

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

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The Society was founded in 1967 with the aim of promoting the advancement of earth sciences particularly in Malaysia and the Southeast Asian region.

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

Microscopic observation of mantle feldspar from Noring granite, Stong Complex

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50603 Kuala Lumpur

Abstract: A mantle feldspar from the Noring granite is described and has been compared to the rapakivi texture from elsewhere. The texture consists of euhedral to subhedral K-feldspar mantled by numerous small plagioclase crystals.

INTRODUCTION

This short note describe microscopic features of mantle feldspar found in the Noring granite, Stong Complex, Kelantan. The interpretation, chemistry and petrogenesis of the texture will be presented elsewhere. The Stong Complex is made up of three plutons, namely Noring granite, Berangkat tonalite and Kenerong microgranite (Fig. 1). General geology of the granite and surrounding areas have been given by Hutchison (1969), Singh *et al.* (1984) and Cobbing *et al.* (1992).

PETROGRAPHIC DESCRIPTIONS

The Noring granite is coarse grained with average grain size between 0.5 mm to 3 cm. Petrographically the rock is made up of a mixture of plagioclase, pinkish K-feldspar megacryst, quartz, hornblende, biotite, apatite, sphene, allanite, zircon, epidote and magnetite.

The notable texture of this rock is the mantled feldspar in which whitish plagioclase (plagioclase rim) mantled the pinkish K-feldspar (K-feldspar core). The size of the texture ranges from several mm to 3 cm. The thickness of the plagioclase rim varies from 1 mm to 10 mm. The K-feldspar core also varies in size, from 2

mm to 2 cm across. Sketches of some of the textures in the hand specimen is given in Figure 2.

The K-feldspar core consists of a single crystal or several crystals usually showing simple twinning. Not infrequently the K-feldspar core contains mineral inclusions usually small irregular outline plagioclase and less commonly euhedral hornblende, magnetite and biotite. Average composition of the K-feldspar core is $Or_{89.6-97.4} Ab_{10.4-2.6}$. Microscopic observation shows that the plagioclase rim is composed of numerous euhedral to subhedral plagioclase, usually less than 1 mm in size (Fig. 3). Individual rim plagioclases are mostly zoned. Composition of the plagioclase rim is restricted to An_{38-44} . Where the plagioclase is in contact with the K-feldspar core, the contact is usually replacive and irregular. Small plagioclase inclusions can be found in the K-feldspar core being most abundant near the contact with plagioclase rim. In one sample, the plagioclase rim seems to penetrate into the K-feldspar core [see Fig. 2 (d)]. Microscopic investigation show that the plagioclases show several highly irregular outline crystals (Fig. 4). Islands of small plagioclase crystals are also abundant at the plagioclase-K-feldspar contacts.

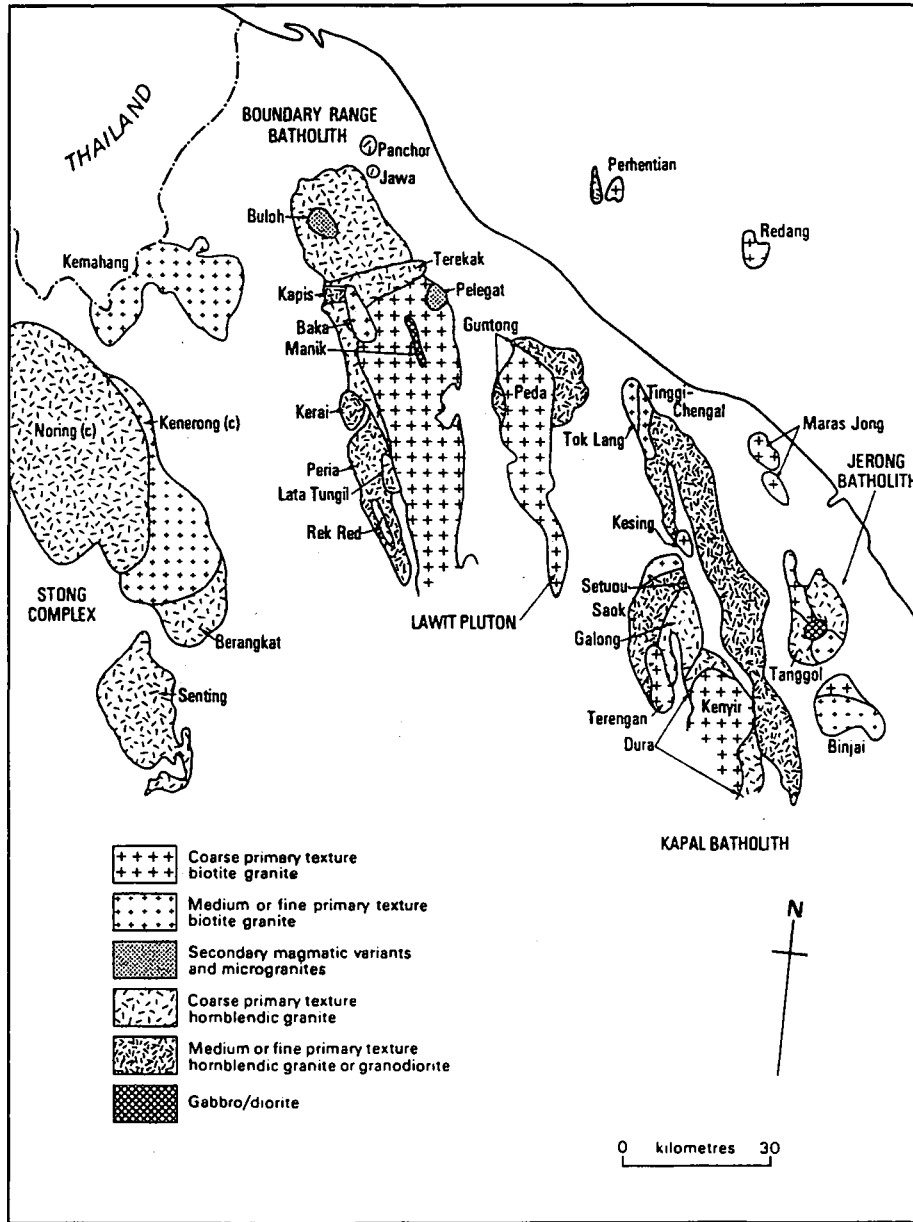


Figure 1. Location of the Noring granite in relation to other granite batholiths of Eastern Peninsular Malaysia (modified after Cobbing *et al.*, 1992).

