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The Society has a membership of about 600 earth scientists interested in Malaysia and other Southeast Asian regions. The membership is worldwide in distribution.

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CATATAN GEOLOGI
Geological Notes

Some Miocene planktonic foraminifera from Bidu-Bidu area, Sabah

BASIR JASIN[1], SANUDIN TAHIR[2] AND ZAIDI HARUN[2]
[1]Department of Geology
UKM, Bangi Selangor
[2]Department of Earth Sciences
UKM, Sabah

Abstract: Two assemblages of planktonic foraminifera were identified from the Garinono Formation in the Bidu-Bidu area. The older assemblage retrieved from the mudstone matrix of the chaotic deposits consists of *Globigerinoides trilobus*, *Globigerinoides diminutus*, *Globigerinoides bisphericus*, *Praeorbulina sicana*, *Globoquadrina baroemoenensis*, *Dentoglobigerina altispira altispira* and *Dentoglobigerina altispira globosa*. This assemblage is indicative of late Early Miocene age. The younger assemblage retrieved from the tuffaceous mudstone bed comprises *Globigerinoides trilobus*, *Globigerinoides immaturus*, *Globigerina woodi*, *Orbulina universa*, *Orbulina suturalis*, *Dentoglobigerina altispira altispira*, *Globorotalia pseudoscitula*, *Globorotalia fohsi peripheroacuta* and *Sphaeroidinellopsis disjuncta* indicative of early Middle Miocene age.

INTRODUCTION

Bidu-Bidu area has been mapped by Newton-Smith (1967). The area consists of Chert-spilite Formation, ultrabasic rocks, basic rocks, Garinono Formation and Kamansi Beds. Most of the geological information were obtained from limited outcrops exposed in the river. Construction of a new road in the area has exposed several good outcrops in the area. A road-cut at Sungai Kibut area (Fig. 1) exposes two rock units. The lower unit consists of sedimentary mélange which was included in the Garinono Formation (Newton-Smith, 1967). The upper unit is composed of interbedded tuffaceous mudstone and sandstone showing thickening upward sequence. This rock association was included in the Kamansi Beds by Newton-Smith (1967). Lee (1970) observed the same rock association in the Sandakan Peninsula and he included both units into the Garinono Formation. The matrix of the sedimentary mélange and the lower tuffaceous mudstone bed yielded some identifiable planktonic foraminifera.

GEOLOGICAL SETTING

The geology of the Bidu-Bidu area is complex. The relationships among the rock units are not fully understood. We will restrict our discussion on the Garinono Formation only. The Garinono Formation is a chaotic deposit composed of rock fragments of various sizes and blocks of sandstone, limestone, chert, basalt, serpentinite and gabbro embedded in a mudstone matrix. This formation is a sedimentary mélange (debris flow deposit). Lee (1970) extended the Garinono Formation to include the well bedded tuffaceous mudstone, tuff and tuffite. The Garinono Formation is equivalent to the Kuamut and Ayer Formations. The contact between the mélange and the well bedded mudstone-sandstone sequence is exposed at an outcrop near Sungai Kibut. The sandstone blocks of the mélange exhibit slump folds and is overlain by the well bedded tuffaceous mudstone-sandstone sequence. The contact appears like an unconformity but there is no erosional feature observed.

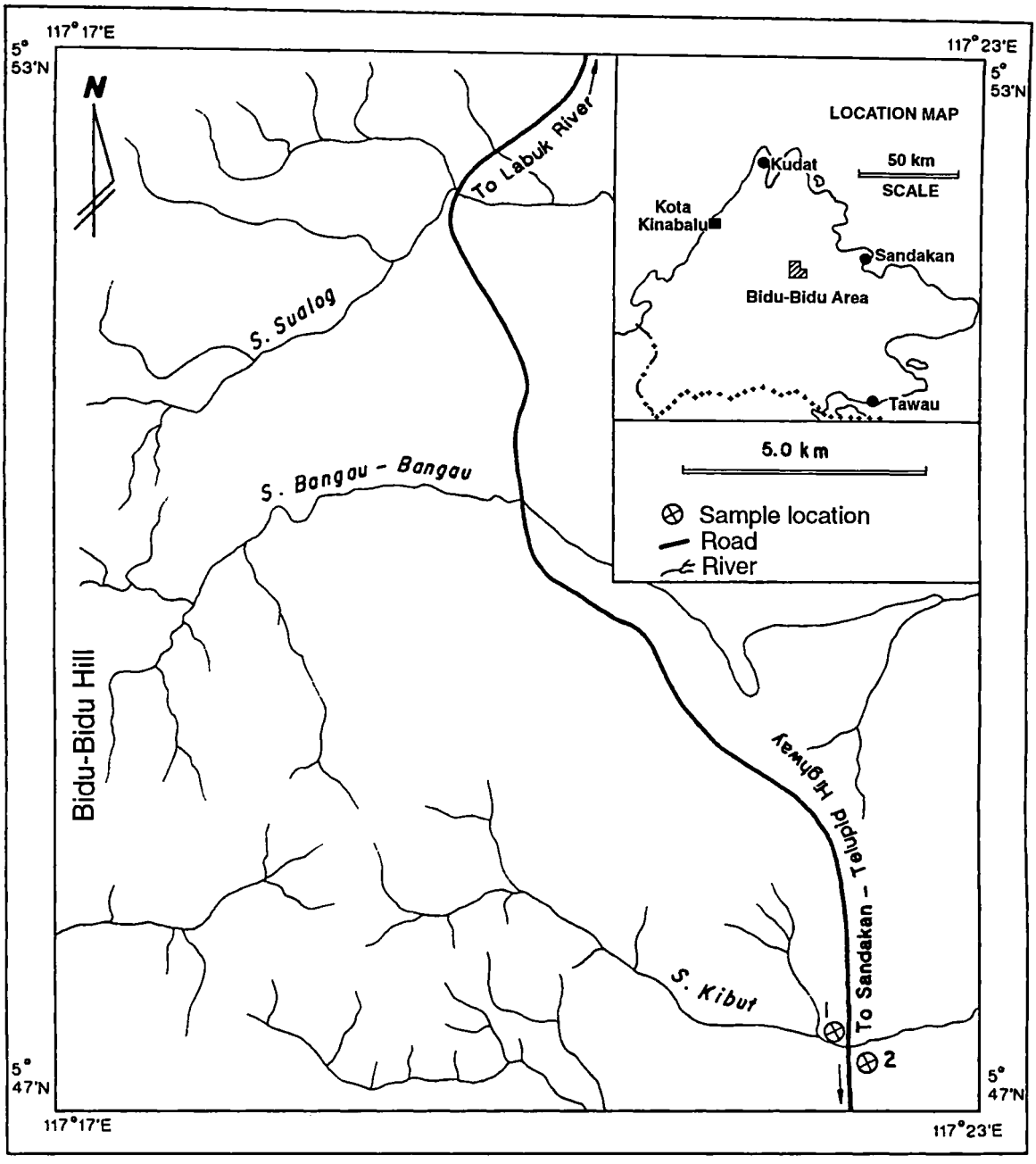
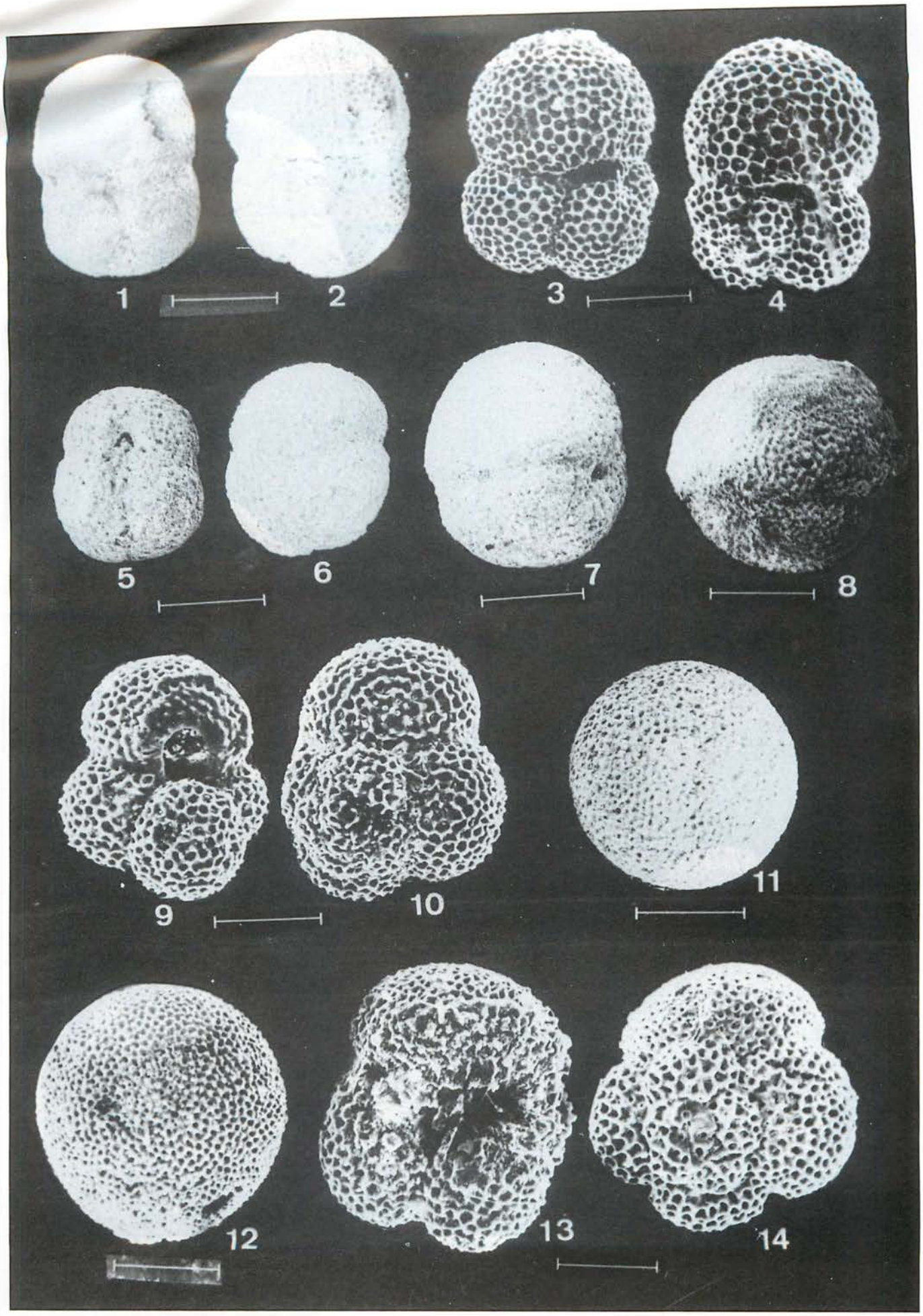


Figure 1. Map of Bidu-Bidu area showing sample locality.

Plate 1. 1, 2. *Globigerinoides immaturus* LeRoy (Scale bar = 200 μm) (1. Umbilical view, 2. Spiral view).
3, 4. *Globigerinoides trilobus* (Reuss) (Scale bar = 100 μm) (3. Umbilical view, 4. Spiral view).
5, 6. *Globigerinoides diminutus* Bolli (Scale bar = 100 μm) (5. Umbilical view, 6. Spiral view).
7. *Globigerinoides bisphericus* Todd (Scale bar = 200 μm).
8. *Praeorbulina sicana* (Blow) (Scale bar = 200 μm).
9, 10. *Globigerina woodi* Jenkins (Scale bar = 100 μm) (9. Apertural view, 10. Spiral view).
11. *Orbulina universa* d'Orbigny (Scale bar = 200 μm).
12. *Orbulina suturalis* Bronnimann (Scale bar = 200 μm).
13, 14. *Globoquadrina baroemoenensis* (LeRoy) (Scale bar = 100 μm) (13. Apertural view, 14. Spiral view).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The occurrence of Middle Miocene planktonic foraminifera in tuffaceous mudstone in Sabah has been reported in many areas, namely, the Libong Tuffite Formation (Basir Jasin and Sanudin Tahir, 1987), the top of Garinono Formation (Lee, 1970), the top of Kuamut Formation, top of Ayer Formation, the Tabanak Conglomerate Formation (Leong, 1974), and Tungku Formation (Haile and Wong, 1965). This indicates that the volcanic eruptions were very active during early Middle Miocene time. These volcanic eruptions might have triggered the formation of chaotic deposits of the Garinono, Kuamut, and Ayer Formations and followed later by the deposition of volcanic ash and tuffs.

CONCLUSION

The Garinono Formation comprises the chaotic sedimentary mélange (debris flow deposits) overlain by the well bedded tuffaceous mudstone-sandstone sequence. The planktonic foraminiferal assemblage from the mudstone matrix of the mélange is indicative of the late Early Miocene whereas the foraminiferal assemblage from the tuffaceous mudstone is indicative of early Middle Miocene. During the Middle Miocene the volcanic activities were very intensive and the tuffaceous material was widely distributed in eastern Sabah.

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NEWTON-SMITH, J., 1967. Bidu-Bidu Hills area, Sabah, East Malaysia. *Geological Survey Borneo region, Malaysia report* 4, 1-109.

