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

AETFAT 1982: The 10th Congress of the Association Pour l'Etude Taxonomique de la Flore d'Afrique Tropicale (AETFAT) was held at the CSIR conference centre from 18-23 January, 1982. The congress was presented by the Department of Agriculture and Fisheries (Botanical Research Institute) and organized by the AETFAT Secretariat and the South African Association of Botanists with the assistance of the Symposium Secretariat, CSIR.

AETFAT 1982 was opened by the Hon. Mr. P.T.C. du Plessis, Minister of Agriculture and Fisheries and was attended by 250 delegates from 23 countries. Many renowned botanists were present and all of them have a particular research interest in the African flora. Ironically, although AETFAT is primarily an association for the taxonomic study of the African flora, this was the first meeting held on the African continent. This significant break from tradition enabled foreign visitors to study the local flora on the post congress tours to the Northern Transvaal and South-Western Cape. This first hand experience with field conditions may further stimulate the continuation of research on our indigenous plants with obvious benefits for South African botany.

The general sessions were preceded by a two-day symposium on the origin, evolution and migration of African floras. Invited speakers presented an overview of the present state of knowledge of the evolution of African floras and vegetation, particularly as a result of continental drift and climatic change. An attempt was made to link these facts to the distribution, composition and diversity of present day floras and vegetation in an attempt to unravel their history. This is a very diverse subject including a period of 3 500 m.y. from Precambrian fossil floras to the present day. In the present day floras topics such as plant geography, diversity and migration, endemism and dispersal are useful in interpreting the history of the continent. Past and present landscapes, climates and vegetation are also relevant and phytosociology, distribution, climate, soils and biotic factors were also discussed with particular reference to relics of past vegetation, elements

of distinct origin and palynology.

In the keynote address, Dr. P. Raven (USA) reconciled the theory of past continental movements and plate tectonics with present day flora distributions particularly of the southern Hemisphere. By this means transoceanic affinities and discontinuities between Africa and Australia and South America can be explained. The unicellular organisms of the Precambrian fossil flora were discussed by Dr. H.H. Knoll (USA), the pteridophytes and gymnosperms of the Silurian to Cretaceous periods by Drs. J.M. and H.M. Anderson (RSA) and the angiosperms of the Tertiary by Dr. J.A. Coetzee (RSA) and Prof. E. Boureau (France). The angiosperms of the Quaternary in southern Africa were dealt with by Prof. E.M. van Zinderen Bakker (RSA) and north-tropical Africa by Dr. J. Maley (France). Dr. J. Vogel (RSA) dealt with isotope methods for obtaining evidence for past climates and vegetation in South Africa.

Present day floras also received attention and Mr. F. White (England) discussed the interpretation of plant discontinuities and stressed the conflict between viewing them as relics or as the result of long distance dispersal. Prof. M.J.A. Werger (Netherlands) dealt with the inter-relationship between vegetation and plant communities through history. Prof. P. Quézel (France) discussed the origins and evolution of the North African flora and emphasized the importance of the Saharan mountains as possible pathways for migration from north to south. Aspects of the phytogeography of certain plant groups were discussed in relation to the origin of African floras. Prof. E.A.C.L.E. Schelpe (RSA) discussed the Pteridophyta, Dr. W.D. Clayton (England) the Poaceae and Mr. E.G.H. Oliver (RSA) the phytogeographical significance of present day Cape taxa. Prof. J.P.M. Brenan (England) summarized the symposium proceedings.

The general section included parallel sessions for such topics as vegetation mapping and ecological studies, floristics and plant geography, taxonomy and morphology and ethnobotany and uses of African plants. Nineteen papers over one and a half days were devoted to vegetation mapping and ecological studies, nearly half being concerned with aspects of vegetation survey and regional vegetation ecology.

J.C. Scheepers (RSA) reviewed progress with vegetation studies in South Africa since the last review at the 1966 AETFAT Congress, showing that methodological approaches had stabilized but there was nevertheless activity in a wide range of topics. Th. Muller (Zimbabwe) presented a case for the