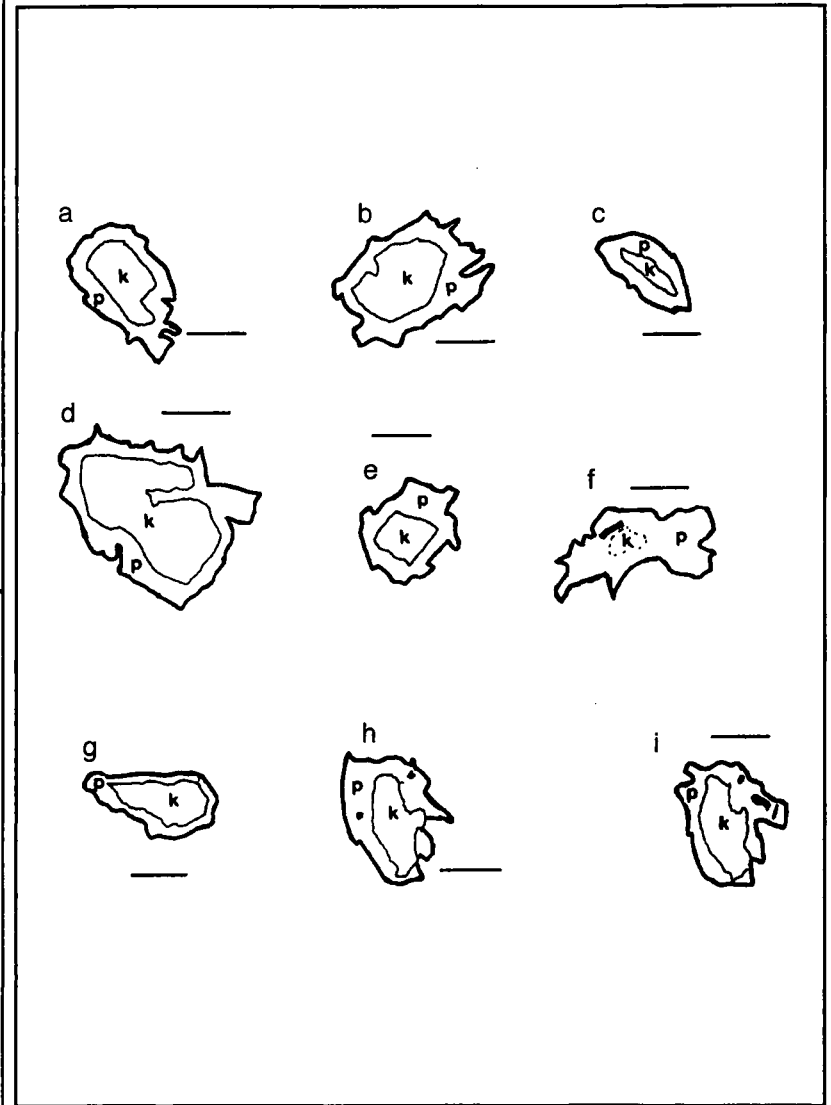


Figure 2. Sketches some of the mantle feldspars in hand specimens. Black spot is either biotite or opaque phase. p: Plagioclase rim; k: K-feldspar core. Scale bar = 1 cm.

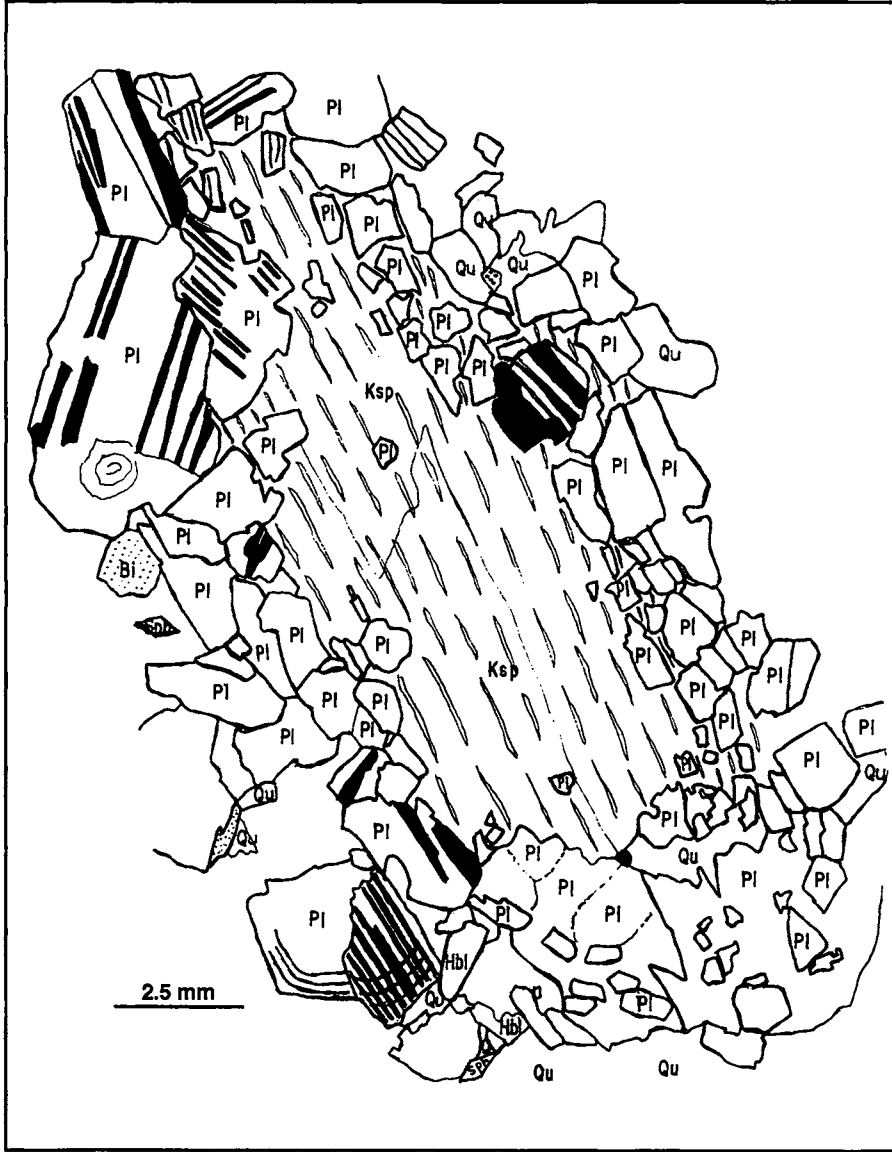


Figure 3. Microscopic sketch of the mantle feldspar. Note that the 'plagioclase rim' consists of numerous small plagioclase crystals. PI: Plagioclase; Ksp: K-feldspar; Qu: Quartz; Hbl: Hornblende; Bi: Biotite; Sph: Sphene.

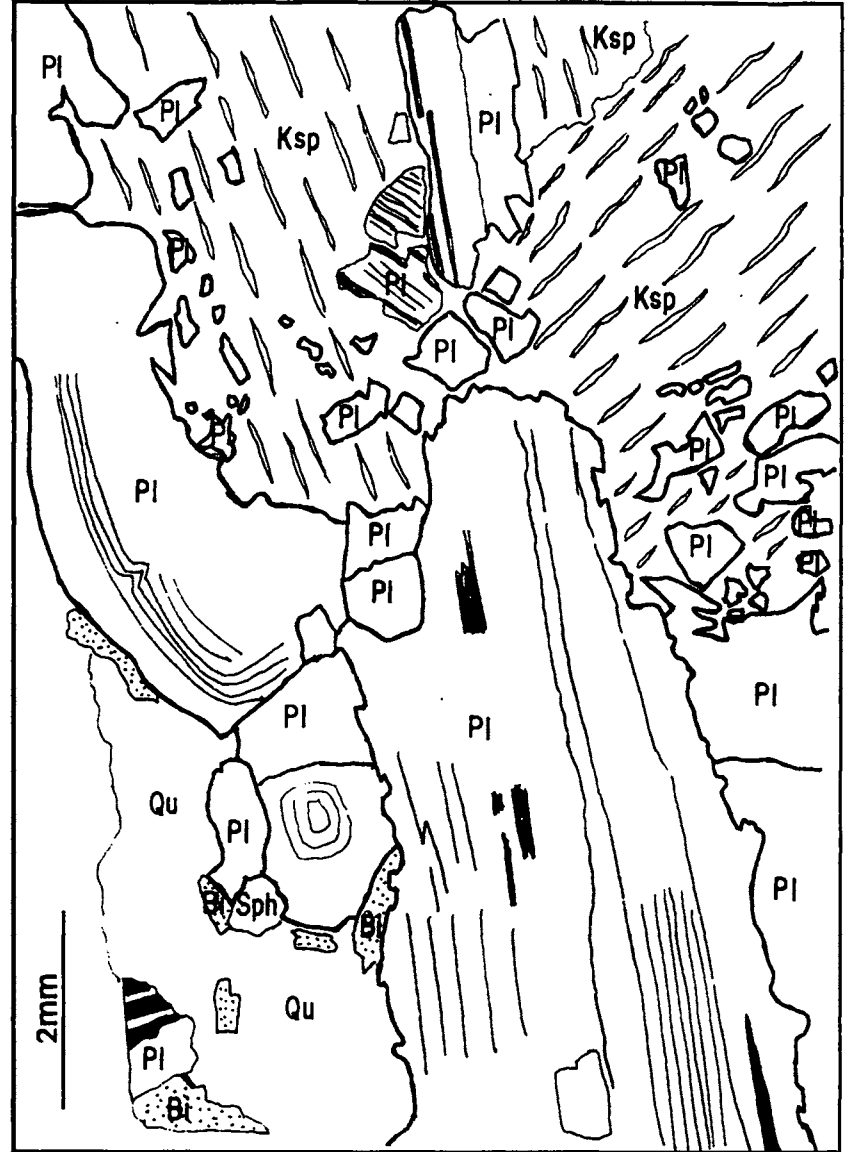


Figure 4. Microscopic sketch of the penetrate plagioclase. The texture in hand specimen is shown in Fig. 2d. PI: Plagioclase; Ksp: K-feldspar; Qu: Quartz; Hbl: Hornblende; Bi: Biotite.

