

Captions to photographs (Tarutao)

- Fig. 2. A closer look at the well-bedded **Thung Song Limestone, Tobu Cliff.**
- Fig. 3. **Dr. C.P. Lee enlightening the participants on the local casts in the Tarutao Formation at Ao Malaca.**
- Fig. 4. **Time for exchange of views on the eastward dipping Tarutao Formation at Ao Malaca. In the background is the Tarutao National Park and the Tobu Cliff (top left hand corner).**
- Fig. 5. **Dr. Muntajit briefing the participants on the Tarutao Formation at Ao Talo Lingai.**
- Fig. 6. **Dr. Sunopus stressing a point on the Tarutao Formation at Ao Talo Dang.**
- Fig. 7. **Group photograph of participants taken at Ao Talo Dang. Note the eastward dipping escarpments of the Tarutao Formation in the background.**

Geology of North West Peninsular Malaysia Seminar - Laporan (Report)

The Seminar, ably organised by Dr. T.T. Khoo on the day of the Society's AGM, was held at the RUMAH UNIVERSITI, University of Malaya and attended by an interested audience of 45 members.

The Seminar appeared to be most timely especially when this corner of the country has received considerable interests, not only geologically and hydrologically but more recently on enthusiasm generated on a possible consultation programme with our Thai counterparts (as a result of the Tarutao Field Trip).

A total of 10 papers were presented. In appreciation of their contributions, the authors of papers were invited to dinner at the Thai Restaurant, Petaling Jaya.

Abstracts of Papers

The terrane of the Patani Metamorphics.

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A regional metamorphic terrane occurs in west and southwest Kedah covering at least 500 sq miles. The metamorphics in this terrane are named as the Patani Metamorphics after Sungai Patani, one of the larger towns in the area. At the present stage of mapping the terrane is found to include Pantai Merdeka and the islands off Gunung Jerai and Yan to the west, areas slightly south of Tikam Batu to the south, Bukit Raya to the north, and the line joining Kampung Padang Pusing to Bukit Selambau forms the approximate eastern boundary.

The rocks in this terrane are quartzite, marble and red, green, black and grey slates and phyllites which are metamorphosed rocks of the Patani Formation of Bradford (1972) and schists, calc-silicate rocks, marble and quartzite which are metamorphosed rocks of the Jerai Formation. Preliminary studies indicate that most of the area is underlain by rocks of low to very low grades, though higher grade rocks, biotite to garnet grade probably, appear to occur in an elongate zone at the central part of the terrane trending parallel to the northwest elongation of the terrane. The slates and phyllites are characterised by the possession of

one or more sets of cleavages or schistositities which generally become more prominent towards the higher grade parts. The lower grade rocks are sometimes porphyroblastic with chloritoid, pyrite or magnetite. Among the higher grade rocks, metapelites and quartzites are biotite-bearing and the calc-silicates contain garnet, amphibole, epidote and diopside.

The terrane extends into the Straits of Melaka and may resurface in Langkawi, e.g. as the area of cleaved rocks described by Koopmans (1965). The terrane does not appear to extend further south-southeast into the Kulim-Mahang area of south Kedah. Towards the north, the pelitic rocks of Gunung Hutun Haji in Perlis which show prominent low angle cleavages, may be part of the Patani Metamorphics.

The termination of metamorphism probably predates the intrusion of the Jerai Granite which gives an Upper Carboniferous age according to Bignell and Snelling (1977). The granite is not metamorphosed and is interpreted here to be post-orogenic. The granite introduced a late boron-metasomatic tourmaline imprint on the regional metamorphics. The Patani Metamorphics include rocks at Kampong Paya Mak Isun which contain Posidonia dated to be uppermost Devonian or lowermost Carboniferous (Jones, Gobbett and Kobayashi, 1966). From these considerations, it appears that metamorphism, which was accompanied by at least one phase of deformation, came to an end with uplift probably in the Middle-Upper Carboniferous. Significantly Middle and Upper Carboniferous sediments have yet to be proven in Kedah/Perlis (Chung & Yin, 1975).

Caution should be exercised when structural and other evidences from the Patani Metamorphics terrane are being used for rocks outside the terrane to prevent erroneous and confusing interpretations.

Late Permian and Early Triassic conodonts from the Kodiang Limestone Formation, Kedah, Peninsular Malaysia.

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The Kodiang Limestone of Bukit Hantu, near Kodiang, Kedah, has yielded conodont elements characteristic of the Late Permian (Capitanian) *Neogondolella rosenkrantzii* - *Neospathodus divergens* Zone and Early Triassic (Scythian) *Neospathodus conservativus* and *Neogondolella milleri* Zones. The known age range of the Kodiang Limestone Formation is thus extended down into the Late Permian. This necessitates a re-examination of the relationship between the Triassic Kodiang Limestone and the Permian Chuping Limestone Formations which are here considered to probably form a continuous sequence.

Stratigraphy and structure of the islands off Gunung Jerai and Pantai Merdeka, Kedah.

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The area is underlain by three units. They are, namely, a) Terundak mudstone (not metamorphosed), b) Patani Formation (metamorphosed) and c) Bunting Metamorphics.