need for a vegetation survey of Zimbabwe, a developing country, to produce a classification based on floristic criteria, while D. Edwards (RSA) presented the bases of a consistent, easily understood, physiognomic-structural system of vegetation description and classification to be used in conjunction with floristics and habitat descriptions of vegetation. A quantitative ecology paper by G.J. Bredenkamp (RSA) on the interpretation of plant communities, using agglomerative cluster analysis and principal components analysis of soil variables, related these classificatory and ordination approaches to the standard phytosociological approach to obtain meaningful habitat classes. J.F.V. Phillips (RSA) in a restatement of his regional bioclimatic approach pointed to its utility in Africa and its recent applications in Southern Africa. Four papers dealt with specific regional studies. C. Boucher (RSA) described the general floristic composition and structure of veld types as related to soil, climate and history in the western Cape Forelands, and R. Lubke (RSA) gave a detailed account of the colonization and plant succession on sand dunes, dune slacks and rocky outcrops of the coast near Port Alfred in the eastern Cape. F. van der Meulen (Netherlands) compared terrain form, climate, soils and land use with the floristic productivity and structure of the vegetation along a broad transect from Botswana to the Western Transvaal. Woody vegetation communities and the mapped land units were discussed by R.N. Porter (RSA) in relation to wildlife management problems and management practices for the Hluhluwe-Corridor-Umfolozi Game Reserve Complex in Zululand.

The remaining ten ecological papers covered a wider range of topics. R. Letouzey (France) put forward an hypothesis based on lowering of the hydrostatic levels to account for the presence of single species populations in forests of the southeast Cameroons, and similarly to account for the peculiar vegetation of certain mountains subject to recent tectonic and volcanic activity.

Two papers were given on fire in vegetation. Based on climatic (including lightning activity), vegetation and fuel characteristics, D. Edwards (RSA) indicated the three main categories of fire-regime for South Africa as being a winter rainfall fynbos type, a summer rainfall grassland-savanna type, and an arid Karoo type. A.F. Jacot Guillarmod (RSA) recorded the seed and other regenerative responses of eastern Cape Fynbos after fire, and of the stimulating effect of fire on alien weed germination. The fast changing dune vegetation dynamics as monitored by air photos from 1937 to 1976 were related by P.J. Weisser (RSA) to changes in management system that had earlier caused considerable degradation. The annual habit and

non-sexual (apogamous) reproduction of Selaginella tenerrima was experimentally demonstrated in a paper by J. Kornás (Poland) as an adaptation to drought conditions and shown as an evolutionary adaptation for occurrence of such species in the drier parts of Africa from Nigeria to Zambia. In another paper on the ecology of individual species, H.E. Hartmann (W. Germany) also showed how the anatomy, morphology, life cycles, physiology and energetic properties are developed in different ways to adapt different species of vygies (Mesembryanthemaceae) to arid conditions in the western Cape.

Finally, four papers considered the influence of weeds on the African Flora. For the National Weed List, M.J. Wells (RSA) grouped weeds into their major taxonomic groups, alien versus indigenous weeds, and the different kinds of weeds. V.M. Engelbrecht and M.J. Wells (RSA), in two separate papers, then discussed the power shifts caused by weeds in the indigenous flora. Relatively few invasive species appear to be displacing a large number of indigenous rare and threatened species, the main invasive weed group being herbs from Europe and Asia and trees from Australia, with South America probably having the greatest potential to provide South Africa with new serious weeds. I.A.W. MacDonald (RSA) then showed that the twenty alien trees, shrubs and climbers invading indigenous vegetation in the Hluhluwe-Umfolozi Game Reserve Complex in Natal, thirteen posed a serious threat to the integrity and conservation of the natural ecosystems represented in the Complex.

From the opening address to virtually the last paper on the programme including those on specialist fields such as taxonomy and ecology, there was evidence of a strong concern for the need to bridge the gap between pure and applied botany in the interests of conserving natural resources and boosting food production. In the sessions on ethno-botany and the uses of African plants speaker after speaker re-iterated the need to conserve gene plasm of useful plants, whilst in the session on conservation, the utilization of indigenous plants was seen as the key to their being valued and protected.

Papers by L. Aké Assi (Ivory Coast), M. Kitembo (Zaire), M.S. Chuah (Ivory Coast) and J.P. Tilquin (Belgium) dealt with tribal plant use and the need for conservation in various parts of Africa, whilst C.R. Peters (USA) revealed evidence of significant competition, between primates and early homonids, for plant foods. Papers by C. Liengme, L. Henderson and G. Brits (RSA) summa-

zed existing knowledge of ethnobotany in South Africa and surveyed the use of indigenous plants as barriers and for floriculture. T. Arnold (RSA) gave a detailed account of the taxonomy of Sorghum in South Africa, and an assessment of the evolution and migration of this group in Africa. The range, frequency and preference for primitive crops shown by 3 tribal groups in South Africa, was reviewed by K. Musil (RSA).