Table 1. Comparison of the mantle feldspar with the rapakivi texture from Proterozoic granite.

	MANTLE FELDSPAR (Noring Granite)	RAPAKIVI TEXTURE FELDSPAR
Plagioclase composition	An ₃₈ -An ₄₄ (Andesin)	An ₁₀ -An ₄₀ (Oligoclase-Andesin)
Age of the granite	Cretaceous	Proterozoic era (1.0 to 1.7 Ga)
K-feldspar core	Usually euhedral to subhedral but may consists of single or several K-feldspar crystals	Usually ovoid, may consist of single crystal or more complex intergrowth of several crystals
Plagioclase rim	Consists of numerous small plagioclase crystals in optically discontinuity.	Single crystal of oligoclase-andesin in optically continuity with the albite lamellae of perthite ovoid or several different oriented plagioclase grains.
Inclusion	Islands of small plagioclase are common in the K-feldspar core especially near the contacts with plagioclase rim.	Plagioclase inclusion common in the K-feldspar core.
K-feldspar composition	Or _{89.6-97.4} Ab _{10.4-2.6}	Or ₅₀₋₈₀ Ab ₂₀₋₅₀ An _{0.5-4}

COMPARISON WITH OTHER RAPAKIVI TEXTURE

The mantle feldspar in the present study has been compared to the rapakivi texture (mantling of ovoid K-feldspar megacrysts by plagioclase) found in Proterozoic granites (e.g. Sederholm, 1891; Dempster *et al.*, 1991, 1994; Ramo and Haapala, 1995) (Table 1). There are several notable differences between those two textures, especially the age of the granites and the plagioclase composition. The rapakivi texture is usually found in granites with age ranging from 1.0 to 1.7 Ga whereas the Noring granite has been dated as Cretaceous (Singh *et al.*, 1984). Plagioclase rims in the present study have a rather restricted composition, An₃₈₋₄₄ compared to An₁₀₋₄₀ for the rapakivi texture. The rapakivi texture is typically composed of ovoid magacrysts of K-feldspar with a millimeter-thick shell of oligoclase whereas the mantle feldspar of the Noring granite consists of subhedral K-feldspar core mantled by numerous euhedral to subhedral plagioclase of andesine composition.

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CATATAN GEOLOGI

Geological Notes

Sabah Crystalline Basement: "Spurious" radiometric ages? Continental?

K.M. LEONG

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The Sabah Crystalline Basement rocks in the Upper Segama area comprise metamorphic rocks, mainly amphibolite, and igneous rocks — granite, granodiorite, diorite and tonalite, the most abundant being granodiorite. The concept of an igneous and metamorphic basement underlying Late Mesozoic-Early Tertiary rocks in Sabah was first advanced by Reinhard and Wenk (1951), and later refined by Kirk (1964, 1968) and Leong (1974). More recently, Tongkul (1991) referred to a pre-Cretaceous "older metamorphosed oceanic basement" of Sabah on which "new oceanic basement" as extrusion of basalt and intrusion of basic and ultrabasic rocks and associated sediments occurred during the Early Cretaceous. The rock sequences of the Cretaceous "new oceanic basement" known as the Chert-Spilitic Formation unconformably overlie the Crystalline Basement (Wong and Leong, 1968).

However, the age and the crustal composition of the Crystalline Basement are still topics of debate.

AGE

The K:Ar radiometric ages of the metamorphic rocks are all Cretaceous; however, two samples of the igneous rocks (tonalite), and a sample of biotite-rich hornfels in the S. Litog Klikog Kiri area dated 150 and 210 Ma, and 160 Ma respectively, that is in the range Jurassic-Triassic (Leong, 1974; Table 7).

Hutchison (1988, 1989, p. 193), in reference to the radiometric ages, states:

*The metagabbro K:Ar radiometric dates as old as 210 Ma (Early Jurassic) have to be **spurious** for the gabbro and metagabbro conformably (or structurally) underlie the Chert-Spilitic Formation as integral layers of the same patchily metamorphosed ophiolite.*

However, it should be noted that the rock types radiometrically dated in the Jurassic-Triassic age range are **not** "metagabbros". In fact, Hutchison (1989, p. 54) had earlier referred to the same rock samples as "granodiorite and biotite tonalite". Interestingly, Omang and Barber (1996) also used the word 'spurious' to describe the pre-Cretaceous ages. They then assigned a "Neogene" age for igneous intrusive bodies in the Upper Segama area without presenting new data or evidence (see Fig. 1 in Omang and Barber, 1996).

In the recent 1990–1993 joint project between the Geological Survey of Malaysia, Sabah and the Japan International Co-operation Agency - Metal Mining Agency of Japan (JICA), as part of the detailed mineral investigations in Sabah, several igneous rocks samples were collected and whole rock K:Ar datings were carried out. Samples from the Crystalline Basement were dated 158 ± 30 Ma and 210 ± 20 Ma (that is Jurassic-Triassic), similar to the

ages reported in Leong (1974) (Lim Peng Siong, personal communication, June 1997).

CRUSTAL COMPOSITION

Tjia (1988) interpreted the Crystalline Basement as fragments of pre-Cretaceous consolidated crust, and that the mixture of felsic and mafic constituents of the Basement suggested that it was at a continental margin. Tjia (1988) also postulated that the entire East Sabah Terrane, which included the Crystalline Basement to be allochthonous. Tongkul (1991) referred to the Crystalline Basement as "older metamorphosed oceanic basement, with 'rare' occurrences of acid igneous rocks". Schluter *et al.* (1996, Fig. 19) indicated the presence of part of a larger allochthonous continental fragment (drifted from? Australia) extending into eastern Sabah, with similar continental material underlying the Cagayan Ridge.

Hutchison (1989) noted the high K_2O content in some of the granitic rocks in the Litog Klikog Kiri area, Upper Segama which supported the hypothesis of a continental basement. However, Hutchison concluded that, apart from the samples in the Litog Klikog Kiri area, for other samples "their extremely low potassium values show that they are genetically related to the ophiolites". It should be noted that with the exception of one sample, the results of chemical analysis of seven tonalite-granodiorite samples show a range of 1.27 to 2.25 wt. per cent. These potassium values are not low and certainly not 'extremely low' in contrast to the potassium values of eleven samples of amphibolites and metagabbros, which range from 0.07 to 0.87 wt. per cent, and to the values of ten gabbroic samples (unmetamorphosed) which range from nil to 0.52 wt. per cent (see Leong, 1974, tables 5, 6 and 28).

LATEST DEVELOPMENT

In the recent GSM Petroleum Geology Seminar, Hutchison (1997) presented new pre-Cretaceous radiometric ages very similar to those reported by JICA. In addition, the presence of pre-ophiolitic "continental microcontinents" in Sabah was also mentioned.

CONCLUDING REMARKS

From the above discussions, it is clear that there are evidences of continental crustal material within the Sabah Crystalline Basement. The limited K:Ar ages also point to Jurassic-Triassic and/or earlier age. However, its relationship to the younger Chert-Spilitic Formation and associated ultrabasic and basic intrusions, or the "new oceanic basement" or 'ophiolitic basement', are not yet completely resolved. The key in the resolution of these intriguing geological questions may lie in a fuller understanding of the acid igneous rocks of the Sabah Crystalline Basement. These acid igneous rocks are fairly widespread in the Upper Segama area, occurring as large bodies, notably in the Dismal Gorge, Danum Gorge and S. Purut areas apart from the Kawag-Litog Klikog Kiri area (Fig. 1). Their relationship to the amphibolites and other metamorphic rocks also need to be studied in more detail.

With the improvement of accessibility from the Danum Valley Field Station, geologists can now map these acid igneous bodies in more detail and to collect more samples for petrographic studies, chemical analysis, and radiometric age datings. Hopefully the new data will not only increase our understanding of the "old basement" but also resolve key outstanding issues, including the origin of the alluvial gold in the Upper Segama.