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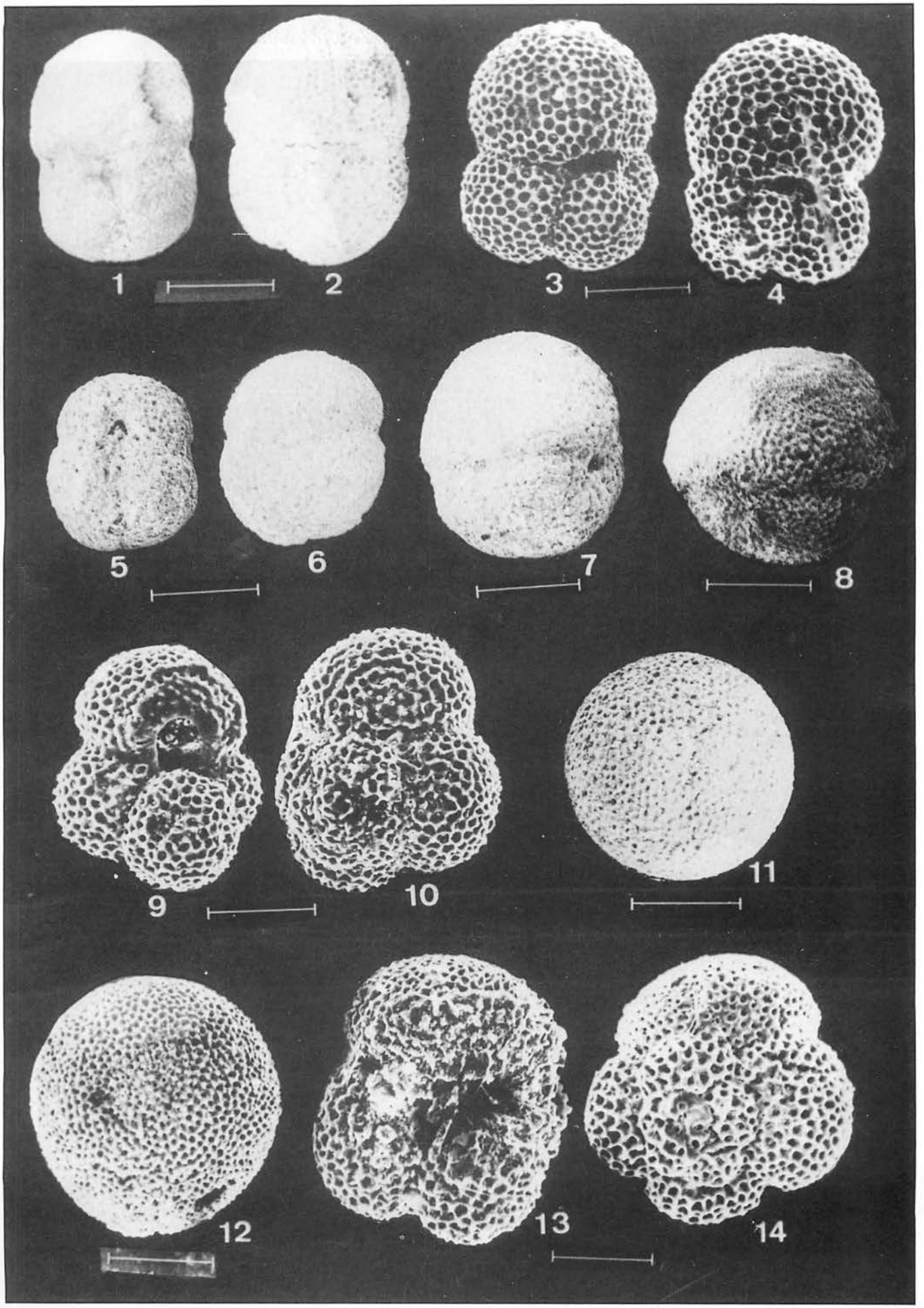
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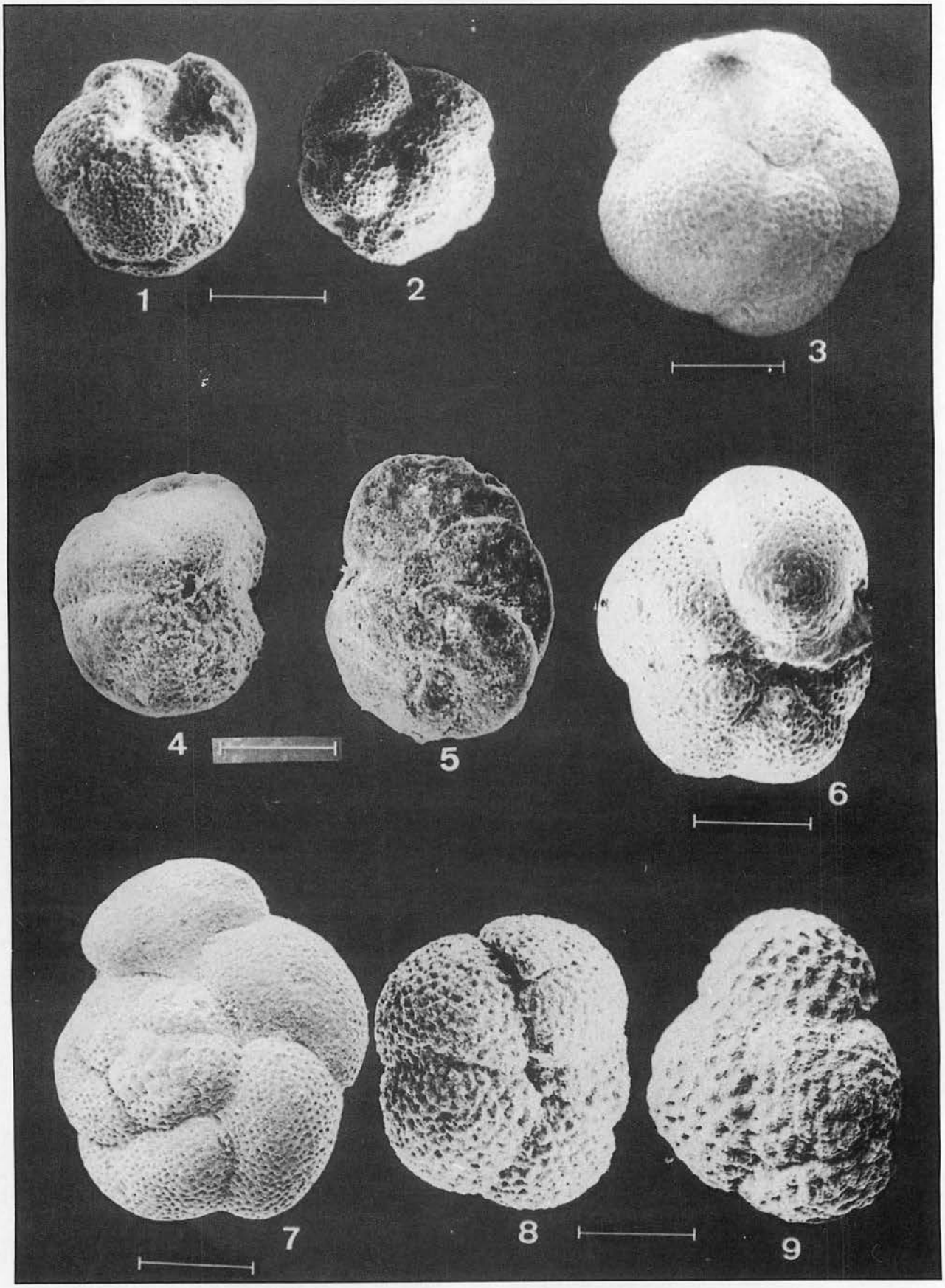
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MATERIAL AND METHOD

A mudstone sample was collected from the matrix of sedimentary mélange (locality 1) and another sample was collected from the tuffaceous mudstone (locality 2) (Fig. 2). The samples were boiled with washing soda for several hours, washed and then dried. The foraminifera were picked by using a paint brush. Well preserved specimens were photographed by using Scanning Electron Microscope.

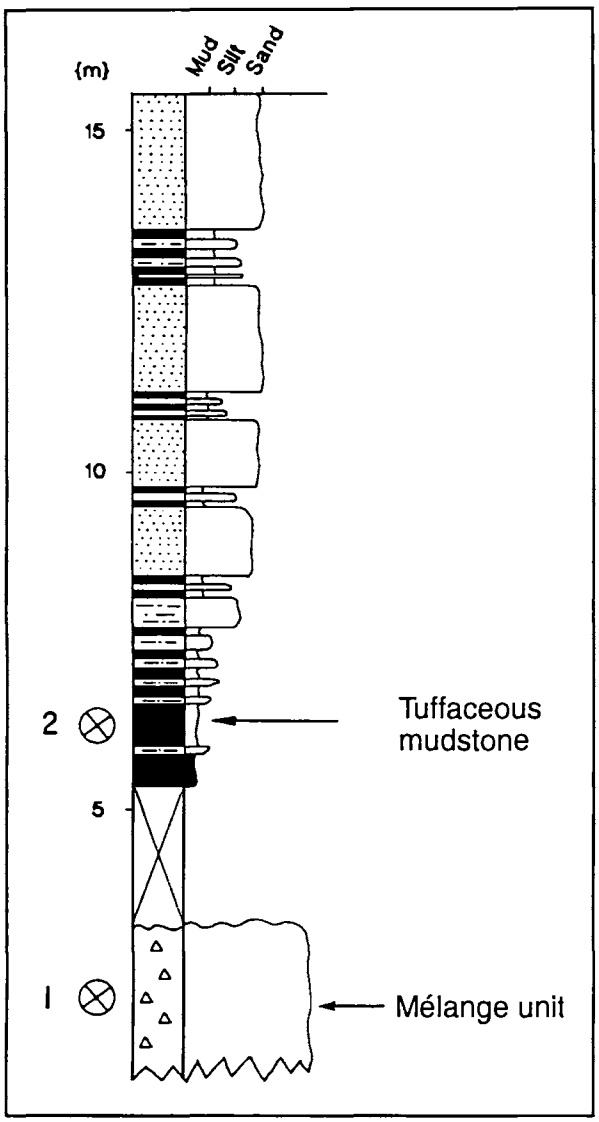

Figure 2. Measured section of locality 1 and locality 2. Garinono Formation, Bidu-Bidu area.

RESULTS AND DISCUSSION

The matrix of the sedimentary mélange (locality 1) yielded seven species of planktonic foraminifera. They are *Globigerinoides trilobus* (Reuss), *Globigerinoides bisphericus* Todd, *Globigerinoides diminutus* Bolli, *Praeorbulina sicana* (Blow), *Globoquadrina baroemoenensis* (LeRoy), *Dentoglobigerina altispira altispira* (Cushman and Jarvis) and *Dentoglobigerina altispira globosa* (Bolli) (Plates 1 and 2). Most of the fauna are kummerforms. The occurrence of *Globigerinoides diminutus*, *Praeorbulina sicana* and *Globigerinoides bisphericus* is indicative of *Praeorbulina Glomerosa* Zone (N. 8) of late Early Miocene age. The occurrence of planktonic foraminifera in the matrix of the mélange indicates that this chaotic rock was deposited by submarine slumping or debris flow.

Nine species of planktonic foraminifera were identified from the tuffaceous mudstone sample from the locality 2. They are composed of *Orbulina universa* d'Orbigny, *Orbulina suturalis* Bronnimann, *Globigerinoides trilobus* (Reuss), *Globigerinoides immaturus* LeRoy, *Globigerina woodi* Jenkins, *Dentoglobigerina altispira altispira* (Cushman and Jarvis), *Globorotalia praescitula* Blow, *Globorotalia fohsi peripheroacuta* Blow and Banner, and *Sphaerodinellopsis disjuncta* (Finlay) (Plates 1 and 2). This assemblage is indicative of *Globorotalia fohsi fohsi* Zone (N. 10), of early Middle Miocene age.

Plate 2. 1, 2. *Dentoglobigerina altispira altispira* (Cushman and Jarvis) (Scale bar = 300 μm) (1. Oblique umbilical view, 2. Spiral view).
3. *Dentoglobigerina altispira globosa* (Bolli) (Scale bar = 200 μm).
4, 5. *Globorotalia fohsi peripheroacuta* Blow and Banner (Scale bar = 130 μm).
6, 7. *Globorotalia praescitula* Blow (scale bar = 100 μm).
8, 9. *Sphaeroidinellopsis disjuncta* (Finlay) (Scale bar = 100 μm).

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CATATAN GEOLOGI
Geological Notes

Fosil kayu dan beberapa fosil tumbuhan dari Sg. Berok, Gua Musang, Kelantan
(Wood and some plant fossils from Sg. Berok, Gua Musang, Kelantan)

UMAR HAMZAH DAN NG CHIANG SENG
Jabatan Geologi
Universiti Kebangsaan Malaysia
43600 UKM Bangi

Abstract: Wood and plant fossils have been discovered in two localities at Post Blau 1-2 km west and southwest of Sungai Berok, Gua Musang. The fossils, *Cordaites* sp., *Araucarioxylon* sp., *Pecopteris* sp. and *Sphenopteris* sp. are exposed in carbonaceous siltstone of Gua Musang Formation. Out of the four genus found, *Araucarioxylon* sp. and *Sphenopteris* sp. have not been reported before from the Gua Musang Formation. In general the age of the plant fossils are estimated to be about the same age as Gua Musang Formation, that is Perm-Triassic.

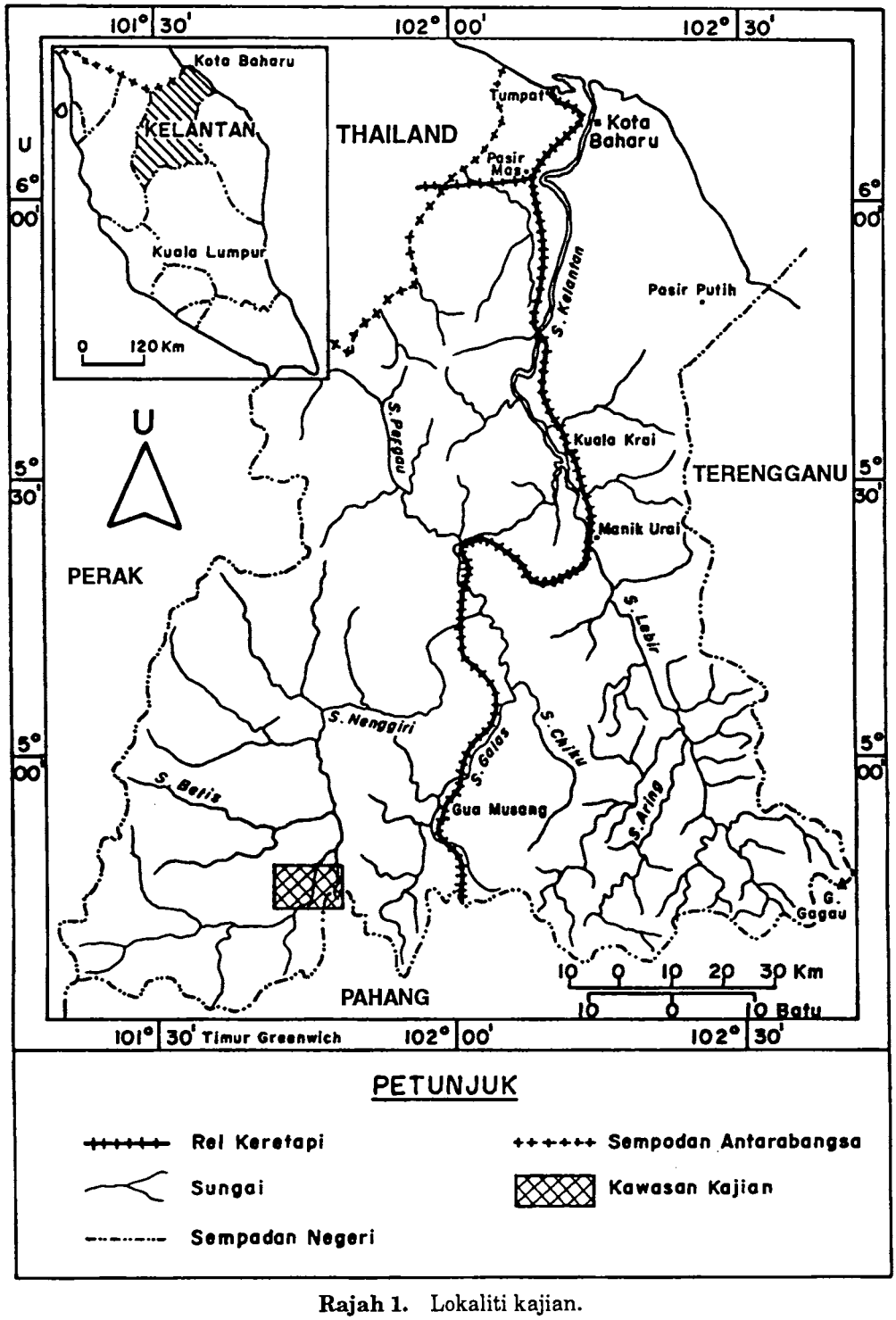
Abstrak: Fosil kayu dan beberapa fosil tumbuhan telah ditemui di dua lokaliti di Pos Blau, 1-2 km ke arah barat dan baratdaya Sungai Berok, Gua Musang. Fosil-fosil tersebut, *Cordaites* sp., *Araucarioxylon* sp., *Pecopteris*, sp. dan *Sphenopteris* sp. telah dijumpai tersingkap di dalam batu lodak berkarbon Formasi Gua Musang. Daripada keempat genus yang ditemui *Araucarioxylon* sp. dan *Sphenopteris* sp. belum pernah dilaporkan ditemui dari Formasi Gua Musang. Pada amnya usia fosil-fosil ini selaras dengan usia Formasi Gua Musang iaitu di sekitar Perm-Trias.

PENDAHULUAN

Dalam kajian tesis yang dilakukan oleh pelajar tahun kepujian di kawasan Sungai Berok berhampiran dengan Blau, Gua Musang, sebanyak tujuh lokaliti fosil telah dijumpai. Tiga diantaranya dijumpai di dalam fasies berargilit dan empat lagi di dalam fasies berkapur dalam Formasi Gua Musang yang berusia Perm-Trias. Daripada kesemua fosil yang dijumpai hanya dua lokaliti tersingkap fosil tumbuhan di dalam batu lodak. Secara amnya kesemua fosil tumbuhan telah dapat dicamkan (Ng Chiang Seng, 1991) dan terdiri daripada genus *Cordaites* sp., *Araucarioxylon* sp. *Pecopteris* sp. dan *Sphenopteris* sp. Selain dari *Cordaites* sp. dan *Pecopteris* sp. yang pernah dijumpai di dalam Formasi Gua Musang oleh Fontaine and Khoo (1990), *Araucarioxylon* sp. dan *Sphenopteris* sp. adalah merupakan fosil-fosil yang belum pernah dilaporkan dari Formasi Gua Musang, Kelantan.