Papers in the section on conservation and environmental ecology read by S. Talukdar (Lesotho) and A.V. Hall and J.C. Scheepers (RSA) probed various conservation problems. These papers, together with a conservation evening in the social programme emphasized the tremendous wealth and fragility of the southern African flora and vegetation. This was echoed in a resolution of the general meeting. It was encouraging to note the amount of good data being gathered to indicate centres of species richness and the conservation needs of particular vegetation types, and to find botanists becoming involved at every level in conservation and utilization studies.

In two sessions on floristics and plantgeography 12 papers were presented. The increasing knowledge of the movement and spatial relationships of the continental masses and their climatic regimes during the last 120 million years has helped phytogeographers and taxonomists to gain a better insight into the evolution and migrations of floras and plant groups. P. Goldblatt (USA) on Iridaceae and R.B. Faden (USA) on Commelinaceae, interpreted the distribution of members of these families in the light of painstaking analyses done in the course of several years. J. Lambinon (Belgium), one of the very few delegates who concerned himself with cryptogams, dealt with the lichen flora of Central Africa. Other speakers confined themselves to smaller taxa of lower rank. J.J.A. van der Walt (RSA) dealt with the approximately 200 African species of Pelargonium, while H.P. Linder (RSA) demonstrated disjunctions for the Disineae (Orchidaceae) and a few other temperate African species of wide distribution. Several papers dealt with the floras of smaller regions. F.P. Malaisse (Zaire) talked on the origin of the copper-cobalt of Upper Shaba (Zaire), while F.N. Hepper (England), I. Friis (Denmark), and J.P. Lebrun (France) discussed mountain floras. O. Hedberg (Sweden) reported on the launching of a new African flora project, the Flora of Ethiopia.

General taxonomy and morphology were best covered at the Congress. Twenty-seven papers on these subjects were presented in the course of five sessions.

All papers, except one on red algae, dealt with flowering plants. Monocots were relatively well covered with 10 papers, dicots were discussed in 14 papers, while 2 papers were of a more general nature. Both traditional and less well proven approaches and techniques were employed, usually to good effect. Examples of papers laying the main emphasis on general morphology were those of E.G.H. Oliver (RSA) who proposed a new classification for the Ericoideae (Ericaceae), by A.J.M. Leeuwenberg (Netherlands) on Plumerioideae (Asclepiadaceae), or D. Müller-Doblies (W. Germany) on the poorly known genus Gethyllis (Amaryllidaceae). T.R. Soderstrom (USA) and R.P. Ellis (RSA) backed up their morphological observations on Arundinaria tessellata (Poaceae) with detailed anatomical findings to conclude that the species should be included under Thamnocalamus.

Several papers were based mainly on anatomy. F.M. Getliffe Norris (RSA) demonstrated that the Kranz syndrome had evolved two or three times in the southern African species of Kyllinga (Cyperaceae), while M.L. Frean (RSA) discussed the occurrence of both Kranz and non-Kranz anatomy in the Alloteropsis semialata complex (Poaceae). J. Hardcastle (and K.H. Schütte) (RSA) reported on the development of aerenchyma in the roots of Restionaceae and other monocotyledons in response to moist and anaerobic conditions. Cytotaxonomic papers were presented by S.O. Oyewole (Nigeria) (Urginea spp. - Liliaceae) and F. Albers (W. Germany), who showed that the basic chromosome numbers of all 52 genera of Asclepiadaceae so far investigated was $x = 11$. The endothecium or fibrous layer of the anther was found to provide useful criteria for the taxonomist (paper by A.R.A. Noel, RSA). Other papers which put the accent on pollen structure were given by A. le Thomas (France) (Annonaceae), D. Lobreau-Callen (France) (Malpighiaceae) and M.L. Frean (RSA) (Euphorbiaceae). Epidermal features, especially as seen with the aid of the SEM were shown to be of value in determining relationships in Mesembryanthemaceae (H.-D. Ihlenfeldt, W. Germany) and Aloineae-Liliaceae (D.F. Cutler, England). P.J. Robbertse and H.J. van Rensburg (RSA) demonstrated the presence of a nucellar canal in the ovules of Momordica balsamina (Cucurbitaceae). Starch grain morphology and chromatographic profiles of sterols in the latex of Euphorbia species (Euphorbiaceae) were shown to be reliable indicators of inter-relationship between numerous species in the genus (P.G. Mahlberg, USA). Starch grains were observed on slides prepared by means of a simple, rapid smear technique.