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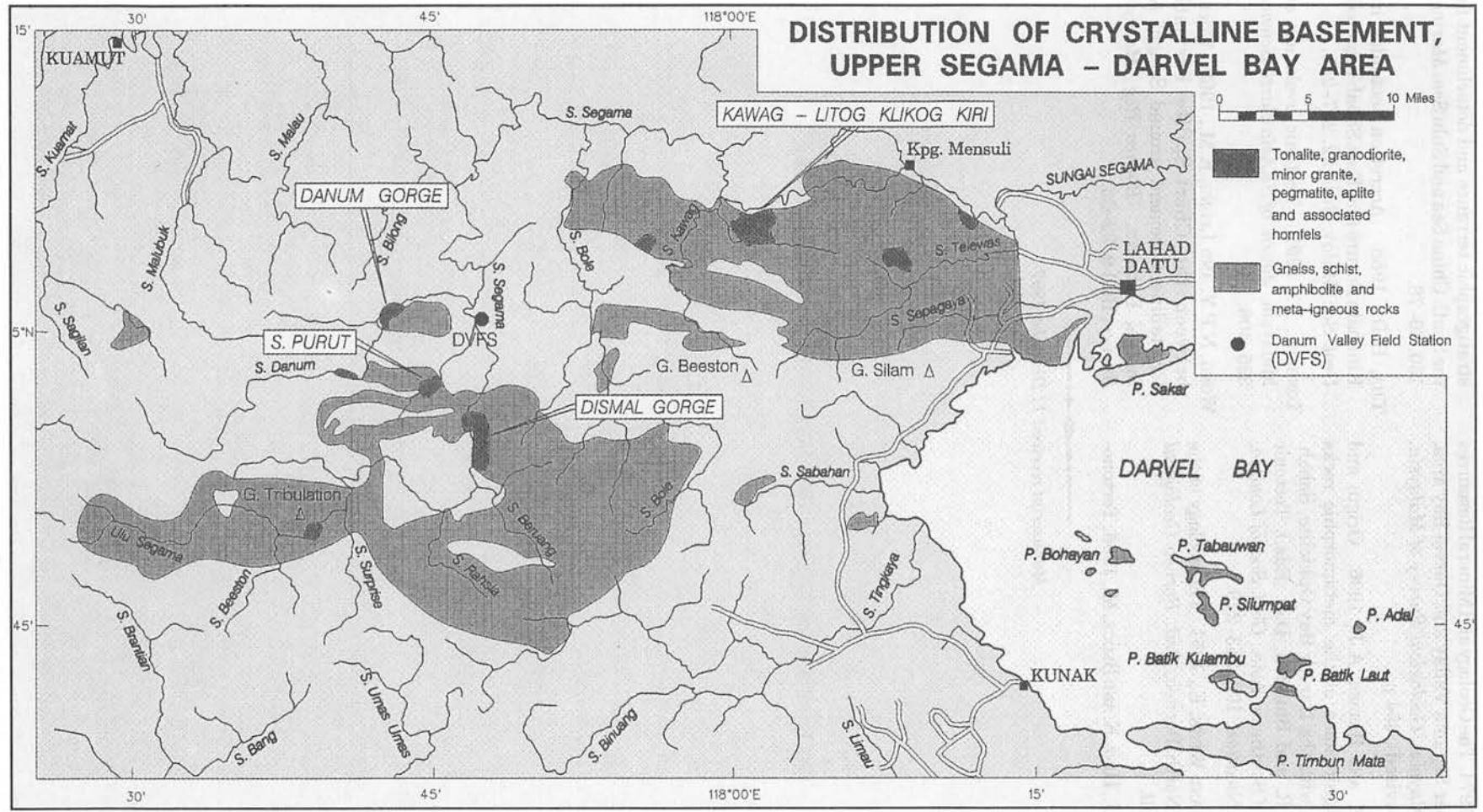


Figure 1. Distribution of Crystalline Basement, upper Segama — Darvel Bay area (from Leong, 1974, Fig. 11 with minor additions).

SABAH CRYSTALLINE BASEMENT: 'SPURIOUS' RADIOMETRIC AGES? CONTINENTAL?

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PERTEMUAN PERSATUAN Meetings of the Society

Ceramah Teknik (Technical Talk)

Conodonts and mass extinctions in the Phanerozoic

D. JEFFREY OVER

Laporan (Report)

Dr. D. Jeffrey Over of the Department of Geological Sciences, State University of New York College at Geneseo, Geneseo, New York 14454, USA, (over@uno.cc.geneseo.edu), gave the above talk on Tuesday, 13 January 1998, at the Geology Department, University of Malaya.

Abstrak (Abstract)

The Frasnian-Famennian boundary that subdivides the Upper Devonian represents one of the five major mass extinctions in the Phanerozoic that mark major changes and turn over in biota. The Frasnian-Famennian extinction is most puzzling because there is no consensus as to the cause for the extinction. The extinction resulted in a major decline in shallow water stromatoporoids, corals, brachiopods, and trilobites. The boundary itself is defined by the abundant occurrence of the conodont *Palmatolepis triangularis* after the extinction of Frasnian conodont species. Conodonts are the phosphatic tooth-like remains of an extinct eel-like organism of chordate affinities. Conodonts are useful biostratigraphic indicators throughout their range and their color change under increasing thermal and pressure conditions is used to determine hydrocarbon maturation.

The Global Stratigraphic Section and Point for the Frasnian-Famennian boundary was recently established in southern France at Coumiac, but like numerous other localities there is a hiatus at the boundary. The highest Frasnian in Europe, North Africa, and North America is characterized by two distinct organic-rich intervals called the Kellwasser Events. These dark colored strata correspond to regional benthic anoxia and changes in organic isotope concentrations. In the shale facies of North America the boundary horizon has been recognized in numerous sections to a discrete horizon within essentially conformable strata. Locally in current alignment of orthocone nautiloids and hummocky cross-strata indicate high energy events in the extinction interval, but geochemical and microscopic analysis have not yielded evidence for a bolide impact. Ash layers at the base of the Upper Kellwasser Bed and the boundary horizon suggest volcanism as a factor in the extinction event and are potential zircon sources for accurate dating of the boundary horizon.



D. JEFFREY OVER

Tertiary Basins of Peninsular Malaysia and its adjacent offshore areas — Report

The GSM's Sedimentology & Stratigraphy Study Group successfully organised a half-day seminar entitled "Tertiary Basins of Peninsular Malaysia and its adjacent offshore areas". The seminar, which was held on the Saturday, 21st February 1998 at the Department of Geology, University Malaya, was well attended by 40 participants. Six papers on Tertiary deposits of Peninsular Malaysia were presented. Registered participants each received an unedited volume of five full-papers and an extended abstract.

Of the six papers presented, three papers were concerned with the Tertiary Batu Arang Beds; the best exposed Cenozoic rocks of Peninsular Malaysia. These were presented by Prof. John Kuna Raj, Dr. Azhar Hj. Hussein and Intan Suhaila and Mustaffa Kamal Shuib and Abdul Hadi Abd. Rahman, all from University Malaya. Results of geophysical studies on the Bukit Arang Tertiary Basin in Perlis were presented by Dr. Lee Chong Yan from Universiti Sains Malaysia. Qalam Azad Roslee and Dr. Teh Guan Hoe, both from University Malaya, reviewed the stratigraphy and structure of the Nenering Tertiary Beds of Hulu Perak. A review paper on Tertiary and possible Tertiary deposits of Peninsular Malaysia by Prof. John Kuna Raj, Abdul Hadi Abd. Rahman and Mustaffa Kamal Shuib nicely rounded up the seminar.

It was highlighted during the seminar that there was a noticeable bias on the Tertiary rocks of Batu Arang. This is due to a combination of lack of investigations on other Tertiary rocks, as well as the lack of outcrops. The committee was also hoping to get papers on adjacent offshore areas, especially the Tertiary of the Strait of Malacca. Unfortunately, since most of the data is with the oil companies, this was not forthcoming. The committee hopes that specialists who have worked on this data will present them in the near future.

The seminar was followed up with a fieldtrip to Pengkalan Hulu in Hulu Perak to look at the Nenering Tertiary Beds. Led by Dr. Teh Guan Hoe and Qalam Azad, the group of 12 participants left the Department of Geology, University Malaya at about 2.30 pm in two 4WDs belonging to the Department of Geology, University Malaya, after a tasty meal of packed chicken rice.

A noisy, chilly thunderstorm greeted the group on arrival at Lawin. As no fieldwork was possible that day due to the heavy downpour the group headed straight for Grik for the night, arriving at 6.30 pm.

