Abstracts of papers presented at the 7th Meeting of the International Group for the Study of Mimosoideae[1]

I. Asian and west Pacific Mimosoideae - patterns of diversity

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An analysis of the distribution patterns of the 21 genera of Mimosoideae which are found in the Asian - W. Pacific area is presented. The tribes Parkieae (*Parkia*), Mimoseae (*Indopiptadenia, Adenanthera, Entada, Prosopis, Xylia, Dichrostachys*) and Acacieae (*Acacia* subgen. Acacia and Aculeiferum) are most strongly represented in tropical mainland Asia and the Sunda Shelf. These genera also have species either in Africa/Madagascar and sometimes even tropical America (*Parkia, Entada, Prosopis, Acacia* subgen. Acacia and Aculeiferum) or they have closely related genera in tropical Africa. The W. Pacific genus *Schleinitzia* (Mimoseae) is pantropical and is distributed both east and west of Wallace's Line.

Acacia subgen. Phyllodineae is poorly represented in the area (3 extra-Australian species) and seems to be younger than the two other subgenera of *Acacia*.

The Ingeae is the most speciose group of the area and of very diverse origin. Genera with "ancient" patterns of distributions are: *Albizia, Calliandra* and *Havardia*. *Albizia is* pantropical and seems to be older than the continental movements of the Mesozoic Era. The Asian *Calliandra* (4 spp.) and the three species provisionally referred to *Havardia* have very restricted distributions and seem to be palaeo-endemics having their closest relatives in tropical Africa-Madagascar and, perhaps, Central America. In the remaining part of the Ingeae the strongest diversification has taken place in the area east of Wallace's Line and in connection with the geologically recent formation of the Malayan Archipelago during the Tertiary: *Archidendron* is endemic to the area and seems to be of W. Malesian origin in spite of a strong diversification in Papuasia. *Serianthes is* of E. Malesian origin, *Paraserianthes* and *Archidendropsis* are of E. Malesian/W. Pacific origin, the latter genus being related to the N. Central Malesian *Wallaceodendron*. *Pararchidendron*, a monotypic genus of E. Australia, N. Guinea, Lesser Sunda Islands, Java and SW Celebes, has a distribution similar to that of many subtropical, warm temperate Australian genera that extend their ranges into the montane areas of Malesia.

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[1] See also expanded Abstracts below by Kenrick and Knox (pp. 16-18) and Playford *et al.* (pp. 19-21)

II. Diversity of neotropical *Acacia* species with emphasis in the section Filicinae

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A general overall view of the neotropical genus, *Acacia*, is presented showing the diversity of the group with emphasis in the Section Filicineae. These comprise about 35 endemic species from the neotropics and the major diversity of species is found in Central Mexico. Based on the character distribution, working cladograms are presented that support hypotheses of the relationships of this group with the other sections in the genus.

III. The *Acacia stigmatophylla* group from Northern Australia

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The group of *Acacia stigmatophylla* Cunn. ex Benth., as defined by Tindale in *Telopea* 2(1): 116-119 (1980), is redefined and enlarged to include additional species. This group is concentrated in the northern regions of Queensland, Western Australia and the Northern Territory. Some species are characterized by spicate inflorescences, whereas others have capitula. It is evident that there is a breakdown in the circumscription of *Acacia* Sect. Plurinerves (Benth.) Maiden and Betche and Juliflorae (Benth.) Maiden and Betche.

IV. Phylogeny of the Acacieae and Ingeae: a first contribution using chloroplast DNA restriction site characters

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Relationships among the closely related tribes Acacieae and Ingeae have been and remain controversial because of a large amount of parallelism among characters traditionally used. The classification of *Acacia* and generic circumscriptions in the Ingeae vary greatly depending on which character is judged as more important in assessing systematic relationships. Thus, more characters need to be examined to obtain a better understanding of the phylogeny of these groups, and to settle current controversies regarding their taxonomy.

This paper is an account of preliminary results from chloroplast DNA restriction fragment analysis. Twenty four species were selected in order to provide a representative sample of the diversity. A member of the tribe Mimoseae, *Leucaena leucocephala*, was chosen as an outgroup. Restriction fragment analysis of chloroplast DNAs of these species was carried out and the characters obtained were analysed cladistically.

Results indicate 1) relatively high levels of divergence among genera, 2) monophyly of the Acacieae, except the monotypic *Faidherbia* which is likely to be included in the Ingeae, 3) monophyly of the Ingeae, and a very particular position of *Calliandra,* distinct from *Zapoteca.* These results, if confirmed on a large number of species, could show once again that chloroplast DNA restriction site characters compared with all other known characters are helpful in phylogenetic reconstructions, providing more accurate classification schemes in such controversial groups as the Acacieae and Ingeae.

V. The chemistry of the acacias - a survey

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As pointed to and exemplified by the author (Brimer 1991) a better understanding of the chemistry of the species within the genus *Acacia* may improve especially the use of potential multipurpose species.

The present paper will present and discuss the current knowledge, with special emphasis on the following topics:

- *Acacia* species in traditional medicine
- Polyphenolics in *Acacia* gum exudates
- Essential oils and the perfume and flavour industry
- Cyanogenic constituents and the use of *Acacia* species for fodder
- Non protein amino acids

The paper is based on a review including more than 1500 articles and books.

Reference

Brimer, L. (1991). Improved utilization of multipurpose tree legumes through a better understanding of their chemistry. The *Acacia* species: a case study. An introduction to selected topics concerning minor forestry products, toxic and anti-nutritional constituents. pp. 73-93. In: Poulsen, E. and Lawesson, J.E. (eds.) *Dryland Degradation - Causes and Consequences.* Danish Sahel Workshop 90. (Aarhus University Press: Aarhus.)

VI. Progress of experimental research on the gum arabic tree *Acacia senegal* (L.) Willd. in northern Senegal

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A multidisciplinary programme of research on the gum producing tree *Acacia senegal was* carried out from 1989 to 1991 in northern Senegal (experimental plantation of M'Biddi). This

paper presents the main results obtained through a survey of 280 trees within 7 plots in 3 different sites of old sand dunes.

1. The volume of gum exuded depends on the amount of rainfall (which seems optimum when between 300 and 500 mm).
2. The sharp drop of hygrometry and the decrease in temperatures in October/November could cause water stress favouring the induction of gummosis.
3. Gummosis is enhanced on dune tops where water shortage in soil happens very early at the beginning of the dry season (early and parallel leaf fall).
4. Tapping is more successful on dune tops in October/November than in hollows where the water store is higher. Physiologically speaking the beginning of the dry season seems the more appropriate period for exudation as late tapping in hollows remains poor.

These first conclusions can help to improve methods and schedules of gum management and a more rational choice of optimum areas for tree planting and farming.