GEOLOGI KAWASAN KAJIAN

Kawasan kajian seluas 91 kilometer persegi (Rajah 1) terletak di bahagian baratdaya Kelantan, iaitu di sekitar Jeram Gajah, Sungai Berok (Hulu Sungai Nenggiri). Kedudukan garis lintangnya adalah dari U4°48' hingga U4°43'. Batas garis bujur pula adalah dari T101°43' hingga T101°48'. Pada amnya kawasan kajian cuma terdiri daripada batuan metamorf paleozoik bawah di sebelah barat dan jujukan sedimen-piroklas Formasi Gua Musang di bahagian timur. Batuan metamorf



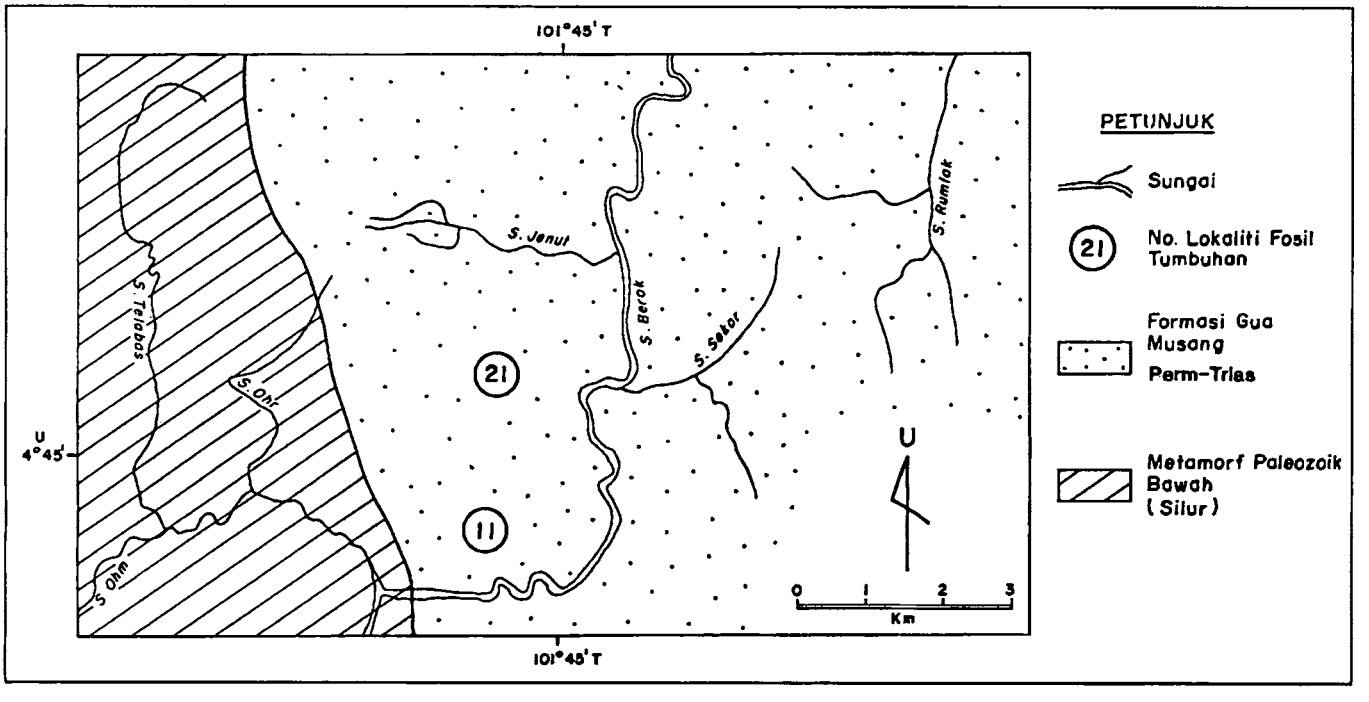
Rajah 1. Lokaliti kajian.

terdiri daripada syis mika kuarza, meta kuarzit dan gneis mika kuarza berjurus foliasi hampir utara-selatan. Sementara jujukan sedimen-piroklas Formasi Gua Musang pula terdiri dari litofasies-litofasies konglomerat, piroklas, arenit, berargilit dan berkalka. Formasi Gua Musang telah mengalami gred metamorfisme yang rendah di kawasan kajian. Sekitaran pengendapannya adalah daratan dan marin cetek. Berdasarkan fosil-fosil yang ditemui sebelumnya, biostratigrafi Formasi Gua Musang menunjukkan batuan berargilit berusia Karbon-Trias (Fontaine dan Khoo, 1990) dan Perm-Trias (Yin, 1965). Batu kapur mungkin diendapkan serentak dengan batuan berargilit dengan perubahan fasies secara sisi.

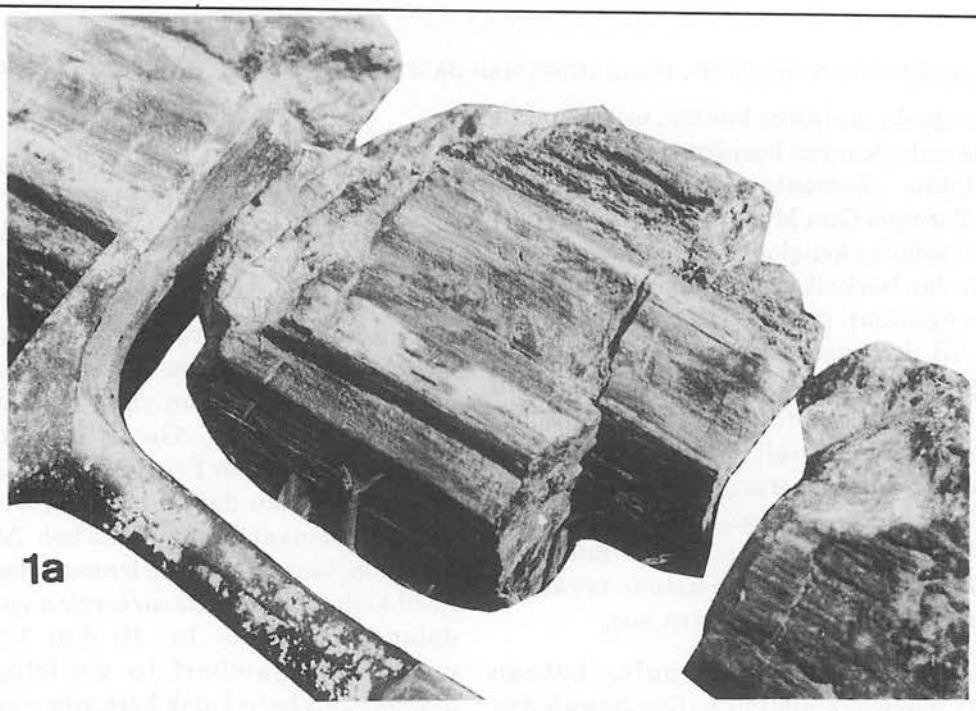
Secara litostratigrafi pula, batuan metamorf paleozoik adalah paling bawah dan berstruktur rencam. Fasies konglomerat Formasi Gua Musang menindih secara tidak selaras di atas batuan metamorf. Fasies berargilit, piroklas dan berkalka pula menindih secara selaras di atas konglomerat di mana kedudukan di antara mereka adalah berubah secara sisi.

PALEONTOLOGI

Kesemua fosil dijumpai di dalam Formasi Gua Musang di lokaliti 11 dan 21 (Rajah 2). Fosil tersebut didapati tersingkap dalam batuan fasies berargilit. Plat 1 no. 2a dan 2b menunjukkan gambar fosil *Cordaites* sp. Ianya adalah daun bersaiz besar di mana lebarnya mencapai hingga 4 sm. Daunnya memanjang dengan urat-urat daun yang juga memanjang tanpa cabang urat. Genus ini sama seperti yang dijumpai oleh Fontaine and Khoo (1990) di Sungai Chiku dalam Formasi Gua Musang yang dipercayai berusia Karbon Atas. Fosil ini tersingkap dalam batu lempung fasies argilit. Fosil kedua ialah *Araucarioxylon* sp. seperti di dalam Plat 1 no. 1a, 1b dan 1c. No. 1a merupakan gambarfoto morfologi sampel diambil dari batu lodak berkarbon yang terdiri dari kayu bersilika sepanjang hampir 0.3 meter dan lebar 0.1 meter. Gambar No. 1b dan 1c adalah dari keratan nipis secara rentas dan menmanjang di bawah mikroskop. *Araucarioxylon* yang berjulat usia Karbon-Kapur pernah dijumpai di Amerika Utara, India, Semenanjung Malaysia (Idris, 1990). Dalam

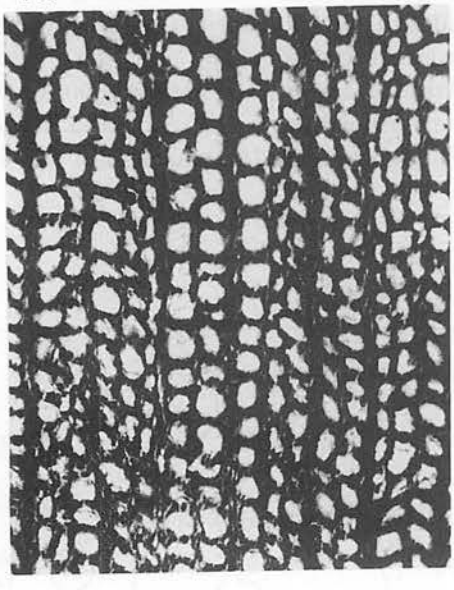


Rajah 2. Lokaliti Fosil.

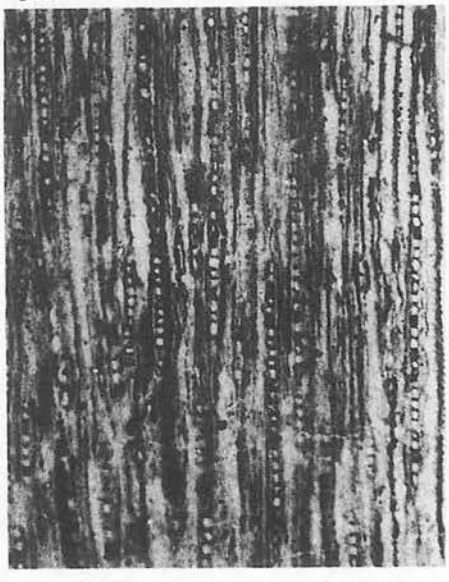


1a

1b X 50



1c X 50



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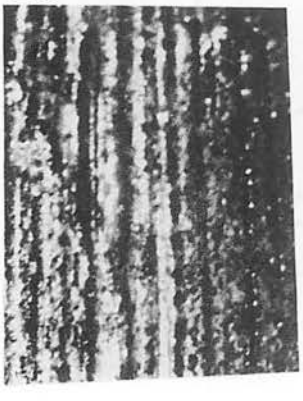

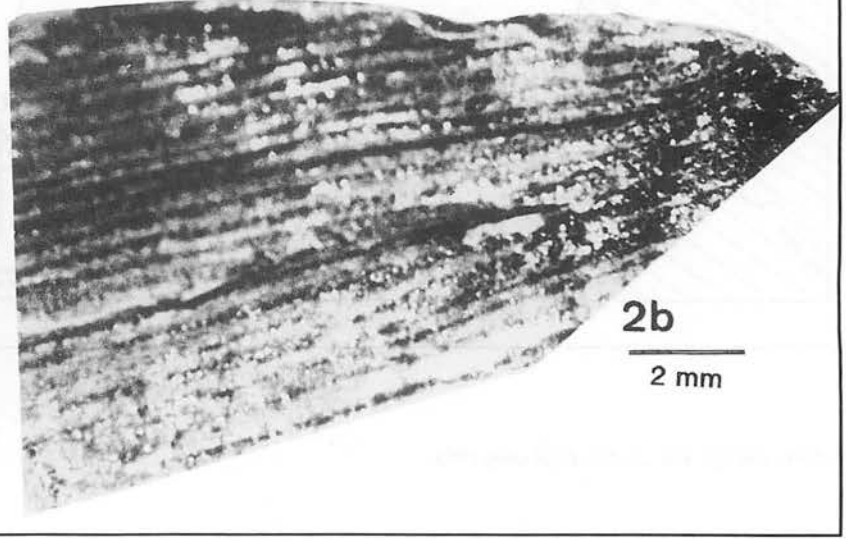

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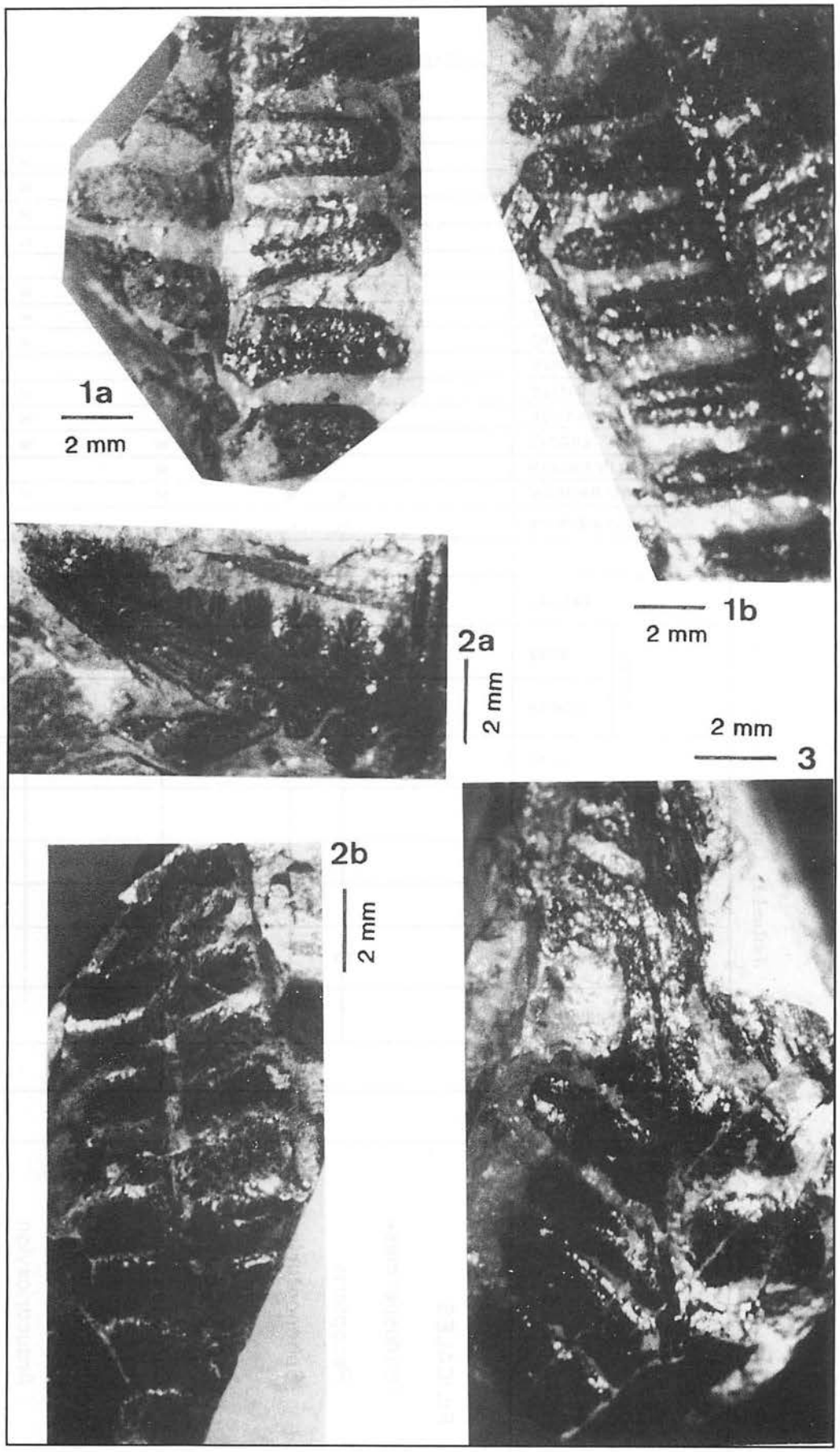
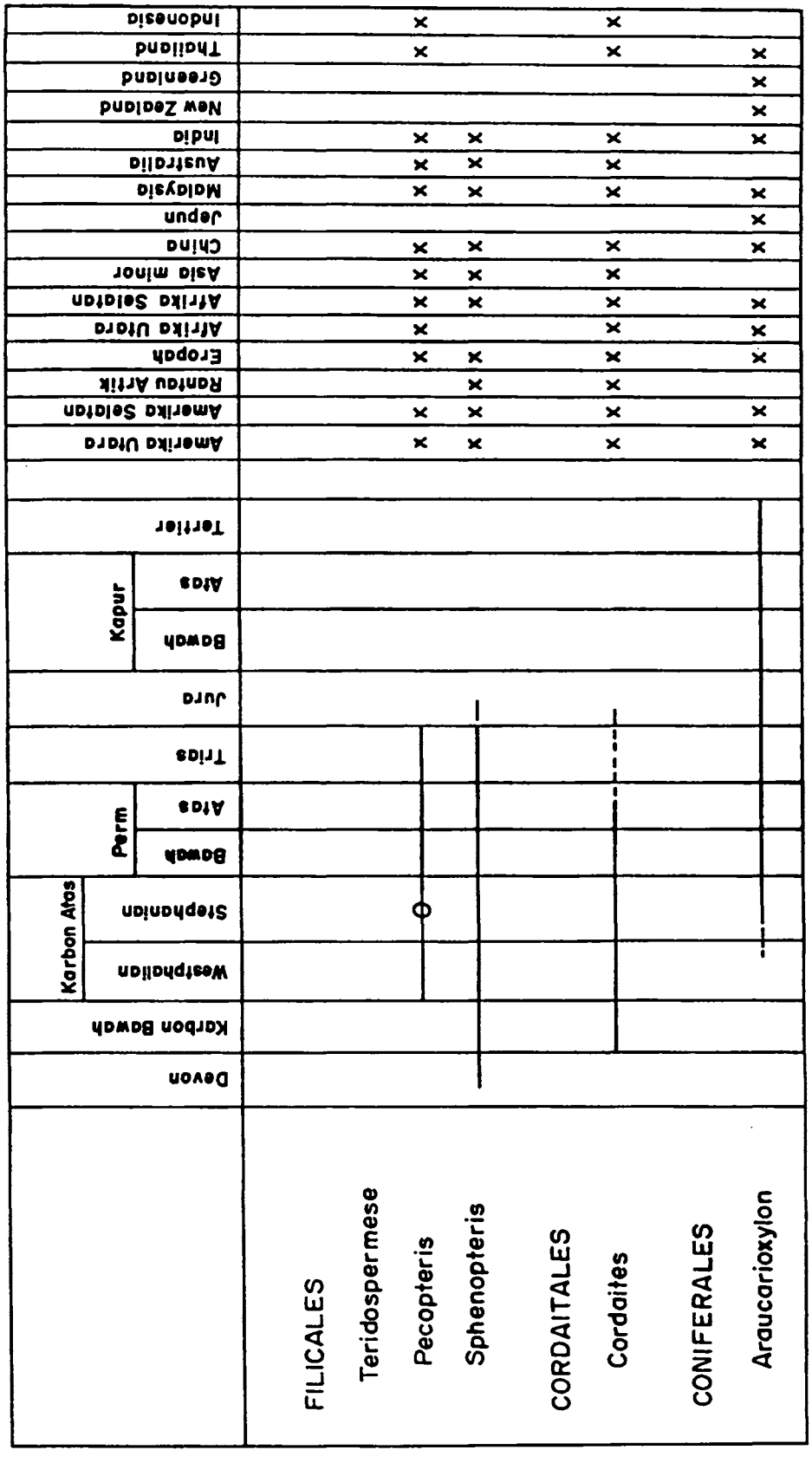


Plat 2. *Pecopteris* sp. (1a, 1b, 3)
Sphenopteris sp. (2a, 2b)

Plat 1. *Araucarioxylon* sp. (1a, 1b, 1c)
Cordaites sp. (2a, 2b)

Jadual 1. Carta usia dan lokaliti fosil.