Early the next day, the group spent a good early morning fieldwork looking at the Nenering Beds unconformably overlying the tightly folded limestone of the Kroh Formation at km 12 of the Kg. Air Panas-Kg. Lallang road. Samples were collected with the hope to firmly establish the age of the Nenering beds.

Next, after getting the necessary clearance from the officer in charge of the troop manning the border road, the participants started looking at the well-lithified conglomerates of the Nenering beds unconformably overlying the Kroh Formation which can be traced across the border into Thailand. A honey collector in the area provided the participants with the right tonic of refreshing, freshly collected honey. The next stop was the less lithified conglomerates of the Nenering beds overlying the tightly folded phyllites of the Kroh Formation.

Having seen enough of the Nenering beds, it was time for lunch at Grik. After lunch the group visited the Lawin Tertiary beds to see for themselves the similarities and differences with the Nenering beds.

A visit to the picnic spot nearby to cool off in the cold stream waters turned out to be a bonus with the discovery of an important outcrop of the Tertiary beds resting on the Lawin granite.

The group headed back for KL around 5 pm, arriving in KL around 9 pm.

Abdul Hadi AR & G.H. Teh

PERTEMUAN PERSATUAN Meetings of the Society

Ceramah Teknik (Technical Talk)

Conodonts and mass extinctions in the Phanerozoic

D. JEFFREY OVER

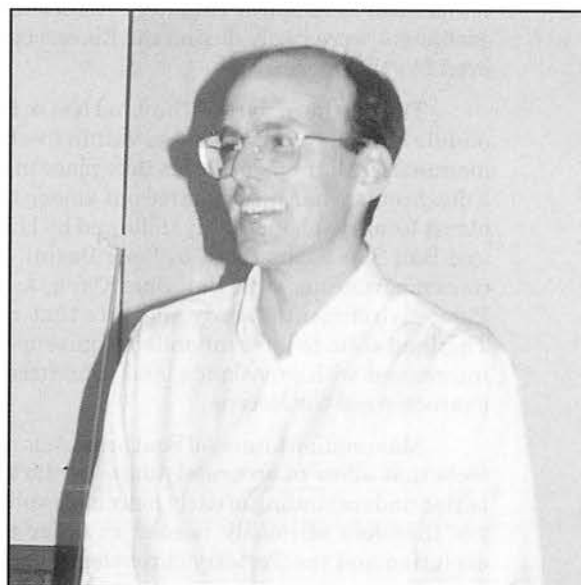
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D. JEFFREY OVER

Technical Talks by Stephane Ducrocq and Yaowalak Chaimanee

Laporan (Report)

Prof. Jean-Jacques Jaeger, Dr. Stephane Ducrocq and Dr. Haiyan Buffetant from Montpellier II University, France and Dr. Yaowalak Chaimanee from the Geological Survey Division, Department of Mineral Resources, Thailand, were here on a recent visit to search for mammalian fossils in the Batu Arang Tertiary coal deposits and fissure fillings in limestones around Raub and Ipoh. Many mammalian fossils, especially teeth, have been found in the Tertiary basins and fissure fillings of limestones in Thailand and they would like to extend their search southwards into Peninsular Malaysia to see if such fossils are also found here. We are indeed very fortunate to have Dr. Ducrocq and Dr. Chaimanee share their findings in Thailand with us during their short visit here in their two talks to the Society on the 15 January 1998 at the Geology Department, University of Malaya.

C.P. Lee

Tertiary mammal faunas from Thailand

STEPHANE DUCROCQ

Abstrak (Abstract)

Intensive survey in continental basins of Thailand has led to the discovery and study of several Tertiary mammalian communities in southern and northern Thailand.

The Krabi Basin (South Thailand) has yielded three rich and diversified Paleogene mammalian faunas (Wai Lek, Bang Pu Dam, and Bang Mark) for which a late Eocene age (about 35 My) has been allocated on the basis of their mammal associations and stages of evolution. The Krabi community can be considered a reference community for Southeast Asia because the oldest representatives of several extant families of mammals (hippos, pigs, megabats, colugos, ruminants), and the first undoubtedly remains of anthropoid primates of Southeast Asia have been discovered there. This led to significantly modify several concepts on early mammalian evolution. The cenogram method (whose structure is related to the general environment of a faunal community) has been used in order to tentatively reconstruct the paleoenvironments of southern Thailand during the late Eocene, and this study suggests a forested habitat submitted to an alternance of dry and rainy seasons with quite high temperatures (tropical climate). According to the mammal fossil record, intercontinental exchanges were likely during the Eocene between South Asia and Europe, North Africa and even North America.

The northern part of Thailand has so far yielded seven distinct fossiliferous localities of middle Miocene age distributed within five basins. These communities include small to large mammals. All these localities take place in a time span ranging from about 16 to 14 My, and a diachronism has been pointed out among these localities. Mae Long (Li Basin) would be the oldest locality (about 16 My) followed by Had Pu Dai (Lampang Basin), and then Huai Siew and Ban San Klang (both in Pong Basin). Ban Na Sai (Li Basin) and Mae Teep might be contemporaneous with Ban San Klang, and Mae Moh is considered the youngest locality. Paleoenvironmental study suggests that middle Miocene mammalian faunas of northern Thailand seem to have inhabited a quite open environment, with small areas of forests likely intermixed with grasslands, and submitted to a likely monsoonal climate, cooler than that characterized the Eocene.

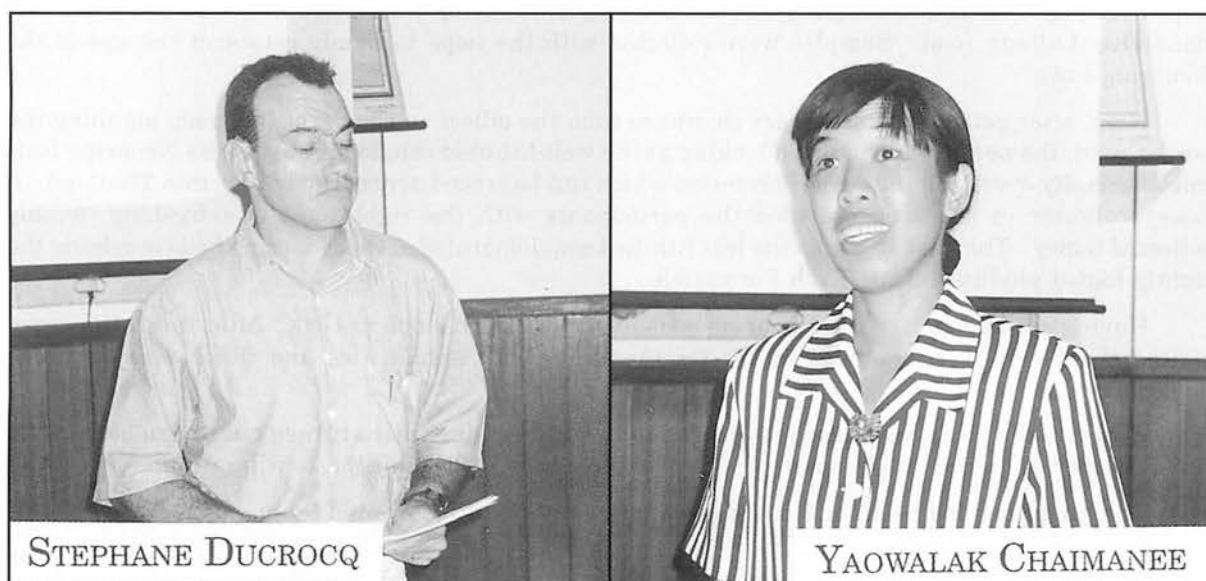
Mammalian faunas of Southeast Asia are therefore valuable and precise biostratigraphic tools that allow to accurately date Tertiary basins. They also represent a reference for the better understanding of early mammal evolution. Additional prospection and fossil collecting are therefore obviously needed in order to improve the knowledge of paleoenvironment evolution and the Tertiary chronological scales in Asia.

