

l'esthétique, qui transcende formes et couleurs des papillons, les joies de la découverte, nourries par les voyages et l'exploration de pays lointains, l'intérêt scientifique, qui plonge ses racines dans la recherche toujours plus approfondie des origines, des formes et du devenir de la Vie.

A ce devoir de souvenir et de reconnaissance qu'il exprime à l'égard du docteur Niessen, Claude Herbulot souhaite également associer quelques-uns des grands lépidoptéristes qui ont, ensuite, conforté sa vocation et l'ont entouré de leurs conseils pour développer ses recherches et bâtir, peu à peu, son exceptionnelle collection: Le Cerf, Radot, Caruel, Dar-denne, Legras, Bayard, le marquis du Dresnay ...

Tous ces noms figurent sur des étiquettes de la collection Herbulot, témoignages d'un passé émouvant, précieux capital d'étude pour aujourd'hui, message d'encouragement à la recherche de demain ...

Pour illustrer ces propos, je vous présente le

carton de la collection Herbulot contenant le *Crocallis auberti*: en tête de colonne vous y retrouvez les exemplaires offerts par le docteur Niessen, sans lesquels, peut-être, la vie de notre ami eût pris un autre cours.

J'espère, mes chers collègues, avoir été un bon interprète de ce que notre éminent collègue Claude Herbulot souhaitait nous faire partager. Il me semble cependant que, derrière le formalisme des mots, il est un autre message, plus profond, sur lequel nous sommes invités à méditer: nous, entomologistes, avons la chance de travailler sur une parcelle de science où se mêlent étroitement l'esthétisme, la réflexion philosophique sur le sens de toute chose, la rigueur d'observation et d'analyse du chercheur ...

Au-delà des souvenirs, et à travers une exceptionnelle collection, ne serait-ce pas ce grand message de Vie et de Pensée que notre cher ami Claude Herbulot a voulu nous transmettre aujourd'hui?

Abstracts and brief versions of some talks of the Seminar Session

The biogeography of some host-specific Indo-Australian geometrid groups in relation to the break-up of Gondwanaland: trackers or fellow-travellers?

Jeremy D. Holloway

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The possibility that some Oriental groups of geometrids with relationships to Australasia were derived originally from parts of Gondwanaland that moved northwards in the Jurassic and Cretaceous is explored. Two main events could have led to this: the movement of several small terranes from adjacent to northern Australia at 165 Ma to accrete to SE Asia at 100 Ma; the movement of India from the east of Africa and Madagascar at 120 Ma to make contact with Asia at around 60 Ma.

The first episode may predate the evolution of the principal higher taxa of the Macrolepidoptera, though it is possible that the Castniidae, restricted to SE Asia, Australia and the Americas, could have been involved. The plant fossil records for the sec-

ond episode, movement of India, indicate that Gondwanan groups of plants that reached SE Asia by this means are much more likely to be of African or Madagascan affinity than Australian, though the latter is not completely excluded (Morley, 1998, 2002). Morley has suggested that the Indian drift component of the current Malesian flora may be significant. The Callidulidae, with some specialism for fern-feeding, show Oriental/Madagascan affinities.

The development and subsequent persistence of biogeographic pattern that reflects such tectonic events will be constrained by several factors. Firstly the taxa concerned must be widely distributed across the components of Gondwanaland prior to the

events; this has implications concerning the geological age of the ancestral taxon. Persistence of such pattern is dependent on the extent to which it becomes confused by subsequent events, i.e. if extensive dispersal predominates over terrane fidelity.

Host specialism in herbivorous insects presents an additional constraint, in that the host plant must be present in an area before the insect can be present. The insect and host plant can be fellow-travellers on a tectonic terrane, but, in a dispersal event, the insect must track its host; it cannot precede it.

Examples of geometrid groups at a tribal level that span most of the areas of Gondwanaland include the Desmobastrini, Lithinini and Caberini. The first tribe shows some host specialism at a generic level, and there is a major section of the Lithinini restricted to fern-feeding. There is a major group of the Caberini that is restricted to the Rhamnaceae. In the Eupitheciini, the genus *Pasiphila* Meyrick is diverse in temperate Australasia, particularly New Zealand, but has a north-temperate subgenus, *Gymnodisca* Warren. Host records are diverse, but many *Gymnodisca* have been reared from Ericaceae such as *Rhododendron*, and the group may have tracked this host through the mountains of Malesia to as far east as New Guinea.

Potential examples of montane tracking from south to north by Larentiinae include a lineage of *Poecilasthena* Warren, possibly specialist on *Leptospermum* (Myrtaceae), that has reached Burma, and the genera *Tympanota* Warren and *Episteira* Warren that feed on Podocarpaceae. The ennomine genus *Milionia* Walker also feeds on Podocarpaceae with Araucariaceae. It is most diverse in New Guinea but has a number of species groups through central Malesia to mainland Asia; it is just possible that some of the more westerly groups are of Indian drift origin.

The true, robust Oenochrominae feed in Australasia on Myrtaceae and grevilleoid Proteaceae, genera with the latter habit probably forming a distinct lineage. The Oriental genus *Sarcinodes* Guenée is a member of that lineage; two species occur in Australasia but a pilot phylogenetic analysis has suggested those are sister-species nested

within an Oriental clade, and that other Oriental clades are more basal, indicative of a west to east movement. All host records are from the grevilleoid genus *Helicia*, which has a similar range and, to a lesser extent, pattern of species richness to the moth genus. However, current estimates of the phylogenetic structure and range of diversification of *Helicia* indicate a more recent history, and the presence of grevilleoid Proteaceae in the Indian drift flora is uncertain.

Thus, whilst *Pasiphila*, *Milionia* and the true Oenochrominae may have contributed early Gondwanan components to the Oriental geometrid fauna, the first is not constrained by host specialism, the second requires testing through detailed phylogenetic analyses, and the third shows biogeographic incompatibility between moth and host. None currently shows any representation in or relationship to Africa or Madagascar.

Much of the subject matter of this talk has been published by Holloway & Hall (1998) and Holloway (2003).

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