Formasi Gua Musang, fosil ini adalah merupakan satu penemuan baru. Fosil ketiga dijumpai di dalam batu lempung di lokaliti 11 iaitu *Pecopteris* sp. merupakan pangkal daun yang melekat dengan keseluruhan kelebarannya pada tulang daun (Plat 2, no. 1a, 1b dan 3). Panjang daun adalah 4 mm, lebar 1 mm dan hujung daun yang hampir menirus. Daun tersusun secara renggang antara satu sama lain dan bersetentangan dengan ruang kosong di sebelah tulang daun yang satu lagi. Urat pusat serta cabang-cabang urat kecilnya jelas. Genus ini pernah ditemui di dalam Formasi Gua Musang di lokaliti Sungai Chiku, Kelantan oleh Fontaine and Khoo (1990) yang dikatakan berusia Stephanian atau Karbon Atas. *Sphenopteris* sp. pula dijumpai dalam batu lodak dan berbentuk daun yang bersaiz 1.5 m x 1 mm. Hujung daun ini berbentuk lobus atau bulat dan berurat pusat serta cabang kecil yang jelas. Daun-daun tersusun secara padat (Plat 2, no. 2a dan 2b). Genus yang berasosiasi dengan arang batu ini berusia Karbon dan pernah dilaporkan di Gambang dan Kijal (Jennings and Lee, 1985).

PERBINCANGAN

Fosil-fosil tumbuhan ini mewakili sekitaran pengendapan tanah rendah berpaya, di sepanjang garis pantai dan muara. Oleh kerana flora-flora tersebut berasosiasi dengan lapisan berkarbon setebal hampir 3 meter sebahagian besar kawasan kajian pada masa dahulunya adalah dipercayai merupakan daratan yang berpaya. Julat usia bandingan kesemua fosil tumbuhan dan taburan geografinya diberikan di dalam Jadual 1. Secara amnya usia fosil tumbuhan yang dijumpai adalah di dalam lingkungan julat usia Formasi Gua Musang yang secara litostratigrafinya telah ditentukan oleh Yin (1965) sebagai Perm-Trias Bawah. Walau bagaimanapun Edwards (1926) dalam Fontaine dan Khoo (1990) telah menyatakan bahawa Formasi Gua Musang berusia lebih tua iaitu dari Karbon Atas hingga Perm Bawah berdasarkan fosil tumbuhan yang terdiri dari *Pecopteris* sp. dan *Cordaites* sp. yang ditemui di Sungai Chiku Kelantan. Sementara itu Jennings dan Lee (1985) pula telah melaporkan spesies *Sphenopteris hibberti* dari Gambang, Pahang yang berusia lewat Karbon Bawah. Penemuan ini menguatkan lagi bukti bahawa Formasi Gua Musang berusia lebih tua bermula dari Karbon Bawah. Idris *et al.* (1990) telah melaporkan penemuan *Araucarioxylon telentangesis* dari kawasan Ulu Endau yang mana kelihatan hampir sama dengan genus yang dijumpai dari Sungai Berok. Beliau menganggarkan usia spesies ini sebagai Perm Atas hingga Kapur Bawah berdasarkan usia formasi yang berhampiran kerana spesies tersebut adalah bongkah sungai. Oleh itu secara kesimpulannya julat usia Formasi Gua Musang boleh difikirkan berlanjutan hingga ke Karbon Atas berdasarkan *Pecopteris* sp., *Cordaites* sp. dan *Sphenopteris* sp., manakala penemuan *Araucarioxylon* sp. menunjukkan seolah-olah julat usianya sehingga Jura Bawah berdasarkan *Araucarioxylon japonicum* yang ditemui di Khorat, Thailand oleh Asama (1982) (dalam Idris *et al.*, 1990).

PENGHARGAAN

Pengarang mengucapkan berbanyak terima kasih kepada Dr. Basir Jasin yang telah menyemak manuskrip ini.

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Manuscript received 25 February 1995

Souvenirs For Sale

In Response to requests by members, the Society has now prepared several souvenir items for sale as follows:

		Unit Price (RM)
1.	Key Chain (brass with epoxy coating and Society Logo)	6.00
2.	Tie Clip (with Society Logo)	7.00
3.	Cap (dark blue, with Society Logo)	9.00
4.	Hat (dark blue, with Society Logo)	10.00
5.	Tie (dark blue with Society Logo)	30.00

Members can purchase/order these souvenir items by contacting:

Anna Lim
Geological Society of Malaysia
c/o Geology Department
University of Malaya
59100 Kuala Lumpur

Fax: (603) 7563900
Tel: (603) 7577036

Tie
Hat
Cap
Tie Clip
Key Chain

PERTEMUAN PERSATUAN
Meetings of the Society

Ceramah Teknik (Technical Talk)

Evolution of Starfish: a success story

ANDY SCOTT GALE

Laporan (Report)

Dr. Andy Scott Gale from The Natural History Museum, London & Imperial College, presented the above talk on 20 July 1995 at the Geology Department, University of Malaya.

Summary

Starfish or asteroids belong to the same phylum as echinoids and sea-cucumbers. Why are the present-day starfish so successful and diverse in their habitats? Modern starfish are very versatile feeders. They can be predators, deposit faders, suspension feeders or scavengers or adopt a mixture of feeding modes depending on the availability of different food supplies.

Stomach eversion together with the ability to pry apart bivalves using their highly flexible arms armed with suckered tube-feet allow them to deal with large prey even though they have small mouths and no jaws for biting.

A complicated arrangement of muscle attachments and skeletal plates gives the arms of the post-Palaeozoic starfish their strength and versatility. Palaeozoic starfish, on the other hand, lack such muscle attachments and possess rigid brick-like ambulacral plates and hence had relatively inflexible arms. They did not have suckered tube-feet and were unable to evert their stomachs and thus could only feed on small prey. They were mostly sluggish scavengers and suspension deposit feeders and not specialized predators like their post-Triassic counterparts.

C.P. Lee

ANDY SCOTT GALE

University of London gravity work in Southeast Asia

JOHN MILSON

Laporan (Report)

Dr. John Milson, a Senior Lecturer in Exploration Geophysics at the University of London gave the above talk to an audience of about 23 on the 2nd August 1995 at the Geological Survey Department, Kota Kinabalu and to about 40 on the 8th August 1995 at the Geology Department, University of Malaya.

Dr. John Milson started off with a background on the University of London's gravity work in Southeast Asia and proceeded to give an example of how their work in the Banda Arc contributed to a better understanding of the geology and tectonics of the region. He also touched on the usefulness of offshore gravity data from satellites. He finished off his talk with a summary of the gravity work in Sabah. An important preliminary finding from his recent survey is that the ophiolites in Segama valley do not continue to those in the Labuk Valley. Apparently, there is a gravity high over the Darvel Bay indicating a much thicker ophiolite sequence there.

Abstrak (Abstract)

The University of London Consortium for Geological Research in Southeast Asia has been active in Malaysia, Thailand and Papua New Guinea since 1982. One aspect of its work is the acquisition of regional gravity data and their interpretation in conjunction with available seismic and geological information. Recently completed studies of the Banda Arc in eastern Indonesia provide an example of the approach. The location of the Australia-Eurasia collision trace in the area has been debated for many years, the critical location being the Kai Archipelago in the extreme east of the Banda Arc. Gravity surveys in the Archipelago have revealed a pattern of variation different from those elsewhere in the arc. Taken together with the oil industry seismic sections, the gravity results indicate a smooth curvature of the arc through 180° and not, as in most published maps, a major strike slip displacement of the Eurasion Plate.

Gravity surveys recently completed in Sabah are providing regional coverage of the southern and eastern parts of the State, and also are allowing the results of earlier surveys to be adjusted to the current international networks. Preliminary analysis shows gravity highs associated with the ophiolite bodies near Telupid and in Darvel Bay but has not substantiated a subsurface linkage between the two areas.

G.H. Teh

JOHN MILSON

EIA Bakun: Aspek geologi dan hidrogeologi

IBRAHIM KOMOO, CHE AZIZ ALI, KAMAL ROSLAN MOHAMED, JUHARI MAT AKHIR DAN FELIX TONGKUL

Laporan (Report)

Seminar anjuran bersama Jabatan Geologi UKM dan Persatuan Geologi Malaysia bertajuk *EIA Bakun: Aspek geologi dan hidrogeologi* telah disampaikan oleh Prof. Dr. Ibrahim Komoo di Bilik Seminar Jabatan Geologi UKM pada hari Rabu 23 Ogos 1995 jam 2.30 petang. Kertaskerja Seminar yang dibentangkan merupakan sebahagian daripada hasil kajian EIA Projek Hidroelektrik Bakun yang dilakukan oleh Prof. Dr. Ibrahim Komoo dan rakan-rakannya. Penyeminar telah membentangkan banyak maklumat geologi yang bakal tenggelam apabila projek Hidroelektrik Bakun ini dilaksanakan nanti. Persembahan grafik dan slaid yang menarik dan barangkali juga kehangatan topik Bakun itu sendiri telah berjaya menarik seramai 87 peserta dari pelbagai agensi kerajaan dan syarikat-syarikat perunding tempatan.

Abstrak (Abstract)

Cadangan Empangan Bakun mempunyai kawasan tadahan seluas 1,505,180 ha, dan luas kawasan takungan maksimum 69,640 ha. Empangan yang akan dibina berjenis Empangan Isian Batuan Bermuka Konkert, dengan ketinggian maksimum 205 m. Empangan ini akan menggunakan 8 unit Turbin yang masing-masing berkapasiti 315 MW, menjadikan empangan ini berupaya mengeluarkan kuasa elektrik sebanyak 2,400 MW.

Geologi kawasan tadahan Empangan Bakun terdiri daripada batuan Formasi Belaga (Kapur-Eosen Tengah), Formasi Nyalau (Miosen) dan batuan volkano (Tertiar Atas-Kuarternari). Formasi Belaga merupakan batuan yang paling dominan menunjukkan ciri selang lapis antara batu pasir greiwak, syal, batu lodak dan syal berkeping. Batuan berbutir halus berwarna kelabu gelap, keras dan berira selari dengan perlapisan asal. Batu pasir greiwak pula berwarna kelabu cerah dan sangat keras. Perlapisannya boleh daripada beberapa cm hingga 5 m. Formasi Nyalau menindih secara tidak selaras di atas Formasi Belaga. Batuan Formasi ini terdiri daripada batu pasir masif, batu pasir berlimonit dan syal berkarbon. Arang batu banyak terdapat di dalam formasi ini, umumnya berketebalan daripada beberapa cm hingga 3 m. Batuan volkano yang umumnya membentuk dataran tinggi dan pergunungan terdiri daripada lava basalt, agglomerat, riodasit, tuf dasit dan breksia andesit.

Keadaan hidrogeologi kawasan tadahan Empangan Bakun umumnya dikawal oleh geologi dan struktur batuan. Batuan ahli Layar dan Kapit daripada Formasi Belaga mempunyai potensi air bawah tanah yang buruk kerana berporositi rendah. Ahli Pelagus dan Metah yang merupakan jujukan muda Formasi Belaga, kelihatan mempunyai potensi air bawah tanah yang sederhana. Bagaimanapun, Formasi Nyalau yang masih terkonsolidasi sederhana merupakan satu-satunya formasi yang mempunyai potensi air bawah tanah yang baik. Sumber air bawah tanah di kawasan ini umumnya berkaitan dengan zon berekahan tinggi dan lapisan tanah terluluhawa.

Bersadarkan kajian aspek geologi dan hidrogeologi, beberapa impak utama pembinaan empangan ini telah dikenalpasti. Diantaranya ialah:

- Hakisan dan perlodakan
- Kestabilan cerun sepanjang tebing takungan
- Keseismosan tabii dan dorongan empangan
- Kehilangan khazanah geologi, dan
- Perubahan kekal di kawaan delta Rajang

Kebanyakan impak-impak ini boleh diminimumkan dengan kaedah kawalan dan sistem rekabentuk empangan yang bersesuaian. Bagaimanapun, sebahagian daripada impak ini akan berkeadaan kekal dan perlu diurus secara bijaksana.

Mohd Shafeea Leman

TECHNICAL TALKS

IBRAHIM KOMOO

VARAVIRDH SUTEETHORN

JEAN-JACQUES JAEGER

Vertebrate fossils in the terrestrial Mesozoic and Cainozoic of Thailand

VARAVIRDH SUTEETHORN AND JEAN-JACQUES JAEGER

Laporan (Report)

The talk on the vertebrate fossils of Thailand was delivered in two parts to an audience of 35 members of the Society. The talk was held on 28th August 1995 at the Geology Department, University of Malaya and was jointly hosted by the Geological Survey Department, Malaysia and the Geological Society of Malaysia.

Mr. V. Suteethorn is currently Head of the Vertebrate Paleontology Unit in the Geological Survey Division of the Department of Mineral Resources, Thailand. He has been with the joint Thai-French Project Vertebrate Fossils of Thailand since 1980.

Prof. Jaeger is currently professor in Vertebrate Paleontology at Paris VI University, Montpellier University. He had worked on Tertiary biochronology and vertebrate fossils in north Africa (Morocco, Algeria and Tunisia), east Africa (Tanzania, Kenya, Ethiopia and Djibonti), India and Thailand (Thai-French Project).

Accompanying them, is Mrs. Yaowalak Chainanee who is attached to the Geological Survey Division of the DMR and had worked on vertebrate fossils of Thailand since 1985.

The party had just returned from a 2-week field trip to the lignite mines in Sarawak organised by the Geological Survey Department, Malaysia.

Summary

Mr. Suteethorn's talk was on the Mesozoic fossils (Dinosaurs) of Thailand. Most of the fossils were found within the continental Khorat Plateau which is Mesozoic in age. Among the fossils discovered were an amphibian ("crocodile-like") lower jaw of Mid-Jurassic age, fish scales, tracks, tooth fossils of carnivorous dinosaurs and abundant Sauropod bones (pelvic and hand bones and sternum plate). Some 20 localities yielding Sauropod fossils and coprolites of "crocodile-like" dinosaurs were discovered. Turtle plates in shales were also found in the Surat Thani province.

Prof. Jaeger's talk was on the Cainozoic fossils (Mammals) of Thailand. He reported that the Krabi basin contained some 30 different species of mammalian fossils. Microfossils were found in the Pitsanuluk basin. Amongst the mammalian fossils found were close relatives of the present day hippopotamus, flying lemur, mastodon, an ancestor of the Sumatran rhinoceros, porcupine, squirrel, deer, antelope, panda, orang utan and hominid teeth. In general, micromammalian fossils are better stratigraphic indicators than macrofossils.

Both speakers illustrated their talks with excellent slides of the fossils found in Thailand. Those present at the talks came away fully inspired to discover similar finds in Malaysia!

Jimmy Khoo

Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.

3. Azman b. Yahya
Jabatan Geologi, Universiti Kebangsaan

Kuala Lumpur.