Plio-Pleistocene fossil from caves and fissure fillings of Thailand

YAOWALAK CHAIMANEE

Abstrak (Abstract)

The main objective of this work was to contribute to the understanding of the evolutionary history of the rodents of Thailand during the last 3 million years (Late Pliocene-Pleistocene) and to the knowledge of the environmental changes that occurred in that area. Twenty rodents localities were discovered all over the country, from fissure fillings and from caves, and their content was studied. 41 species were identified, 30 Murinae among which two new genera, *Ratchaburimys* and *Prohadromys*, and 7 new species, which are described, and 11 Sciuridae, including 6 flying squirrels. Most fossil species could be identified as belonging to extant species still living in Thailand or in adjacent countries, either in Indochina or in Sundaland. Some important changes in species distributions through time could be demonstrated. As we could use only molar characters for the identification of these fossils, we tested the value of our characters in the light of phylogenetic analysis. Using cladistic analysis, we propose therefore several original phylogenetic relationships between these Southeast Asian fossil and extant rodents. The taxonomic knowledge and the changes in community composition and in species distributions which occurred through time allowed us to build up the frame of a biochronological scale that will allow the date Plio-Pleistocene terrestrial deposits in Southeast Asia by using fossil rodents. A variety of quantitative methods have been used, as multivariate statistical analysis, parsimony analysis method and probabilistic similarity index, to justify on a more rigorous basis our qualitative interpretations. This relative chronology is tentatively calibrated on the availability of a few absolute ages as Uranium/Thorium dates from calcite. Important changes in the composition and in the distribution of species pinpoint to the importance of climatic changes during the Plio-Pleistocene in Thailand. Until now, only data relative to the Holocene were available from that country. The fossil rodents show that during the Latest Tertiary, there was a significative amount of grasslands by comparison to the present day, indicating stronger seasonality. Since that time, climate seem to have become wetter with less seasonality and evergreen forests have become progressively more widespread over the country. In Snake Cave, more than 130,000 years ago, during Late Middle Pleistocene times, the climate was wet and cooler than today, and the rodent composition indicate a downwards shift of at least 1,000 meters in vegetational zones. We relate this development of evergreen forests to the radiation of the genus *Rattus*, whose species become more and more numerous through the Plio-Pleistocene. Also, the climatic history seems in good agreement with some climatic global models which correlate cooling and increasing humidity through Plio-Pleistocene in Southeast Asia to the uplift of Tibet plateau.



STEPHANE DUCROCQ

YAOWALAK CHAIMANEE

Tertiary Basins of Peninsular Malaysia and its adjacent offshore areas — Report

The GSM's Sedimentology & Stratigraphy Study Group successfully organised a half-day seminar entitled "Tertiary Basins of Peninsular Malaysia and its adjacent offshore areas". The seminar, which was held on the Saturday, 21st February 1998 at the Department of Geology, University Malaya, was well attended by 40 participants. Six papers on Tertiary deposits of Peninsular Malaysia were presented. Registered participants each received an unedited volume of five full-papers and an extended abstract.

Of the six papers presented, three papers were concerned with the Tertiary Batu Arang Beds; the best exposed Cenozoic rocks of Peninsular Malaysia. These were presented by Prof. John Kuna Raj, Dr. Azhar Hj. Hussein and Intan Suhaila and Mustaffa Kamal Shuib and Abdul Hadi Abd. Rahman, all from University Malaya. Results of geophysical studies on the Bukit Arang Tertiary Basin in Perlis were presented by Dr. Lee Chong Yan from Universiti Sains Malaysia. Qalam Azad Roslee and Dr. Teh Guan Hoe, both from University Malaya, reviewed the stratigraphy and structure of the Nenering Tertiary Beds of Hulu Perak. A review paper on Tertiary and possible Tertiary deposits of Peninsular Malaysia by Prof. John Kuna Raj, Abdul Hadi Abd. Rahman and Mustaffa Kamal Shuib nicely rounded up the seminar.

It was highlighted during the seminar that there was a noticeable bias on the Tertiary rocks of Batu Arang. This is due to a combination of lack of investigations on other Tertiary rocks, as well as the lack of outcrops. The committee was also hoping to get papers on adjacent offshore areas, especially the Tertiary of the Strait of Malacca. Unfortunately, since most of the data is with the oil companies, this was not forthcoming. The committee hopes that specialists who have worked on this data will present them in the near future.

The seminar was followed up with a fieldtrip to Pengkalan Hulu in Hulu Perak to look at the Nenering Tertiary Beds. Led by Dr. Teh Guan Hoe and Qalam Azad, the group of 12 participants left the Department of Geology, University Malaya at about 2.30 pm in two 4WDs belonging to the Department of Geology, University Malaya, after a tasty meal of packed chicken rice.

A noisy, chilly thunderstorm greeted the group on arrival at Lawin. As no fieldwork was possible that day due to the heavy downpour the group headed straight for Grik for the night, arriving at 6.30 pm.

Early the next day, the group spent a good early morning fieldwork looking at the Nenering Beds unconformably overlying the tightly folded limestone of the Kroh Formation at km 12 of the Kg. Air Panas-Kg. Lallang road. Samples were collected with the hope to firmly establish the age of the Nenering beds.

Next, after getting the necessary clearance from the officer in charge of the troop manning the border road, the participants started looking at the well-lithified conglomerates of the Nenering beds unconformably overlying the Kroh Formation which can be traced across the border into Thailand. A honey collector in the area provided the participants with the right tonic of refreshing, freshly collected honey. The next stop was the less lithified conglomerates of the Nenering beds overlying the tightly folded phyllites of the Kroh Formation.

Having seen enough of the Nenering beds, it was time for lunch at Grik. After lunch the group visited the Lawin Tertiary beds to see for themselves the similarities and differences with the Nenering beds.

A visit to the picnic spot nearby to cool off in the cold stream waters turned out to be a bonus with the discovery of an important outcrop of the Tertiary beds resting on the Lawin granite.

The group headed back for KL around 5 pm, arriving in KL around 9 pm.

Abdul Hadi AR & G.H. Teh

Tertiary Basins of Peninsular Malaysia Seminar



Captions to figures

- | | | | |
|------|---|--------|---|
| 1. | The Organising Chairman starting off the Seminar. | 8. | C.Y. Lee with his Bukit Arang paper. |
| 2-4. | Sections of the participants. | 9. | Abdul Hadi with his joint paper. |
| 5. | Azhar receiving memento from Session Chairman C.P. Lee. | 10. | A question for J.K. Raj. |
| 6. | Qalam presenting his joint paper. | 11. | C.S. Hutchison summing up. |
| 7. | Tea time at a new location. | 12. | Final words from the Organising Chairman. |
| | | 13-14. | Lunch of packed chicken rice. |

Tertiary Basins of Peninsular Malaysia and its adjacent offshore areas fieldtrip



Captions to figures

1. Time to stretch (and air) legs at Changkat Jering Interchange.
2. At the Nenering outcrop along the Kg. Air Panas — Kg. Lalang Highway.
3. Abdul Hadi briefing on the manner of deposition.
4. Time to examine and discuss the Nenering outcrop along the Border Road.
5. A group photo at a landslide at fault contact between the Nenering deposit and Kroh Formation.
6. Looking at the extension of the Nenering deposit across the border.
- 7-8. Studying the Lawin deposit.
9. A last group photo.

BERITA-BERITA PERSATUAN

News of the Society

KEAHLIAN (Membership)

The following applications for membership were approved:

Full Members

- | | |
|---|--|
| <p>1. Asiah Mohd Salih
Petronas Research & Scientific Services Sdn. Bhd., Lot 3288 & 3289, Off Jalan Ayer Itam, Kawasan Institusi bangi, 43000 Kajang.</p> <p>2. Shamsul Nizam Ariffin
No. 12 Jalan 11/4F, Off Jalan Universiti, 46200 Petaling Jaya.</p> <p>3. Jusmila Baharom
Pernas Charter Management Sdn. Bhd., Tingkat 35, Menara PNB, 201A, Jalan Tun Razak, 50710 Kuala Lumpur.</p> | <p>4. Mohamad Nazly Nasir Mohamad
SSP Geotechnics Sdn. Bhd., Level G, Wisma SSP I, Jalan SR8/3, Serdang Raya, Seri Kembangan, Selangor.</p> <p>5. Asiah Mohd Salih
Petronas Research & Scientific Services Sdn. Bhd., Lot 3288 & 3289, Off Jalan Ayer Itam, Kawasan Institusi Bangi, 43000 Kajang.</p> |
|---|--|