Three papers on biosystematics, speciation and pollination were presented. R. Faden (USA) discussed isolating mechanisms among five sympatric species

of Aneilema (Commelinaceae) in Kenya, G.E. Gibbs Russell and E.R. Robinson (RSA) speculated on speciation in some grass genera in southern Africa and C.H. Stirton (RSA) demonstrated nocturnal petal movements observed in 48 genera of Asteraceae. He recognized seven night petal positions which were clearly distinct from the day position of the same species.

SUID-AFRIKAANSE TYDSKRIF VIR PLANTKUNDE: Die S. Afr. Tydskr. vir Plantkunde sal vir twee jaar gratis aan 'n maksimum van 200 persone en/of organisasies telande en in die buiteland, wat nie lid van die SAGP is nie, gestuur word met die hoop dat hulle daarná op die tydskrif sal inteken. Sal u asseblief prof. N. Grobbelaar, Departement Plantkunde, Universiteit van Pretoria, 0002, so gou moontlik maar voor 31 Maart 1982 van die name en volledige adresse van persone en/of organisasie voorsien wat u sou wou sien in hierdie reklameveldtog be-arbei moet word.

Sal SAGP-lede ook asseblief aan prof. Grobbelaar die name van daardie samevattingstydskrifte stuur waarin u voel die S. Afr. Tydskr. Plantk. se artikels opgeneem behoort te word.

SOUTH AFRICAN JOURNAL OF BOTANY: The S. Afr. J. Bot. will be sent to a maximum of 200 individuals and/or organisations that are not SAAB members in South Africa and abroad free of charge for two years in the hope of getting them to subscribe to the journal thereafter. Will you kindly provide Prof. N. Grobbelaar, Department of Botany, University of Pretoria, 0002, as soon as possible but before 31 March 1982 with the names and full addresses of individuals or organisations which you feel should be favoured in this promotion campaign.

Will SAAB members also kindly provide Prof. N. Grobbelaar with the names of those abstracting journals which you feel should refer to papers published in the S. Afr. J. Bot.

S₂A₃ MEDALS: The Bronze Medal of the South African Association for the Advancement of Science sponsored by Sentrachem Ltd, is awarded annually to a person, at each of the 17 South African universities, who during the past year, has contributed the most outstanding Master's Study in one of the branches of science. The latter includes the natural sciences as well as the human sciences which have traditionally participated in the Association.

The Medal shall give prominence to the Association on the occasion of the award at each university, and the donation of the Medal sponsored by Sentra=chem Ltd in 1980 shall be recalled.

The Medal bears the inscription "Magisterstudie - Master's Study", and the name of the university round the existing Minerva emblem; and on the reverse the existing decoration with space for the name of the recipient and the year, surrounded by "Suid-Afrikaanse Genootskap vir die Bevordering van die Wetenskap/South African Association for the Advancement of Science".

These Bronze Medals have at each university the status of one of the highest awards to a Master's Degree student at the university concerned.

All the South African universities have welcomed the presentation of these Medals and established procedures for administering the awards in accordance with these objectives. Three awards have already been made.

Mr. F.N.G. Engelbrecht of the University of the Western Cape received a Medal for his M.Sc. thesis in Botany on "A comparative anatomical study of the South African species of Olea L." which was conferred on him cum laude at a Graduation and Diploma Ceremony held on 18 July 1981.

After completing his B.Sc. and UED at the University of the Western Cape in 1966, Mr. Engelbrecht taught at the Windermere High School from 1967-1980, where he advanced to Deputy Principal in 1980 and was appointed Principal of the new Kasselsvlei High School in 1981. In the meantime he continued his studies in science at the University of the Western Cape, obtaining the degrees B.Sc. Hons. cum laude in 1977 and now M.Sc. cum laude in 1981.

The other Medals were awarded to a mathematician and a zoologist.

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EDITORS/REDAKSIE

Mr. E.G.H. Oliver (Stellenbosch)

Miss W.G. Welman and Dr. G.E. Gibbs Russell (Pretoria)

ADDRESSES/ADRESSE

Botanical Research Unit
P.O. Box 471
7600 STELLENBOSCH

Botanical Research Institute
Private Bag X101
0001 PRETORIA

(For News and Correspondence)

(For Change of Address)