15. Lau Ung Kiong
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.

SOCIETY'S BATIK SHIRT

Computer-designed and handprinted with the latest technology of handprinting from the East Coast, the Society's batik shirt is of soft, rayon material and comes in a cool, soothing grey colour.

PETUKARAN ALAMAT (Change of Address)

The following members have informed the Society of their new addresses:

1. Kwang Ah Tsai
   P.O. Box 10266, 88803 Kota Kinabalu, Sabah, Malaysia.
2. Larry S. Grubbs
   c/o Texaco International, 4800 Fournace Place, Bellaire, Texas 77402, USA.
3. Michael C. Friederich
   BHP Minerals, 11th Floor, Midplaza Building, Jl. Jend. Sudirman 10-11, Jakarta 10220, Indonesia.
4. Manohar Suppiah
   Resources Consultant, No. 18A, Lintasan Perajurit 6, 31400 Ipoh, Perak.

GSM

CURRENT ADDRESS WANTED

The GSM is seeking the address of the following member. Will anyone who knows his whereabouts please inform the Hon. Secretary of his new address:

1. Sahat Sadikun
   UKM Kampus Sabah, Beg Berkunci 62,
   88996 Kota Kinabalu, Sabah.

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PERTAMBAHAN BAHARU PERPUSTAKAAN (New Library Additions)

The Society has received the following publications:

1. Tin International, vol. 68, no. 4, 5 & 6, 1995.
2. U.S. Geological Survey, Fiscal year 1994.
3. AAPG Bulletin vol. 79/6, 1995.
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BERITA-BERITA PERSATUAN
News of the Society

KEAHLIAN (Membership)

The following applications for membership were approved:

Full Members

1. Basri b. Sumani
GCS Sdn. Bhd., 128M, Jalan SS21/35, Damansara Utama, 47400 Petaling Jaya.
2. Ali Hashim
20-1-6, Jalan 1/108C, Taman Sungei Besi, 57100 Kuala Lumpur.
3. Frank Jahn
Falcon House, Union Grove Lane, Aberdeen AB1 6XU, United Kingdom.
4. Zakaria Mohamad
Jabatan Penyiasatan Kajibumi Malaysia, Bangunan Tabong Haji, P.O. Box 11110, Jalan Tun Razak, 50736 Kuala Lumpur.
5. Rosmah A. Rahman
9, Lorong Enggang 7, Taman Keramat, 54200 Kuala Lumpur.
6. Bernard Leo Rayner
Schlumberger, 32F Menara Promet, Kuala Lumpur.
7. Mohamad Fairus Bin Hassan
Terra Geotechnics Sdn. Bhd., 23C, Jalan SS21/60 Damansara Utama, 47400 Petaling Jaya.
8. Che Aziz Ali
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.

Student Members

1. Low Ying Chek
Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.
2. Yusri b. Yusof
Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.
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7. Zakaria b. Abdullah
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8. Roslan b. Kamari
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9. V. James Daniel
Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.
10. Mohd. Shalbe Mohd. Yasin
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
11. Janani Kathirgamoo
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
12. Yoong Boon Teck
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
13. Huong Tuong Chai
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
14. Norhasliza Kasim
Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
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14. Institute of Geological & Nuclear Sciences, Monograph nos. 1-9 (1993-1994).
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16. IMM Bulletin, no. 1025, 1995.
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20. Scripta Geologica, no. 104, 106, 107 (1994); 108 (1995).
21. U.S.G.S. Professional Paper: 1995: 1402-F, 1538-J, 1538-E, 1543A-B, 1559, 1415-A; 1994: 1538-N, 1410-C (tex & plate), 1538-M, 1534, 1544, 1538-H, 1529, 1545, 1550-F.
22. U.S.G.S. Bulletin 1995: 2072, 2085-C, 1808-P, 1917-S, 2116, 2104, 2094-B, 1988-I, 2120, 2086, 2111; 1994: 2110, 2060.
23. U.S.G.S. Circular: 1995: 1121, 1120-G, 1120-H, 1112.

WARTA GEOLOGI 21(3) PEMBETULAN (Correction)

Article "Some Paleogene planktonic foraminifera from the Lubok Antu Complex, Sarawak" by Basir Jasin and Taj Madira Taj Ahmad, *Warta Geologi* 21(3) page 151, Plate 2,

Figure 8. *Globanomalina indiscriminata* (Mallory) (spiral view)

should read

Figure 8. *Morozovella naussi* (Martin) (Umbilical view)

and

Figure 9. *Globanomalina indiscriminata* (Mallory)

We apologise for the error.

PERSATUAN GEOLOGI MALAYSIA

GEOLOGICAL SOCIETY OF MALAYSIA

PETROLEUM GEOLOGY CONFERENCE '95

Concorde Hotel,
Kuala Lumpur
11 & 12 December 1995

First Circular
JUNE 1995

GEOLOGICAL SOCIETY OF MALAYSIA

PETROLEUM GEOLOGY CONFERENCE '95

Background

The Geological Society of Malaysia is a non-political and non-profit making scientific organisation. Founded in 1967, the aim of the Society is to promote advancement of the geological sciences in Malaysia. Currently, it has more than 500 registered members worldwide.

In keeping with the Society's objectives to provide a forum for exchange of scientific and technical information and advancement in petroleum exploration and development, preparation is now being made to organise the 18th Petroleum Geology Conference in Kuala Lumpur. This year, the Conference will be held at the Concorde Hotel on 11th and 12th December 1995. The Petroleum Geology Conference is a major annual event of the Society and has been well attended by the geoscientific community, both local and abroad.

During the past years, exploration activities have been brisk. Commendable results have been achieved, some of which are attributed to the innovative use of the latest advances in exploration technology. This Conference would provide you an opportunity to experience how these innovative technologies are applied in this region as some of the success stories will be told at this Conference.

Call for Papers

Once again your support to ensure continued success of the 1995 Conference is required. The Organising Committee wishes to invite you to participate and contribute papers on your experiences in the exploration for and development of hydrocarbon resources. Papers presented at the past *seminars* cover a wide spectrum of petroleum geology. So, do share your experiences with your counterparts and we are sure your participation in this Conference will be memorable.

In order to assist the Organising Committee in the preparation of the Conference, we would appreciate receiving your intention to present a paper by **6th September 1995.** Abstracts should reach us by **1st October 1995.** Authors will be notified of the acceptance of their papers by **20 October 1995.**

Call for Sponsorship

Generous contributions in the form of sponsorship of the Conference's events and donations received from various organisations, including PSC contractors, service and consulting companies and other institutions have made this annual event a success. For the 1995 Conference, the Organising Committee is again seeking your support, either to donate or to fund Conference functions. Organisations wishing to contribute to the success of the Conference may contact directly the Organising Chairman.

REGISTRATION AND GENERAL INFORMATION

All intending participants are advised to register early. Advance registration will be accepted until **1st December 1995.** Late registration will be accepted at the Geological Society of Malaysia's registration desk at the Concorde Hotel beginning Monday, 11 December 1995 from 8 am to 10 am.

Membership	Advance Registration Fees	Late Registration Fees
Full Members	RM80.00	RM100.00
Non-Members	RM100.00	RM120.00
Student Members	RM10.00	RM15.00
Student Non-Members	RM15.00	RM20.00

Speakers will be exempted from payment of registration fees.

Payment by crossed cheque, bank draft or cashier's order is acceptable and these should be made payable to the Geological Society of Malaysia. Outstation cheques should cover bank charges.

Please send registration fees together with the attached Registration Form to:

The Treasurer
Geological Society of Malaysia
c/o Department of Geology
University of Malaya
59100 Kuala Lumpur
MALAYSIA

to reach us by **1st December 1995.** Lunch will be provided for all registered participants except student participants.

ACCOMMODATION

Accommodation at the Concorde Hotel, at the participants' own expense, can be arranged upon request. All requests for accommodation will be automatically confirmed.

Please indicate in the Registration Form if arrangements for accommodation will be required. For further information, please write to or call:

Organising Chairman
Petroleum Geology Conference '95
Geological Society of Malaysia
c/o Department of Geology
University of Malaya
59100 Kuala Lumpur, MALAYSIA

Attn: Mr. Hoh Swee Chee
Tel: 603-7577036
Fax: 603-7563900

GEOLOGICAL SOCIETY OF MALAYSIA
PETROLEUM GEOLOGY CONFERENCE '95
11 and 12 DECEMBER 1995

REGISTRATION FORM

Please tick appropriate boxes.

☐ I intend to register as participant in the above Conference.

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☐ I will require _____ rooms* at the Concorde Hotel.

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Position: _____

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Please complete and return to the Geological Society of Malaysia **together** with the appropriate registration fees.

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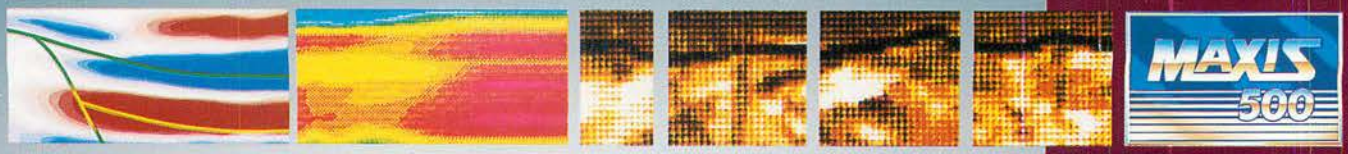

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Understanding the internal structure of the rock can confirm hypotheses regarding its geological evolution and can provide valuable clues to geologists and engineers regarding local porosity and permeability changes. This is possible with the enhanced textural analysis from the new high-resolution sensors, as well as detailed evaluation of fracture networks and other secondary porosity.

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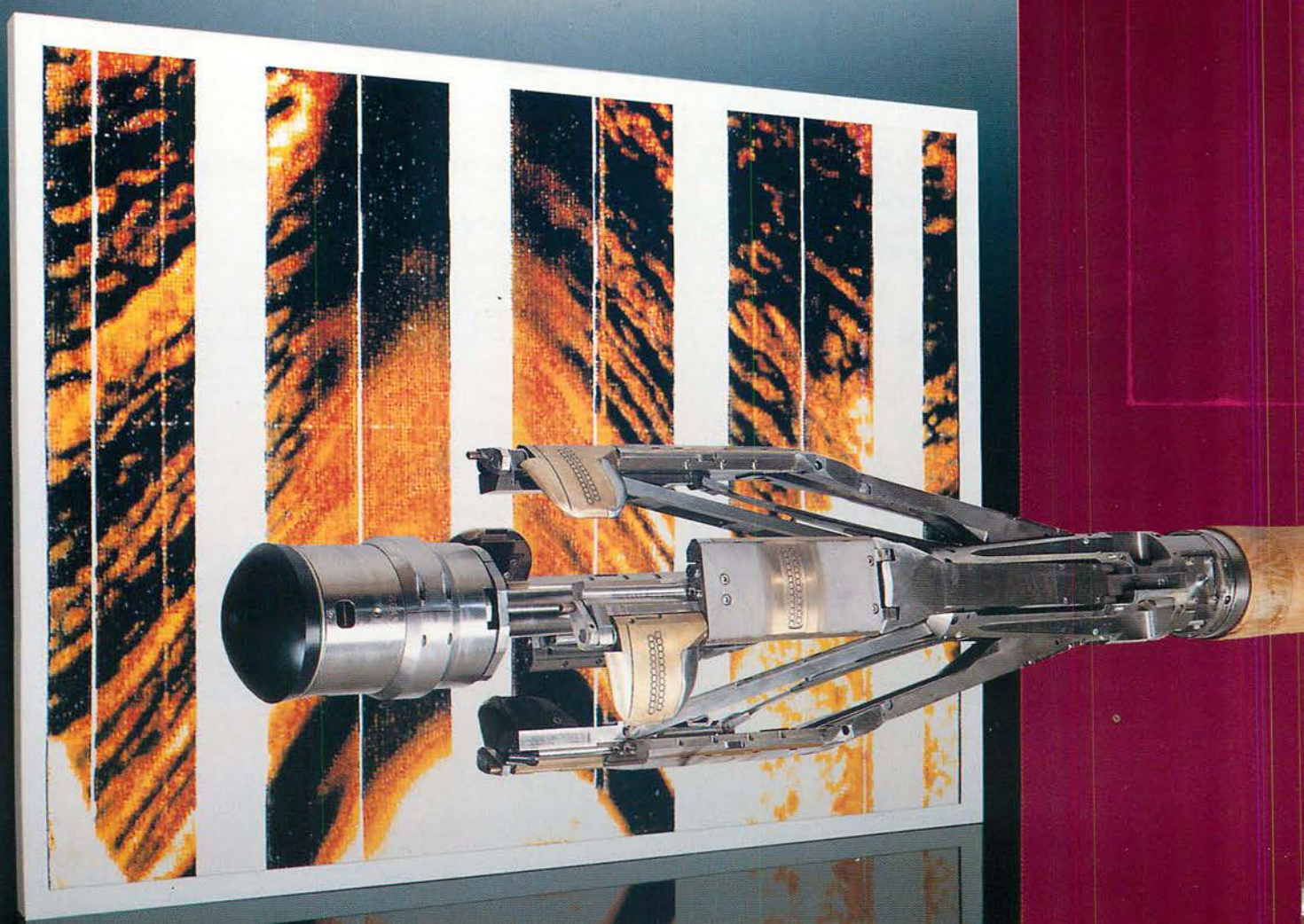

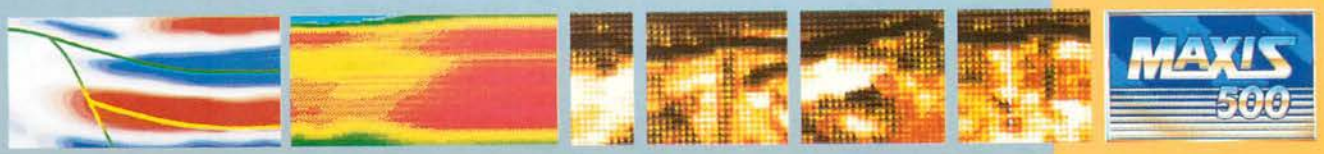

The Schlumberger Ultrasonic Borehole Imager Detects Openhole Problems and Fractures, Even in Oil-Base Muds.

Accurate, high-resolution, acoustic measurements by the UBI* Ultrasonic Borehole Imager let you examine an openhole for stability problems, deformation and fractures when nonconductive, oil-base muds prevent resistivity measurements. On the same trip, the UBI rotating transducer can check for corrosion and mechanical wear of the internal surface of the casing as the tool is pulled out of the hole.

No other borehole measurement gives you the thin-bed resolution you get with the UBI tool. The images, cross-section plots and pseudo-3D "spiral" plots generated from UBI measurements also reveal keyseats, breakouts, shear sliding and shale alteration to help you avoid the added drilling costs that result from stuck pipe and lost time or equipment. In addition, you get horizontal stress information for mechanical properties evaluations to predict breakouts and perforation stability in unconsolidated sands.

Talk to your Schlumberger representative about detecting openhole problems and fractures acoustically, even in oil-base muds. What UBI images show you could save you time, expense or possibly your well.

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Second Malaysian Geology Photographic Competition





The Geological Society of Malaysia invites entries for the second Malaysian Geology Photographic Competition. This competition is to further enhance interest in Malaysian Geology amongst the geological community as well as to create awareness of geology in the general public.

Rules & Regulations

1) This photographic competition is open to all members of the public.
2) The subject of the photographs must be on Malaysian geology only.
3) Each entry will be judged for both their geological as well as photographic quality and content.
4) Entries must be in the form of prints either colour or black and white and of 11" x 14" size (11R).
5) There is no limit to the number of entries from each participant.
6) All entries must be made using official Entry Form obtainable from the Geological Society of Malaysia.
7) Each participant is limited to winning one prize only.
8) The prizes are as follows:

   1st prize : RM 1,000.00
   2nd prize : RM 500.00
   3rd prize : RM 300.00
   5 consolation prize of RM100.00 each.

   In addition all prize winners will receive a certificate.
9) The closing date of the competition is **31st December 1995**.
10) The decision of the judges is final.
11) Copyright of the winning photographs shall be the property of the Geological Society of Malaysia and prize winners are required to submit their negatives to the Society.

For further information please contact:
Geological Society of Malaysia
c/o Department of Geology
University of Malaya
59100 Kuala Lumpur
Tel: (603) 757 7036
Fax: (603) 756 3900

BERITA-BERITA LAIN
Other News

Local News

Varsity courses to be shortened

First degree courses offered at all local universities will be shortened from four to three years with effect from the next academic year, Education Minister Datuk Seri Najib Tun Razak announced yesterday.

He said the move would reduce the total fees undergraduates would have to pay and allow them to enter the job market earlier to meet the shortage of skilled manpower in the country.

"Three years is adequate for a university education; we don't need to study for four years," Najib said, adding that Malaysian students would lose their competitive advantage by graduating at the age of 24 while their counterparts in advanced countries graduate sooner.