Student Members

- | | |
|---|---|
| <p>1. Zainal Abidin Jamaluddin
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>2. Yusuf Hj. Imbun
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>3. Bisharuzi Omar
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>4. Mohamed Syahrizal Zakaria
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>5. Ashazry Anuar
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>6. Mohd Zaidi Saad
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> | <p>7. Syed Mohd Rodizan Syed Mohd Zain
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>8. Ahmad Tarmizi Abdul Ghani
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>9. Yusri Ramly
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>10. Ahmad Suhaimi Osman
Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi.</p> <p>11. Nur Susila Md Saad
Jabatan Geologi, Universiti Malaya, 50603 Kuala Lumpur.</p> <p>12. Siti Julia Tumpang
Jabatan Geologi, Universiti Malaya, 50603 Kuala Lumpur.</p> |
|---|---|

13. Jaineh Lingi
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
14. Danny Hamid
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
15. Juhari Ismail
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
16. Azlan Mohamad
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
17. Azlina Habibullah
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
18. Khairul Hamidi Khalid
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
19. Mohd Zaid Jaafar
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
20. Anura Dason A/L Namadason
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
21. Azmi Abu Bakar
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
22. Zamri Baseri
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
23. Zainal Abidin Jamaluddin
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
24. Yusuf Hj Imbun
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
25. Bisharuzi Omar
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
26. Mohamed Syahrizal Zakaria
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
27. Ashazry Anuar
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
28. Mohd Zaid Saad
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
29. Syed Mohd Rodizan Syed Mohd Zain
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
30. Ahmad Tarmizi Abdul Ghani
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
31. Yusri Ramly
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
32. Ahmad Suhaimi Osman
Jabatan Geologi, Universiti Kebangsaan
Malaysia, 43600 Bangi.
33. Nur Susila Md Saad
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
34. Siti Julia Tumpang
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
35. Jaineh Lingi
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
36. Danny Hamid
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
37. Juhari Ismail
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
38. Azlan Mohamad
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
39. Azlina Habibullah
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
40. Khairul Hamidi Khalid
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.
41. Mohd Zaid Jaafar
Jabatan Geologi, Universiti Malaya, 50603
Kuala Lumpur.

PETUKARAN ALAMAT (Change of Address)

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

- | | |
|--|--|
| 1. Melissa Johansson
Schlumberger Geoquest, 8th Floor Rohas
Perkasa, No. 8 Jalan Perak, 50450 Kuala
Lumpur. | 2. Muhad Saleh Ambok Bolong
8 Jalan Balau 12, Taman Rinting, 81750
Masai, Johor. |
|--|--|

GSM

PERTAMBAHAN BAHARU PERPUSTAKAAN (New Library Additions)

The Society has received the following publications:

- | | |
|--|---|
| 1. Annual Report: Chinese Academy of
Geological Sciences, 1995. | 6. Hart's Petroleum Engineer International,
Oct. 1997. |
| 2. Journal of Shijiazhuang, University of
Economics, vol. 20, nos. 3 & 4, 1997. | 7. Petromin, Dec 1997. |
| 3. Acta Geoscientia Sinica, vol. 18, no. 3 &
supplementary, 1997. | 8. AAPG Explorer, Jan 1998. |
| 4. Oklahoma Geology Notes, vol. 57, nos. 1-3,
1997. | 9. AAPG Bulletin, vol. 81/12, 1997. |
| 5. Geological Survey of Japan, Bulletin vol.
48, nos. 5-8, 1997. | 10. Geoscience, vol. 11, no. 4, 1997. |
| | 11. Earth Science Frontiers, vol. 4, nos. 3 & 4,
1997. |

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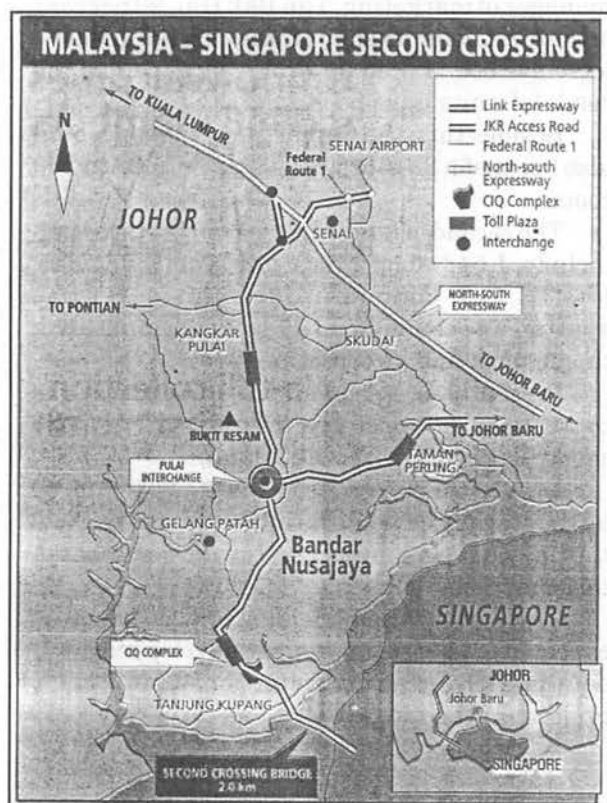
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BERITA-BERITA LAIN Other News

Local News

Second crossing opens today



The second link which can cope with the movement of 200,000 vehicles a day is set to open tomorrow, after eight years of construction costing RM1.64 billion for the Malaysian side.

The customs, immigration and quarantine complex contains two rest and service areas, a

light vehicle plaza, a lorry complex, bus terminals and an overnight holding bay. The complex will be called the Sultan Abu Bakar Complex and also has staff quarters.

The link starts from Kampung Ladang at Tanjung Kupang in Johor to Jalan Ahmad Ibrahim at Tuas in Singapore.

Of the 2 km three-lane dual carriageway, the approximate 1.7 km over Malaysian waters was built by LinKedua, a company within the Renong Group, and the rest by Singapore.

The bridge components and connecting expressway were privatised and wholly financed by the developer and concessionaire while the complex was financed by the government.

The link will be connected by a new 44 km highway to the north-south highway, the Sultan Ismail International Airport in Senai and with Federal route one.

The highway is made up of two connecting highways, the second link highway spanning 35.5 km and the 8.5 km-long Perling highway.

The highway will allow motorists to by-pass Johor Baru and head directly to Singapore or to travel north.

When toll is charged a month after the soft opening, motorists from Malaysia will have to pay at the Lima Kedai toll plaza on reaching the new expressway. On reaching the bridge, they will have to pay again at the Tanjung Kupang toll plaza before proceeding to Singapore.

Motorists from Singapore will have to pay on the Singapore side of the bridge as well as at the Tanjung Kupang and Lima Kedai toll plazas.

Sun, 2.1.1998

RM2b project a catalyst for Malacca

The construction of the RM2 billion Pulau Melaka project outside Bandar Hilir, Malacca, will serve as a catalyst for the development of future artificial island projects in the country.

Being the first artificial island project in Malaysia, its success or failure will reflect the future of this type of real estate development which utilises the principles of sea reclamation due to limited land space.

With Malacca and Kedah lining up to develop more artificial islands in the near future, the Pulau Melaka project is seen as an indicator for this new type of real estate development.

The construction of these artificial islands serves a dual purpose. Besides providing a new alternative market in the real estate business due to limited land space and a yield in price, the islands could also serve as a barrier to prevent coastal erosion a factor affecting the Malacca and Kedah coasts seriously.

Therefore, both the Kedah and Malacca State Governments are lobbying for the construction of more of these islands due to the benefit in preventing erosion.

For Malacca, the 17 artificial island projects spanning from Kuala Linggi to Sungai Rambai are in the works pending approval from a macro-Environmental Impact Assessment study.

A decision is expected to be made soon as the study was completed last month.

Hence, the importance of the Pulau Melaka project developed by Inno-Enhance Sdn. Bhd., a subsidiary of Larut Consolidated Bhd., must not be undermined.

The project was launched by Prime Minister Datuk Seri Dr. Mahathir Mohamad in May 1996 and already, the first of the two islands and a RM10 million 300-metre bridge connecting the island with the mainland have been completed.

The recently-completed 40-hectare island consists of 1,518 shop-office units, 92 bungalow lots, 990 condominium units, 1,012 condotel units, a jetty centre, commercial and office complexes.

According to Inno-Enhance deputy general manager of marketing, Tan Bak Hai, 90 per cent of the (first) island's shop offices and 20 bungalow lots have been taken up while 30 per cent of the condotel units have been sold.

Besides this, the first artificial island would also boast of a 33-storey five-star hotel with 300 rooms.

