

## **Early Permian brachiopods from the Singa Formation of Langkawi Island, northwestern Peninsular Malaysia: biostratigraphical and biogeographical implications**

G.R. SHI

### **Laporan (Report)**

Dr. G.R. Shi presented this second talk at 5.30 pm at the Department of Geology, University of Malaya on 18 July 1997. The natural status from a joint paper with Dr. Mohd. Shafeea Leman (Universiti Kebangsaan Malaysia) and Prof. B.K. Tan (University of Malaya).

### **Abstrak (Abstract)**

This study is based on two brachiopod collections from the upper part of the Singa Formation on the main Langkawi Island off northwestern Peninsular Malaysia. A taxonomic examination of the first collection from Batu Asah has revealed the following brachiopod species: *Kasetia cf. kaseti* Waterhouse, *Bandoproductus* n. sp., *Stenoscisma* sp., *Rhynchopora culta* Waterhouse, *Sulciplica* sp., *Spirelytha petaliformis* (Pavlova), *Spinomartinia prolifica* Waterhouse, ?*Martiniopsis* sp., *Arionthia sapa* Waterhouse, and ?*Elasmata* sp. Of these species *Spinomartinia prolifica* is most predominant, accounting for over 50% of all specimens collected.

The second collection, from the Kilim area some 7 kms northeast of the Batu Asah outcrop, bears close similarity to the Batu Asah assemblage in overall species composition but

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is characterised in particular by the abundant occurrences of *Bandoproductus* n. sp., *Sulciplica* n. sp., and *Spirelytha petaliformis* (Pavlova) and by the absence of *Spinomartinia prolifica* Waterhouse, a key species of the Batu Asah assemblage. As the two collections share some 60% of their joint total number of species, the two assemblages are considered to indicate a comparable age.

The Singa brachiopod fauna as a whole can be compared very closely with a number of Early Permian brachiopod faunas of the peri-Gondwanan terranes as now found in the Cimmerian continent. These comparable faunas include the *Spinomartinia prolifica* Assemblage from Ko Yao Noi of southern Thailand and the Nam Loong No. 1 Mine Beds of western Peninsular Malaysia, brachiopods from the upper Phuket Group of southern Thailand, the upper Pondo Group of the Lhasa terrane, central Tibet, the upper Dingjiazhai Formation of the Baoshan block, western Yunnan, and the Tashkazyk Formation of southeast Pamir. In addition, more than half of the identified brachiopod genera of the Singa Formation fauna, especially *Arctitreta*, *Bandoproductus*, *Spirelytha*, and *Sulciplica*, also occur in the Lower Permian of Australia. Based on these correlations, a general Sakmarian (Early Permian) age is proposed for the Singa Formation brachiopod fauna.

Using the previously published association values of Late Sakmarian western Pacific brachiopod genera and a discriminant function analysis formula, a high discriminant score of the Singa Formation brachiopods was revealed with the coeval faunas of the Shan-Thai terrane, indicating that this brachiopod fauna is assignable to the incipient transitional 'Cimmerian' Province.

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