuxia. Many amateurs and professionals will know a number of species of the genus Ceropegia but few will have ever seen Brachystelma or Riocreuxia. This book should produce many admirers of this group of the Stapelieae, but let us hope that it does not create a rush to acquire these rarities from the veld thereby ensuring the extermination of many of them. (E.G.H.O.)

MEDICAL PLANTS AND TRADITIONAL MEDICINE IN AFRICA by Abayomi Sofowara Chichester: John Wiley & Sons. 1982, pp. 256, 17 black & white photographs. Price

This is a textbook aimed primarily at students of medicine and pharmacy in the developing countries of Africa. Its botanical content is limited to chapters on: methods of obtaining information on botanical plants, some common medicinal plants and guidelines for research on medicinal plants. About 10 medicinal plants are dealt with in some detail, whilst the index indicates that about 50 species are mentioned somewhere in the text. The index is, however, not exhaustive and more species are referred to in the text.

Possibly the most valuable botanical information is the list on page 192, of African plants that have appeared 50 or more times in the NAPRACERT computer master datebase. There are also tables containing lists of plant drugs suitable for production by developing countries, and other information of value in determining guidelines for research.

This may well prove to be a useful textbook, and its author is to be congra= tulated on his analytical approach, but its botanical content is limited and hardly justifies the accent in the title of the book. (M.J.W.)

COEVOLUTION by Futugma, D.J. & Slatkin, M. (1983). Published by Sinauer Associates Inc., Scadeland, Massachusetts, sold in Britain at about £18-00.

This 555 page paperback is a collection of 19 papers, covering almost the complete range of modern coevolutionary theory, and would come as an excellent summary of where the field is now. Of interest to botanists would be D.H. Janzen's paper on seed dispersal in vertebrate guts, D.J. Futugma on the interactions between herbivorous insects and plants, and Feinsinger's chapter on coevolution and pollination. The other chapters are of more zoological and theoretical interest, and are also excellent. The book appears to indi= cate a drift from wide-ranging, imprecise theories or concepts, as were popular in the 1970's, to the compilation of precise case studies. This is tied to the realization that nature's complexity cannot as yet be adequately summarized by these earlier theories, and that they lost too much detail. (H.P.L.).

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EDITOR/REDAKSIE

Mr. E.G.H. Oliver
P.O. Box 471
7600 STELLENBOSCH.