Speaking to reporters after chairing a post-Cabinet meeting, Najib said the decision was made at the recent vice-chancellors' conference.

He also said the syllabi of all courses would be reviewed to fit the new timetable and assured that the quality of education would not be compromised.

Najib said the three-year directive would not apply to five-year undergraduate programmes at Universiti Teknologi Malaysia which would be reduced to four years.

Another exception is the medical degree course.

"We will follow the international norm. If it is five years, we'll do five years," he said.

Najib denied the move was linked to the corporatisation of universities. He said the Government had earlier planned to reduce the duration of courses of study.

He said the Cabinet had given its support for the changes and all local universities, including the International Islamic University, have been directed to implement the three-year courses for the 1996/97 intake.

Commenting on the announcement, Universiti Kebangsaan Malaysia vice-chancellor Prof. Datuk Dr. Mohd Sham Sani said UKM was conducting a thorough study on its courses, especially those which are subject to requirements of professional bodies.

He added that the university might introduce a third semester to ensure that the students could graduate in three years.

Star, 17.8.1995

Landslides can occur at 126 spots

The Works Ministry has identified 126 sites along the East-West Highway where landslides can occur.

Its Minister, Datuk Seri S. Samy Vellu, said today this was based on the interim report received from the respective State Public Works Departments on problem areas and roads nationwide.

The full report was expected to be received by the end of the month and would be sent to the Economic Planning Unit in the Prime Minister's Department for scrutiny before submission to the Cabinet for a decision, he said.

"The ministry has received many reports from the State PWDs on problem areas since the directive to identify such areas was issued last month," he told reporters after opening the PWD senior officers' meeting here.

He said the concessionaire for the North-South Highway, Projek Lebuhraya Utara-

Selatan (PLUS), would be responsible for the maintenance of the highway and ensuring the safety of the users.

Samy Vellu said earth and mud slips could occur during heavy rain along the 126 identified spots, many of them at hillslopes.

He said repairs and maintenance work had been carried out at 30 of the 126 identified spots to minimise problems.

"More such repairs would be carried out by the Public Works Department along the East-West Highway stretch and also along other roads with similar problems.

"Immediate measures need to be carried out to ensure that no tragedy or catastrophe like the recent one in Genting Highlands occurs," he said, referring to the June 30 landslide on the Genting Highlands slip road which killed 20 people and injured 22 others.

Samy Vellu said a substantial sum would have to be spent on maintenance and repair works along the East-West Highway and other identified problem roads.

He did not disclose how much was needed but added that the cost was irrelevant as the public's safety had to be given due importance.

The reports from the State PWDs, he said, would enable relevant departments under the ministry to take immediate remedial action to avoid incidents which could jeopardise the lives of road users.

"We are concerned over the safety of road users, especially those travelling along stretches which are surrounded by hills and valleys.

"Future problems which could affect the existing and proposed roads have also been identified," he said.

NST, 20.8.1995

Tin likely to breach RM18 level in two weeks

Tin, the commodity that has long taken a back seat to high-fliers such as palm oil and rubber, is in for headier days.

Last Friday, the price of tin on the Kuala Lumpur Tin Market hit another three-year high at RM17.60 per kg, up 43 sen from Thursday's RM17.17 per kg.

"The KLTM tin price could breach the RM18 per kg level over the next two weeks," an industry analyst told *Star Business* in Kuala Lumpur yesterday.

After having been in the doldrums for years, the commodity breached the RM17 mark on Aug 8, closing at RM17.13. The last time it reached this level was on June 29, 1992.

Many view the current surge in price on the KLTM as a spillover effect of the commodity's strong performance on the London Metal Exchange (LME), where it traded above US$7,000 (RM17,500) per tonne — a level not seen since 1992.

Major factors boosting the price are the tight supply in the world's tin stocks and a sudden upsurge in tin consumption by major consumers such as the United States and Europe, which are slowly recovering from the recession, as well as developing nations like China, Thailand, South Korea and Taiwan.

The analyst said: *"Even on the LME, the emergence of fund manager, who are digging into tin, is prominent,"* he said.

He said foreign fund managers, who used to focus on main metals such as aluminium and copper, were currently diverting to tin. He added that tin was set to become a "hot" commodity again, as its substitution by other materials might end soon.

The analyst said escalating aluminium prices had resulted in US and European consumers shifting interest to "less pricely metals" such as tin.

He said a strong impact was created when soft drink giant Coca Cola, which had long used aluminium cans, recently opted for tin plates.

This was followed by news of a US company setting up a US$80 million (RM200 million) electrolytic plant to produce 250,000 tonnes of tinplates annually by late 1996.

Again this backdrop however, tin stocks on the LME were fast depleting as major producers had scaled down production or closed their mines during the bad years, the analyst said.

Star, 21.8.1995

Tunnel cracks only 'superficial'

The web-like cracks in the Ipoh-Changkat Jering tunnel will not endanger the tunnel structure, the Malaysian Highway Authority said.

State Infrastructure Committee chairman Ong Ka Chuan said the MHA report stated that they were superficial cracks and did not have any impact on its structure.

"The cracks on the granite block are caused by the dilation of cement which is affected by the weather," he told reporters after receiving the MHA report here yesterday.

Ong was responding to *The Star*"s report on Saturday that several motorists had detected web-like cracks in the tunnel.

Projek Lebuhraya Utara-Selatan (PLUS), in a statement, also claimed that the cracks were superficial and did not affect the tunnel's structure.

Ong said PLUS had started injected a high-strength exposure chemical in between to glue the cracks and expected to complete their task by October. He assured motorists that the tunnel was safe.

Star, 22.8.1995

Ashton spinoff focusing on gold ops in Indonesia

Aurora Gold, a spinoff from Malaysia Mining Corp's Australian diamond company Ashton, said it is concentrating its attention on Indonesia.

As a result it is drastically writing down the value of its Australian operations.

The writedowns, totalling almost A$35 million (RM66.5 million), saw the company reporting a half-year to June loss of A$32.8 million (RM62.3 million).

The company said it was considering selling off its interest in the Bardoc-Davyhurst joint venture in Western Australia. A decision on the Rishton gold venture in Queensland would be made after an underground deep drilling programme was completed in October.

Aurora was floated on the Australian Stock Exchange two years ago from Ashton's gold operations and is regarded by analysts as a highly rated junior gold miner because of its Indonesia interests.

Last year it successfully commissioned the A$100 million (RM190 million) Mt. Muro goldmine in Kalimantan. The mine is now producing gold and silver at a gold equivalent production rate of 200,000 ounces a year.

Managing director Ian Burston said Aurora was now Indonesia's third largest gold producer and had projects with the potential for significant growth.

Aurora has high hopes of its Toka Tindung prospect in Sulawesi where exploration has extended the strike length of mineralisation to 800 metres.

At Mt. Muro itself further promising results came from two epithermal zones with returns including 12 metres at 9.58 grames/tonne gold and 179 grammes/tonne silver.

Burton said Mt. Muro was a low cost gold producer.

Meanwhile Ipoh Garden Australia, the subsidiary of IGB Corp of Malaysia, has reported a 40 percent increase in Half year aftertax profit to June of A$8.15 million (RM15.5 million) largely due to strong rentals from its Queen Victoria Building.

For the first time it is declaring an unfranked (tax not paid) interim dividend of 12 Australia cents (22.8 sen) per share.

Star, 30.8.1995

16.	Nasharuddin Zaini	The Limestone Hill of Kampung Paya Gunung, Jerantut Pahang Darul Makmur.
17.	Nik Azhar Nik Mat	Geologi Am Kawasan Kuala Lebir-Gua Musang, Kelantan.
18.	Noradzmudin Muhamed Nor	Geologi Kawasan Kuala Jengai-Kampung Gadong Ulu Dungun, Trengganu.
19.	Noranitha Sulatin	Geologi Struktur Kawasan Puchong, Serdang.
20.	Noryati Roslie	Pemetaan Turutan Arang Batu & Petrologi Arang Batu Di Kawasan Lambir, Miri, Sarawak.
21.	Qalam Azad Rosle	Stratigraphy, Sedimentology and Structural Geology of the Betong-Lepang Nenering Border Area, Pengkalan Hulu (Keroh), Hulu Perak.
22.	Rengga A/K Gendang	Geologi Kawasan Bintulu Selatan, Sarawak dengan Penekanan kepada Petrologi Arang Batu.
23.	Rosli Ismail	Geologi Kawasan Gombak Bintulu, Sarawak.
24.	Rozita Hj. Musib	Geology of the Ampang-Ulu-Kelang Area, with Emphasis on Its Granite Soil Properties.
25.	Rushdi Hj. Mohd. Yusoff	Geologi Kawasan Selinsing-Sg. Koyan dengan Penekanan kepada Permineralan.
26.	S. Ramesh A/L V. Subramanian	Geologi Kawasan Gombak, Selangor dengan Penekanan kepada Permatang Kuarza Klang Gate dari segi Petrologi, Geokimia dan Struktur.
27.	Samsul Idrus	Geologi Am dengan Penekanan Kajian Geoteknik ke atas Kestabilan Cerun Lebuhraya Bukit Lanjan ke Jalan Duta.
28.	Shazali Mat Arof	Geologi dengan Penekanan kepada Kajian Kejuruteraan Geologi Kawasan Teranum, Raub, Pahang Darul Makmur.
29.	Syed Omar	Kawasan Kapit, Bahagian Ketujuh, Sarawak.

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Star, 22.8.1995

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Star, 30.8.1995

PRESS RELEASE

Geological Reports on Industrial Minerals

Four reports by the Geological Survey Department on ball clay have been published recently. These reports are part of the Department's Sixth Malaysia Plan series of follow-up investigations on the clay deposits of Prai (Penang), Pasir Mas (Kelantan), Batang-Berjuntai (Selangor) and Besut (Terengganu).

A total of 74 million tonnes of ball clay were delineated; ten million tonnes in Prai, 14 million tonnes in Pasir Mas, 43 million tonnes in Batang Berjuntai and seven million tonnes in Besut. The quality of the clays found in all these areas are comparable to ball clays used in the local ceramic industry for the manufacture of floor and wall tiles, sanitary wares and other ceramic products. The physical and chemical characteristics as well as their suitability of for use in industry are detailed in these reports.

Principal Geologist Mr. K.K. Khoo said that these reports are on sale at RM50 each from the Geological Survey Department at Kuala Lumpur and Ipoh.

Senarai Tesis SmSn Semester II, Sesi 1994/95 Jabatan Geologi, UKM, Bangi

Bil.	Nama Pelajar	Tajuk Tesis
1.	Shamsul Arif Harun	Geologi Am Kawasan Batu Anam Segamat, Johor
2.	Andrese Glabi	Geologi Am Kawasan Bera, Pahang Darul Makmur
3.	Zamzuri Zakaria	Geologi Am Kawasan Bera, Temerloh Pahang Darul Makmur
4.	Tosri Amin	Geologi Am Kawasan Ulu Selangor-Bentong, Selangor-Pahang
5.	Amir Saiful Haris Abdullah	Geologi Am Kawasan Pulau Manis, Terengganu Darul Iman
6.	Mohamed Asri Omar	Geologi Am Kawasan Semantan, Sarawak
7.	Aziman Madun	Geologi Am dan Stratigrafi Kawasan Lundu, Sarawak
8.	Abd. Rahman Omar	Geologi Kawasan Seremban, Negeri Sembilan
9.	Zamani Ahmad Mansor	Geologi Am Kawasan Kuala Kerau, Pahang Darul Makmur
10.	Zamry Mohamed Yunus	Geologi Am Kawasan Kampong Pulai, Baling, Kedah Darul Aman
11.	Yusri Zakariah	Geologi Am Kawasan Chaah Segamat, Johor Darul Takzim
12.	Mohamed Nazly Nasir Mohamad	Geologi Am Kawasan Bukit Kepong, Muar, Johor Darul Takzim.
13.	Abdullah Hasan	Geologi Kawasan Sungai Petani Barat, Kedah Darul Aman
14.	Zakaria Endut	Geologi Am Kawasan Bandar Cerul, Kemaman, Terengganu

Senarai Tesis/Laporan Projek Tahun Akhir Sesi 1994/95 Jabatan Geologi, Universiti Malaya

Bil.	Nama Pelajar	Tajuk Tesis/Laporan Projek
1.	Ahmad Hatta Kamaruzzaman	Geology of the Temenggor Area.
2.	Amran Abd. Wahid	Geologi Am Kawasan Pasir Gudang dengan Penekanan kepada Enapan Lanar Tua, Kajian Stratigrafi dan Sedimentologi Kawasan Kapit, Bahagian Ketujuh, Sarawak.
3.	Amri Amdan	Stratigrafi, Sedimentologi dan Struktur Kawasan Kisap, Pulau Langkawi, Kedah.
4.	Azmi Abd. Rashid	Kajian Petrologi dan Paleontologi Bukit Batu Kapur Kota Gelanggi, Jerantut, Pahang.
5.	Borhan Mohd Doya	Petrologi dan Geokimia Granitoid Kawasan B. Mertajam, P. Pinang-Kulim, Kedah-Semanggol, Perak dan Kajian Geologi Am.
6.	Ivan James Sta Maria	Stratigraphy and Sedimentology of Santubong Area, West Sarawak.
7.	John Joseph Jinap	Geology of the Siburan-Sikog Area, Sarawak With Emphasis on Petrography, Geochemistry and Engineering Aggregate Properties.
8.	Lee Choon Lian	Geologi Kawasan Sekitar Labu-Nilai-Pajam, Negeri Sembilan dengan Penekanan kepada Petrografi, Geokimia dan beberapa Sifat Kejuruteraan Batuan Granitoid.
9.	Md. Zin Hj. Kamsan	Geologi Kejuruteraan Bahagian Barat, Pulau Langkawi, Kedah.
10.	Meor Shahrin Mahmood	Petrologi dan Geokimia bagi Batuan Granitoid Kawasan Sepanjang Lebuhraya Utara-Selatan dari Sg. Siput(S) ke Chendering, Perak.
11.	Mohamad Tarmizi Mohd. Zulkifley	Petrology and Geochemistry of the Dacite Prophyry. Intrusions in the Kuching-Kwap Area, West Sarawak and Its Aggregate Engineering Properties.
12.	Mohamed Rashid Saluki Subhi	Geologi Kawasan Gunung Tebu, Besut, Trengganu, dengan Penekanan kepada Batuan Granitoid.
13.	Mohd. Fairuz Hj. Md. Isa	Geologi Kawasan Ayer Puteh, Kemaman, Trengganu Darul Iman.
14.	Mohd. Shah Sulaiman	Geologi Am Kawasan Kuala Telemong, Ulu Trengganu, Trengganu Darul Iman.
15.	Muhammad Fadzli Deraman	Geologi Hulu Selangor dan Kajian Kestabilan Cerun Potongan Di KM 443.8–421.1 Lebuhraya Utara-Selatan (Rawang-Sg. Selangor).

16.	Nasharuddin Zaini	The Limestone Hill of Kampung Paya Gunung, Jerantut Pahang Darul Makmur.
17.	Nik Azhar Nik Mat	Geologi Am Kawasan Kuala Lebir-Gua Musang, Kelantan.
18.	Noradzmudin Muhamed Nor	Geologi Kawasan Kuala Jengai-Kampung Gadong Ulu Dungun, Trengganu.
19.	Noranitha Sulatin	Geologi Struktur Kawasan Puchong, Serdang.
20.	Noryati Roslie	Pemetaan Turutan Arang Batu & Petrologi Arang Batu Di Kawasan Lambir, Miri, Sarawak.
21.	Qalam Azad Rosle	Stratigraphy, Sedimentology and Structural Geology of the Betong-Lepang Nenering Border Area, Pengkalan Hulu (Keroh), Hulu Perak.
22.	Rengga A/K Gendang	Geologi Kawasan Bintulu Selatan, Sarawak dengan Penekanan kepada Petrologi Arang Batu.
23.	Rosli Ismail	Geologi Kawasan Gombak Bintulu, Sarawak.
24.	Rozita Hj. Musib	Geology of the Ampang-Ulu-Kelang Area, with Emphasis on Its Granite Soil Properties.
25.	Rushdi Hj. Mohd. Yusoff	Geologi Kawasan-Selinsing-Sg. Koyan dengan Penekanan kepada Permineralan.
26.	S. Ramesh A/L V. Subramanian	Geologi Kawasan Gombak, Selangor dengan Penekanan kepada Permatang Kuarza Klang Gate dari segi Petrologi, Geokimia dan Struktur.
27.	Samsul Idrus	Geologi Am dengan Penekanan Kajian Geoteknik ke atas Kestabilan Cerun Lebuhraya Bukit Lanjan ke Jalan Duta.
28.	Shazali Mat Arof	Geologi dengan Penekanan kepada Kajian Kejuruteraan Geologi Kawasan Teranum, Raub, Pahang Darul Makmur.
29.	Syed Omar	Kawasan Kapit, Bahagian Ketujuh, Sarawak.

SEMINAR GEOLOGI ABAD KE-21: CABARAN DAN PELUANG

13-14 Disember 1995
Kelab Rekreasi Universiti
Universiti Kebangsaan Malaysia
43600 Bangi
Selangor D. E.

Anjuran
Jabatan Geologi
Universiti Kebangsaan Malaysia

Dengan Kerjasama
Persatuan Geologi Malaysia

Hebahan Pertama
Ogos 1995

SEMINAR GEOLOGI ABAD KE-21: CABARAN DAN PELUANG

OBJEKTIF

Sempena genapnya usia UKM 25 tahun pada tahun 1995, begitu juga usia Jabatan Geologi, amat wajar Jabatan melakukan aktiviti menyemak sumbangannya setakat ini kepada bidang keilmuan dan pembangunan negara serta menentukan arah tuju yang lebih jelas, yang bukan sahaja bakal memperkukuh kegiatan penerokaan dan pengembangan ilmu geologi tetapi juga meningkatkan kebolehgunaannya untuk membangunkan negara. Sehubungan itu, Jabatan Geologi, UKM dengan kerjasama Persatuan Geologi Malaysia akan menganjurkan seminar di atas dengan objektif utama:

- **Meneliti perkembangan semasa dalam bidang geologi khususnya dan sains bumi amnya dan merumus arah tuju bidang ini yang benar-benar relevan sebagai agen pengembangan ilmu dan pembangunan negara bagi Abad Ke-21.**
- **Menggariskan cabaran-cabaran yang harus ditempoh bagi menjayakan hala tuju tersebut.**
- **Melihat peluang-peluang pengembangan yang ada bagi bidang geologi dan sains bumi, baik dalam aspek keilmuan, kegunaan, mahupun kerjaya dalam abad yang akan datang.**

KERTASKERJA

Kertaskerja terbahagi kepada dua kategori: jemputan dan terbuka. Kertaskerja jemputan akan disampaikan oleh wakil-wakil institusi pengajian tinggi, agensi kerajaan, badan koporat serta jabatan kerajaan yang meliputi pelbagai aspek yang bersesuaian dengan tema seminar "Geologi Abad Ke-21: Cabaran dan Peluang". Bagi kertaskerja terbuka, pihak penganjur menjemput mereka yang

berminat untuk membentangkan kertaskerja yang berkaitan dengan aspek *geologi pendidikan, perlombongan, petroleum, kejuruteraan, sekitaran* dan *geologi pengembangan* yang bersesuaian dengan tema seminar ini. Antara kertaskerja jemputan ialah seperti di bawah:

- **Perubahan global dalam pendidikan geosains pada transisi abad 20-21**
- **Unsur geosains dalam pendidikan menengah di Malaysia**
- **Prospek baru dalam sektor mineral di Malaysia**
- **Sektor petroleum Malaysia menuju abad ke 21**
- **Pendekatan geologi bersepadu ke dalam kerja geoteknik dan kejuruteraan awam**
- **Peranan ahli geologi dalam menangani isu alam sekitar abad ke 21.**
- **Prospek bidang geologi baru muncul di Malaysia**

PROGRAM KELUARGA

Kelab Rekreasi Universiti (KRU) mempunyai kemudahan seperti padang golf 18 lubang, padang sasar, tenis, skuash, kolam renang dan permainan *indoor* lain. Di samping kawasan kampus yang cantik, Universiti Kebangsaan Malaysia juga mempunyai beberapa tempat yang menarik untuk dilawati, antaranya Muzium Geologi dan Muzium Zoologi. Sekiranya diperlukan, pihak penganjur akan mengaturkan program keluarga (permainan atau lawatan) untuk peserta dan keluarga mereka semasa seminar ini.

PENGINAPAN

Peserta seminar boleh menginap sama ada di Rumah Tamu, Universiti Kebangsaan Malaysia, Hotel Metro Inn, Kajang atau Hotel Renaissance, Palm Garden, Putera Jaya. Sebagai panduan, kadar tempat penginapan adalah seperti berikut:

Rumah Tamu Universiti ..... *RM40 - 75*
Hotel Metro Inn ..... *RM138 - 230*
Hotel Renaissance ..... *RM335 - 520*

Sila hubungi pihak penganjur sekiranya memerlukan tempat tinggal.

TARIKH GENTING

Menyatakan minat turut serta ..... 01 Okt. 95
Menghantar Abstrak Kertaskerja ..... 15 Okt. 95
Edaran Kedua (akhir) ..... 15 Nov. 95

PENDAFTARAN

Yuran pendaftaran:

sebelum 15 Nov. 95 ..... *RM200.00*
selepas 30 Nov. 95 ..... *RM230.00*

Bayaran ini termasuk salinan kertaskerja prosiding, minuman ringan, makan tengah hari dan jamuan persidangan pada malam 13/12/95. Bayaran hendaklah dibuat secara cek berpalang atas nama "BENDAHARI, UNIVERSITI KEBANGSAAN MALAYSIA". Hantarkan borang pendaftaran bersama bayaran kepada:

Setiausaha,
Seminar Geologi Abad Ke-21:
Cabaran dan Peluang,
d/a Jabatan Geologi,
Universiti Kebangsaan Malaysia,
43600 BANGI, SELANGOR D. E.

No. Tel. 03-8292392/3, No. Fax. 03-8292490,
Email: hbm@pkrisc.cc.ukm.my.

Biogeography and Geological Evolution of SE Asia

— First Circular and Call for Papers

Flett Lecture Theatre
Natural History Museum
London

March 6-7 1996

CONVENORS

PROFESSOR ROBERT HALL
Geological Sciences, University College London
DR. JEREMY HOLLOWAY
International Institute of Entomology, London
DR. BRIAN ROSEN
Department of Palaeontology, Natural History Museum

Sponsored by

Natural History Museum
Geological Society of London
Linnean Society
University of London SE Asia Research Group

This meeting, organised under the auspices of the Geological Society, the Linnean Society, the UCL-NHM Global Change programme, and the London University SE Asia Research Group aims to explore the links between the biogeographical and geological development of the SE Asia region. It is intended that the meeting will cross the disciplines and attract zoologists, botanists, palaeontologists and geologists who have a knowledge and interest in evolution in, and of, the region. An understanding of the tectonic development of the region could be of interest and value to biogeographers, and biogeographical data could also help in reconstructing the region and understanding some aspects of its tectonic development. Currently, few of us know much about the data available outside our own field and we aim to try to help remedy this situation through presentations followed by informal workshops. The meeting will provide an opportunity to consider how data collected in the last few years in SE Asia test current tectonic models. It will form a UK contribution to three current IGC Projects: IGCP321 *Gondwana Dispersion and Accretion*, IGCP306 *Stratigraphic Correlation in SE Asia*, and IGCP355 *Neogene Evolution of Pacific Ocean Gateways.*

PRESENTATIONS

The first day will consist of formal presentations, with two overview talks on the geology of the region by Ian Metcalfe (University of New England, Australia) on the Palaeozoic and Mesozoic history of the SE Asia region, and Robert Hall (UCL) on its Cenozoic history and possible plate tectonic reconstructions. We then intend to have a series of talks by biogeographers and palaeontologists explaining the distribution, variation and development of faunas and floras of the region. On the second day, we shall break into informal subgroups to discuss the issues raised on the first day using maps, charts and computer-based palaeogeographical reconstructions. We invite contributions on all aspects of SE Asian biogeography, as oral presentations, or as posters or informal workshop contributions.

PUBLICATION

Papers presented at the meeting are expected to be published after the meeting. Information on publication will be provided in later circulars.

FURTHER INFORMATION

A second circular will be sent to respondents to this first circular with further details of the meeting, registration details and accommodation information, in late 1995-early 1996.

ABSTRACTS

Potential participants are requested to submit abstracts on computer disks or by Email to the convenors (Email addresses are at the end of this circular). The preferred format for abstracts is Microsoft Word for Windows or Word for the Macintosh. Users of other word processors may submit abstracts as RTF files (Rich Text Format). If this is not possible, they may be submitted as ASCII text files, or on paper. 3.5" disks formatted for IBM-compatible or Macintosh computers can be accepted. Abstracts are required for oral and poster contributions. They should not exceed 500 words. The abstract may include text and diagrams. Abstracts should be submitted to the conference organisers by **November 30th 1995.**

CONTACT ADDRESSES

Mrs. Diane Cameron
Department of Geology
Royal Holloway and Bedford New College
Egham
SURREY TW20 OEX
U.K.
Tel: 01784 443592
Fax: 01784 471780
Email: cameron@gl.rhbnc.ac.uk

Professor Robert Hill
Department of Geological Sciences
University College London
Gower Street
LONDON WC1E 6BT
U.K.
Tel: 0171 387 7050 ext. 2386
Fax: 0171 387 1612
Email: robert.hall@ucl.ac.uk

Metal Bulletin's 4th International Tin Conference

27-29 March 1996
Sheraton Bal Harbour Beach Resort
Miami, Florida, USA

After its highly successful events in three major tin producing countries — Malaysia, Thailand and Indonesia — Metal Bulletin is taking its 4th International Tin conference to one of the world's largest areas of net consumption: North America.

Metal Bulletin's 4th International Tin Conference, which will be held at the Sheraton Bal Harbour Beach Resort Hotel, Miami, Florida from March 27-29th, will focus strongly on the main areas of consumption as well as new application and substitution. North America currently uses close on 40,000 typ of tin or around a fifth of global consumption, but has very little indigenous production.

The Americas as a whole, however, continues to be a major producer of the metal, accounting for a third of Western world output. The conference venue in Miami, therefore, is ideally located for many of the region's suppliers and consumers, although delegates from tin mining, smelting, processing, consuming and trading companies from around the globe are expected to attend this established industry event.

Issues to be discussed at the conference include:

- latest mine and smelter supply projections.
- technology, quality and the environment.
- the importance of recycling.
- tinplate and tinning.
- tin-based chemicals.
- smelter industry structure.
- the growth in output in areas such as China and Peru.
- solders and other alloys.
- new uses and the threat of substitution.

Confirmed speakers:

1. James Bruhn, executive vp, Weirton Steel Corp, USA
   "Outlook for the North America tinplate market"
2. Richard Connelly, administrator, Defense National Stockpile Center, USA
   "The DLA as a reliable supplier of tin"
3. Peter Tucker, Bethlehem Steel Corp, USA
   "Speaking on the tinplate industry"

Metal Bulletin's 4th International Tin Conference is an opportunity to hear the views of industry experts, to meet with senior industry executives from all around the world, and to mix with a wide range of people involved in the tin industry: producers, smelters, processors, traders, consumers and investors.

Further information available from:

Jackie Gregson
Metal Bulletin Conferences
Park House, Park Terrace
Worcester Park
Surrey, KT4 7HY, UK
Tel: +44 (0)171 827 9977
Fax: +44 (0) 181 337 8943

Jeannie Lee
Metal Bulletin Inc.
220 Fifth Avenue
19th Floor, New York, NY
10001/7781, USA
Tel: +1 212 213 6202
Fax: +1 212 213 1870

AAPG/SEPM Annual Convention
— Call for Papers

May 19-22, 1996

San Diego

The Annual Convention of the American Association of Petroleum Geologists (AAPG) and SEPM (Society for Sedimentary Geology), with AAPG's Division of Environmental Geosciences (DEG), Division of Professional Affairs (DPA), and Energy Minerals Division (EMD), will present an exciting technical program, exhibits, short courses, the International Pavilion, and a wide variety of great field trips in addition to the tourist attractions of Southern California and Baja California.

The Technical Program will be varied and will include four themes:

- Pacific Rim exploration and production
- Development geology, geophysics, and reservoir characterization
- Basin development and stratigraphy in tectonically active basins
- Hydrocarbon remediation in environmental geology

In addition to these, there are many geotechnology sessions on topics of interest to everyone, such as 3-D modeling, structural geology, new technologies, recent discoveries, sequence stratigraphy, carbonates, diagenesis, geochemistry, and much more.

The Pacific Rim sessions will be co-sponsored by the Circum-Pacific Council, and the North America Micropaleontological Society will co-sponsor a session with SEPM.

Authors are invited to submit new and original work for either oral or poster sessions outlined in this call for papers. Selection of abstracts will be based on geologic significance, application to the session topics listed, and quality.

Abstracts are due by **October 13, 1995.** Authors will be notified or acceptance or rejection after December 1. Speaker and poster kits will be mailed to all presenters in December 1. Speaker and poster kits will be mailed to all presenters in December.

Oral sessions will be 20 minutes per speaker. Speakers are strongly encouraged to pay close attention to preparation of their slides, as good visuals go a long way to making a quality presentation.

For further information:

AAPG Convention Department
P.O. Box 979
Tulsa, OK 74101-0979 USA

or

AAPG Convention Department
1444 S. Boulder Ave.
Tulsa, OK 74119-3604 USA

ACXRI '96

Asian Conference on X-Rays and Related Techniques in Research and Industry

June 6-8, 1996

Organised by

School of Materials and Mineral Resources Engineering
Universiti Sains Malaysia
Perak Branch Campus
31570 Tronoh, Malaysia

Tel: (605) 3676901 ext. 5545/5501 Fax: (605) 3677444
E-mail mrzainal @ kcp.usm.MY

Co-organiser

Malaysian Institute for Nuclear Technology Research (MINT)

FIRST CIRCULAR AND CALL FOR ABSTRACT

The modern analytical research techniques like XRD, XRF, TEM, SEM, EDX and related techniques have contributed a lot for advancement of knowledge in Materials, Solid State Physics and other fields. In recent years, there have been improvements of this technique with inclusion of software and plotting facilities to provide quick results for solution of the problems encountered. It is time to take stock of the situation and to deliberate on the recent innovation and the future trends in application of these techniques. The School of Materials and Mineral Resources Engineering at USM and Malaysian Institute for Nuclear Technology Research (MINT) are well equipped with the latest analytical tools for materials studies. Both these institutes have good experience and interaction with local industries which have fully utilized the available facilities. The well known manufacturers of these instruments worldwide are expected to represent their wares and give up-to-date information about their products.

Scope of participation

The conference is open to Material, Mineral Scientists/Engineers, Solid-State Physicists, Chemists and others who are engaged in research and utilization of these techniques.

Topics

Both theoretical and experimental aspects of these techniques for research and industrial applications is the core of this conference. The presentation on design/improvement of the equipment and modelling will also form part of the conference.

Contribution

Prospective authors are invited to submit printed abstract of about 150 words in single spacing, preferably with the diskette. In case of multiple authors the name of the person who will be presenting the paper should be underlined.

Deadline for receipt of abstracts:

31st October 1995

Authors will be notified on acceptance of their paper by **15th December 1995** and will receive instruction for preparation of manuscript.

The proceedings of the conference will be published in advance and the date for submission of the full manuscript of the papers will be communicated in the second circular.

Language

The official language of the Conference is English.

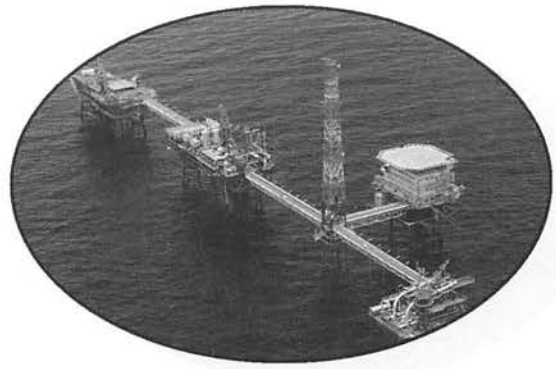
Conference Venue

Ipoh is the capital of Perak State which is well known for the production of tin and other minerals in Malaysia. The School is a part of the Engineering Campus of Universiti Sains Malaysia (USM) and located about 35 km from Ipoh and is actively engaged in research and teaching.

Ipoh, the Bougainvilla city is situated some 90 km away from the famous Pangkor Resort Island and about 120 km to Cameron Highlands. It is also centrally located between the city of Penang and Kuala Lumpur along the North-South Express Way. Famous for its beautiful limestone caves, modern shopping complexes, Kellie's Castle, fruits, good food and entertainment. Ipoh is certainly an exiting place to stay.

Further Information

The Secretariat of the Asian Conference on X-Rays and Related Techniques in Research and Industry
(ACXRI '96)
School of Materials and Mineral Resources Engineering
Universiti Sains Malaysia
Perak Branch Campus
31750 Tronoh
Perak, MALAYSIA
(Attn: Dr. Zainal Arifin Ahmad)



Shell Malaysia forms part of the worldwide network of the Royal Dutch/Group of Companies. In Malaysia we have been operating for more than a century and we look forward to even more exciting and challenging years ahead. We are made up of a group of wholly owned, joint venture and subsidiary companies engaged in the full spectrum of the petroleum and chemical business. Whilst our "upstream" companies are involved in the exploration for and production of oil and gas, our "downstream" companies are involved in the manufacturing, marketing and distribution of oil, gas, chemicals and related products.

SARAWAK SHELL BERHAD and SABAH SHELL PETROLEUM CO. LTD. make up our "upstream" companies based in Sarawak and Sabah. Our employees reside mainly in Miri, Kota Kinabalu, Labuan and Bintulu. As a Production Sharing Contractor to PETRONAS, we operate at the forefront of the Oil and gas industry. With the effective blend of the best in technology and human resources, comprising more than 2600 dedicated multi-racial and multi-national employees, we play a critical role in meeting the energy needs in Malaysia through on-going petroleum exploration and production.

SHELL MALAYSIA

SENIOR RESERVOIR GEOLOGIST

We are presently looking for a suitably qualified Malaysian to fill the above position in our Petroleum Engineering Function, based in Miri, Sarawak.

THE JOB

The successful candidate will be responsible for the supervision of a group of sedimentologists / reservoir geologists in undertaking detailed sedimentological / reservoir geological modelling; recommending necessary data acquisition / analyses and integration of sedimentological analyses, biostratigraphic data, petrophysical data, seismic data and other relevant data to obtain a more reliable / realistic reservoir model. He will also be responsible in quantifying and assessing impact of reservoir geological heterogeneities and uncertainties on hydrocarbon reserves, reservoir performance and subsequent field development planning.

THE PERSON

- At least 8 - 10 years experience in Petroleum industry in reservoir geological / sedimentological modelling, with practical experience in building reservoir models for simulation purposes.
- Preferably, candidates should possess either a M.Sc or Ph.D. in Geology.
- Professionally self-sufficient, skilled in communication with geoscientists of different disciplines and, a person of drive and tact for effectiveness in a multidisciplinary environment.

We offer a highly competitive remuneration package to match your qualifications, experience and potential, as well as a wide range of fringe benefits.

If you possess the above qualities and experience, please write to us giving your full curriculum vitae to:

The Head of Recruitment
Sarawak Shell Berhad
Locked Bag No. 1
98009 Miri, Sarawak

Letters and envelopes should be marked "CONFIDENTIAL" - and posted to reach us before 7/11/1995.

TO BUILD AND NURTURE A CREATIVE, EFFECTIVE, EFFICIENT AND FLEXIBLE WORKFORCE

Shell Malaysia forms part of the worldwide network of the Royal Dutch/Group of Companies. In Malaysia we have been operating for more than a century and we look forward to even more exciting and challenging years ahead. We are made up of a group of wholly owned, joint venture and subsidiary companies engaged in the full spectrum of the petroleum and chemical business. Whilst our "upstream" companies are involved in the exploration for and production of oil and gas, our "downstream" companies are involved in the manufacturing, marketing and distribution of oil, gas, chemicals and related products.

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SHELL MALAYSIA

EXPERIENCED RESERVOIR ENGINEERS

We are presently looking for suitably qualified Malaysians to fill the above positions in our Petroleum Engineering Function, based in Miri, Sarawak.

THE JOB

The job will cover reservoir performance analysis, well-testing and reservoir simulation for reservoir characterisation, reservoir management as well as field development planning and execution.

THE PERSON

- Possess an Engineering degree preferably in Petroleum Engineering
- Minimum of 4 years experience in reservoir engineering
- Professionally self-sufficient, skilled in communication with geoscientists of different disciplines and, a person of drive and tact for effectiveness in a multidisciplinary environment.

We offer a highly competitive remuneration package to match your qualifications, experience and potential, as well as a wide range of fringe benefits.

If you possess the above qualities and experience, please write to us giving your full curriculum vitae to:

The Head of Recruitment
Sarawak Shell Berhad
Locked Bag No. 1
98009 Miri, Sarawak

Letters and envelopes should be marked "CONFIDENTIAL" - and posted to reach us before 20/11/1995.

TO BUILD AND NURTURE A CREATIVE, EFFECTIVE, EFFICIENT AND FLEXIBLE WORKFORCE

KALENDAR (CALENDAR)

1995

October 16-20

LAND SUBSIDENCE — FISOL '95 (1st International Symposium), La Haye, The Netherlands. (F.H. Schröder, Netherlands Geodetic Commission, P.O. Box 5030, NL-2600 GA Delft, The Netherlands)

October 17-19

SEISMIC ZONATION (5th International Conference), Nice, France. (5th ICZS, AFPS Domaine de Saint-Paul, BP 1, 78470 Saint Remy Les Chevreuse, France. Telefax: (33-1) 30 52 75 75)

October 22-25

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (International Conference and Exhibition), Cairo, Egypt. (AAPG Convention Department, P.O. Box 979, Tulsa, OK 74101, USA. Phone: (918) 584-2555)

October 29-31

26TH UNDERWATER MINING INSTITUTE, Newfoundland, Canada. (Ms. Karynne Chong Morgan, Underwater Mining Institute, c/o Marine Minerals Technology Center, 811 Olomehani Street, Honolulu, Hawaii 96813-5513, USA. Phone: (808) 522-5611; Fax: (808) 522-5618; Internet: 70673.534@compuserve.com • CompuServe: 70673,534)

November 4-6

GEOLOGY OF SOUTHEAST ASIA AND ADJACENT AREAS (Joint Meeting of IGCP Projects 306, 321 & 359), Hanoi, Vietnam. (Prof. Dang Vu Khuc, Geological Museum, 6 Pham Ngu Lao, Hanoi, Vietnam. Phone: 84.4.266.802, Fax: 84.4.254.734)

November 5-9

SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Conference), Denver, Colorado, USA. (Society of Exploration Geophysicists. Convention Assistant, P.O. Box 702740, Tulsa, OK 74170, USA)

November 6-10

CURVED OROGENIC BELTS: THEIR NATURE AND SIGNIFICANCE, Buenos Aires, Argentina. (Dr. Jose Selles-Martinez, COB '95, Dpto. de Ciencias Geologicas, Pabellon 2 Ciudad Universitaria, 1428 Buenos Aires, Argentina. Phone: 54 1 781 8213; Telefax: 54 1 788 3439; E-mail: postmast@lpgfcf.uba.ar)

November 7-11

RIVER SEDIMENTATION (6th International Symposium), New Delhi, India, (Shri C.V.J. Varma, Central Board of Irrigation and Power, Malch Marg, Chanakyapuri, New Delhi 110021, India. Phone: 91 11301 5984; Telefax: 91 11301 6347; Telex: 31 66415 CBIP IN)

November 19-22

PACRIM (Congress), Auckland, New Zealand. (Mrs. Charmayne Perera, Congress Secretariat, Australasian Institute of Mining and Metallurgy, P.O. Box 122, Parkville, Vic 3052, Australia. Phone: (03) 347-3166; Telefax: (03) 347-8525; E-mail: j.mauk@auckland.ac.nz)

November 22-25

CONFERENCE ON GEOLOGY, GEOTECHNOLOGY AND MINERAL RESOURCES OF INDOCHINA [In commemoration of the Twentieth Anniversary of the Department of Geotechnology, Faculty of Technology, Khon Kaen University (KKU)], Khon Kaen, Thailand. (Assist. Prof. Ladda Wannakao, The Conference Secretariat, Department of Geotechnology, Faculty of Technology, Khon Kaen University, Khon Kaen 4002, Thailand. Phone: (66-43) 242333-40 Ext. 2351-3; Fax: (66-43) 239329; E-Mail: ladda@kkul.kku.ac.th

December 9-11

QUATERNARY DESERTS AND CLIMATIC CHANGE (JIGCP 349 Meeting), Al Ain, United Arab Emirates. (A.S. Alsharhan, Desert and Marine Resource Center, UAE University, P.O. Box 17777, Al ain United Arab Emirates. Phone: 971 3 638 150; Telefax: 971 3 620486)

December 13-14

SEMINAR GEOLOGI ABAD KE-21: CABARAN DAN PELUANG, Bangi, Malaysia. (Setiausaha, Seminar Geologi Abad Ke-21: Cabaran dan Peluang, d/a Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi,

Selangor D.E. Tel: 03-8292392/3; Fax: 03-8292490; Email: hbm@pkrisc.cc.ukm.my.)

1996

CANADIAN INSTITUTE OF MINING, METALLURGY AND PETROLEUM, (98th Annual General Meeting), Quebec City, Quebec, Canada. (John Gaydos, Meetings Manager, Canadian Institute of Mining and Metallurgy, 1 Place Alexis Nihon, 1210-3400 de maisonneuve Boulevard West, Montreal, Quebec H3S 3B8, Canada. Phone: (514) 939-2710; Telefax: (514) 939-2714)

GEOSTATISTICS (5th International Congress). Wollongong, New South Wales, Australia. (Géostatistique de li École des Mines de Paris, 35 rue Saint Honoré, 77305 Fontainebleau, France. Phone: (1) 64 69 47 04; Telefax: (1) 64 69 47 05)

February 19-23

GEOSCIENCE IN THE COMMUNITY (13th Australian Geological Convention and Celebration of the Jubilee of BMR/AGSO), Canberra, Australia. (ACTS, GPO Box 220, Canberra ACT, 2601 Australia)

February 27-29

MYANMAR (BURMA) OIL & GAS EXPO '96 (Downstream & Upstream), Yangon (Rangoon), Myanmar (Burma). (Mr. K.G.E. Kay, CP Exhibition, 2801 Tung Wai Commercial Building, 109 Gloucester Road, Wanchai, Hong Kong. Fax: 852-25119692; Tel: 852-25117427, Tlx: 76270 HX)

March 6-7

BIOGEOGRAPHY AND GEOLOGICAL EVOLUTION OF SE ASIA, London. (Prof. Robert Hill, Department of Geological Sciences, University College London, Gower Street, LONDON WC1E 6BT, U.K. Tel: 0171 387 7050 ext. 2386; Fax: 0171 387 1612; Email: robert.hall@ucl.ac.uk)

March 6-8

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March 27-29

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4TH CONFERENCE ON PETROLEUM GEOCHEMISTRY AND EXPLORATION IN THE AFRO-ASIAN REGION, Arusha-Tanzania. (The 4th AAAPG Conference Secretariat, Tanzania Petroleum Development Corporation, P.O. Box 5233, Dar Es Salaam, Tanzania, East Africa. Phone: 255-51-29661/2 & 36086; Fax: 255-51-29663/20775; Telex: 41219 Oil Exp. Attn: Mr. Y.S. Mwalyego, Ms. F.K. Mpanju, Mr. E.A. Kilembe)

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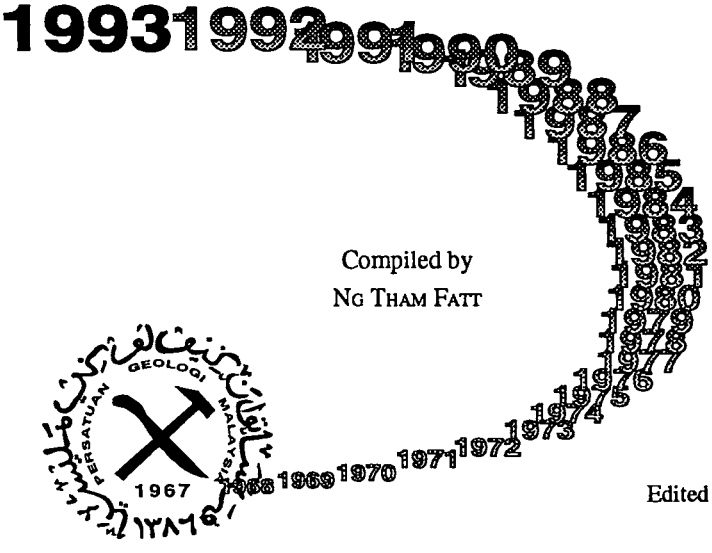

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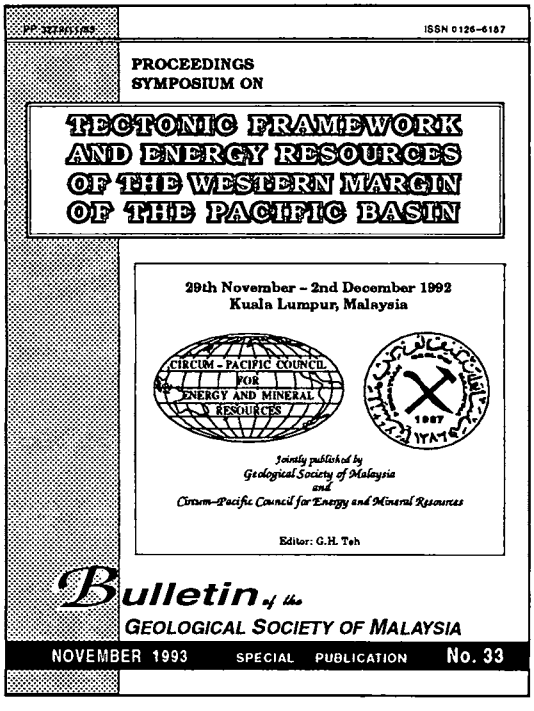

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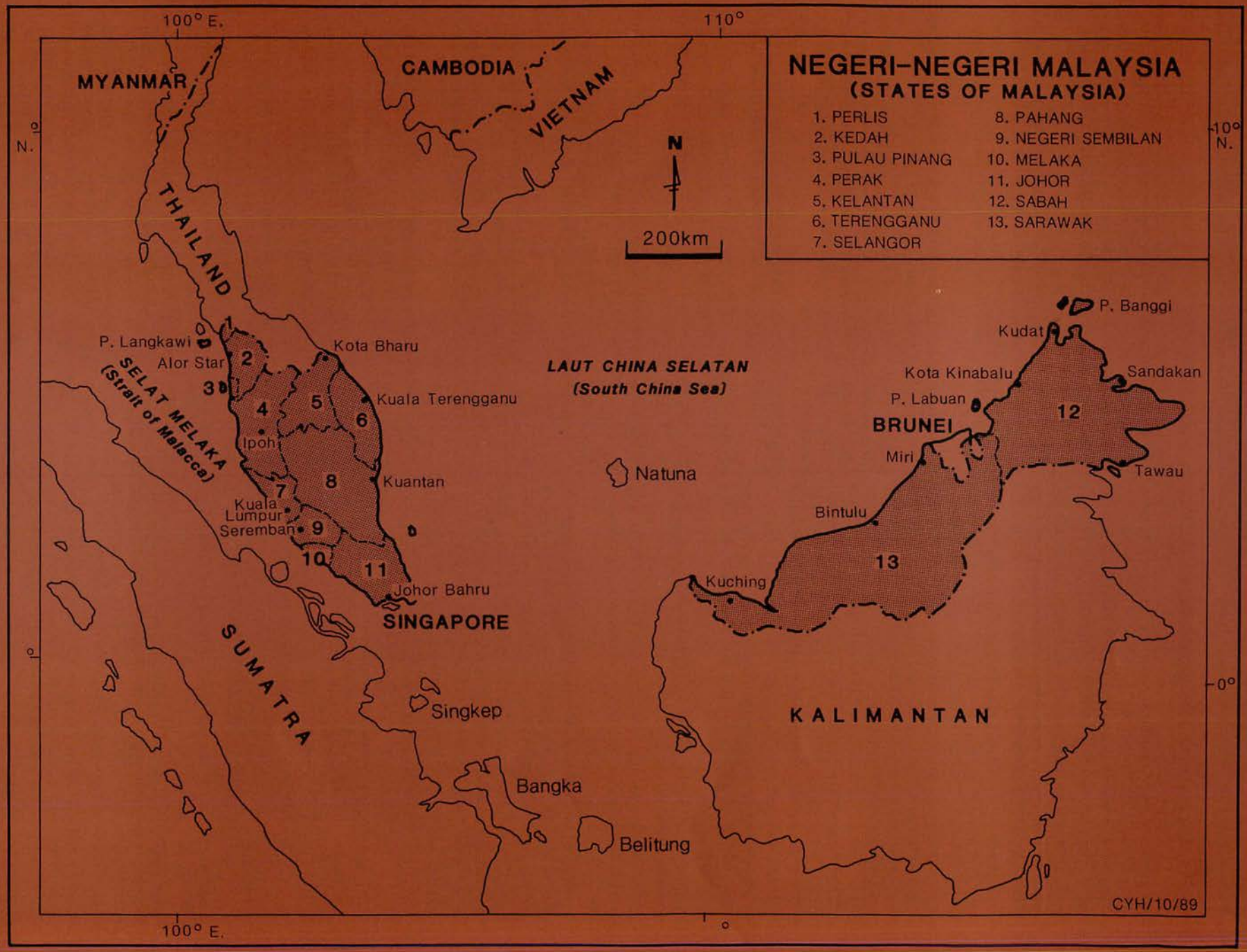
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