The second 'island' of almost 50 hectares will include 1,548 shop office units, 94 bungalow lots, 3,210 condominium units, service apartments, commercial and office complexes, a theme park and a recreational park.

Presently, Inno-Enhance is preparing works to reclaim 50 hectares of the sea for the construction of the second island.

Despite the current economic slowdown faced by the country, it would be interesting to see how this may have an impact on the development of these artificial islands.

Truly, the Pulau Melaka project which is expected to take seven years to develop may well be a marker or an indicator for other similar projects in the future.

NST, 2.1.1998

Miners in Perak weigh prospects of reviving tin mines

Miners in Perak are looking at the prospect of reviving abandoned tin mines in view of the projected increase in the price of tin this year.

The Perak Chinese Mining Association president Chin Lean Choong said a detailed analysis of the annual world production and consumption showed that world demand for tin had been outstripping new supply by as much as 10,000 tonnes a year.

He said the general consensus in the world market was that tin price would move upward in

1998.

"If the projected consensus is true, many miners whose mines had been abandoned, would consider reviving them," he said, adding however that it would depend on their viability.

He said since July last year, tin price has steadily increased from RM14 per kg to a high of RM21.13 per kg on Dec 5.

Since then, the KLTM price hovered in the region of between RM18 per kg and RM20 per kg range.

"Admittedly, the rise in tin price is entirely due to the depreciation of the ringgit against the US dollars."

"The lower value of the ringgit has attracted much foreign interests into the market and it is widely believed, the exchange rate will eventually stabilise and reflects in the tin price at above RM17 per kg, assuming the supply and demand remain constant at current level," he said.

The current world production of tin is about 215,000 tonnes while demand is estimated at over 225,000 tonnes.

Malaysia's tin production last year was about 5,174 tonnes while demand was in the region of 5,996 tonnes.

Speaking at the opening of the association's meeting in Ipoh yesterday, he said the sudden change of outlook in tin price had rekindled the enthusiasm of many miners to pool their resources and management skills to start mining for tin and other mineral resources in the country once again.

The only question remaining now, he said,

was whether there was mining land available.

Chin said in view of the change in scenario it was appropriate for the State Government to review its policy of alienating land for mining purposes.

It is learnt that the State Government has stopped renewing leases for mining land after the drop in the world tin price in 1985 and instead allocated the land to more productive uses such as development and agricultural purposes.

The association also hoped that the National Mineral Policy would soon be implemented so that the mining industry could play a meaningful role as a supplier of raw material and provide input towards the nation's industrialisation process.

At present, there are only three dredges, 20 gravel pumps, 13 open-cast mines and one underground mine still in operation in the country of which one dredge, 11 gravel pumps and six open-cast mines are found in Perak.

NST, 2.1.1998

Shell starts ops at unmanned oil platform

Sabah Shell Petroleum Company Ltd. (SSPC) began production from its Kota Kinabalu Field (KNDP-A) — its first unmanned and remote control oil platform — a month ahead of schedule on Dec 25.

The Kinabalu Field, 55 km offshore west-north-west of Labuan Island was first discovered in early 1989 and is a 80:20 joint venture developed by Sarawak Shell (as operator) and Petronas Carigali.

Its lies in the SB-1 block in a water depth of 55 m.

When the first phase of development is completed by the middle of this year, the KNDP-A is expected to produce 40,000 barrels of oil and 30 million standard cu ft (mmscf) of gas daily.

It is designed to cater for peaks of 60,000 barrels and 42 mmscf daily, Sarawak Shell Bhd/SSPC said in a statement.

The oil and gas produced will be transported through two 27 km pipelines to Labuan Crude

Oil Terminal (LCOT), passing by Petronas Carigali's operated Samarang Platform.

The statement said the successful start-up and production at the Kinabalu Field platform was a milestone in Shell's long-term commitment to the development of hydrocarbon resources in Sabah.

It is equipped with several advanced technologies: for example it is unmanned and fully remote controlled from the LCOT and was developed exclusively with horizontal or multi-lateral wells.

Shell general manager for Sabah business unit, Campell Keir, said the Kinabalu oil production would doubled the total net oil output of Shell in Sabah.

"Many of the contracts executed were economies of scale contracts, part of Petronas-led cost reduction initiative Coral which has resulted in significant cost savings for the project," he said.

Star, 2.1.1998

Shell appoints another Malaysian to key position

The Shell group, in its efforts to transfer technology and award key management positions, has another Malaysian in a top position for its upstream operations.

Ding Chung Nyea, 45, a Sarawakian from Bintulu, assumed the position of general manager for new business development at Sarawak Shell Bhd./Sabah Shell Petroleum Co. Ltd. (SSB/SSPC) from Dec 1.

He took over from Vuc Khac Cung, an expatriate who has returned to Shell Oil USA for a posting.

As the top man at the business development unit, Ding will be in charge of developing new business which is critical for sustainable growth and future profitability.

His job includes the acquisition of new business deals, new acreages, handling production-sharing contract extensions and finding new opportunities for growth.

Ding, who holds a first-class honours degree in civil engineering from the University of Singapore, joined SSB/SSPC in 1977 as a well-site petroleum engineer when he was 25 years old.

He was later posted to Shell Internationale Petroleum Maatschappij and Shell Expro UK.

Ding returned to SSB/SSPC in 1988 and held several senior posts as head of planning, economics and liaison department, head of production-sharing contract management and senior manager for long-term gas supply before his present appointment.

With its latest "Malaysianisation" effort, six out of nine management positions in SSB/SSPC are now being held by Malaysians.

Out of the total of 962 senior staff positions, 842 are being held by Malaysians. The company has a total workforce of 1,783 people.

Star, 2.1.1998

Petroleum resources to last 30 years

The country's petroleum resources can only meet the national requirement for another 20 to 30 years.

The national gas reserves can sustain controlled production for the next 50 to 60 years, said the Electricity and Gas Supply Department in its publication, *Guide on Efficient Use of Electricity for Domestic Appliances*.

Its director-general Datuk Mohamed Annas Mohamed Nor said at end of last year, Malaysia's oil reserves stood at 3.9 billion barrels while production was 630,000 barrels a day.

The book said the 60% of energy generated in the country used natural gas as fuel, making it the most important fuel in electricity production.

Star, 4.1.1998

Shell's new platform producing oil, gas

Sabah Shell Petroleum Company Ltd (SSPC) yesterday announced it has started to produce oil and gas from its platform in the Kinabalu field (KNDP-A) near Labuan since Christmas Day — one month ahead of the initial schedule.

The company said in a statement that the successful start-up of the platform was a further milestone in the company's long-term commitment to developing hydrocarbon resources in Sabah.

Besides this, it was a breakthrough for Shell in Malaysia as it was equipped with advanced technology.

"The field is unmanned and fully remote-controlled from the Labuan Crude Oil Terminal (LCOT). Also, the field is being developed exclusively with horizontal or multi-lateral wells," the petroleum company said.

The Kinabalu field, was discovered in early 1989 and developed as a joint venture between Shell (80 per cent) as operator and Petronas

Carigali (20 per cent).

Campbell Keir, Shell's general manager for the Sabah business unit, said the Kinabalu oil

production would double the total net oil output of Shell in Sabah.

NST, 6.1.1998

Market rally may spur tin industry revival

The rally in the tin price on the Kuala Lumpur Tin Market since the end of July 1997 might give some hope for the revitalisation of the tin mining industry.

Tin price had been hovering between RM13 and RM20 last year compared to between RM14 and RM16 in 1996.

In 1998, tin price started on a stronger note as it hovered at the RM20 level and touched its peak at RM24.68 per kg on Jan 7.

Dealers attributed the uptrend of the metal mainly to the ringgit's depreciation against the US dollar.

On the revitalisation of tin mining activities, an industry observer said that *"it is viable so long there are tin ore deposits and virgin lands to be mined."*

"However, there are not much virgin land available for mining right now," he added.

He said as at September 1997, there were 35 mining units operating in Malaysia which mainly extract low grade tin ore from mines that have

been tapped between 15 and 16 times.

Production of tin-in-concentrate is anticipated to decline further by 5.3 per cent to 4,900 tonnes in 1997, against 5,174 tonnes produced in 1996, while consumption stands at about 6,000 tonnes per annum.

The industry observer said that if State Governments were willing to give virgin land for mining purposes then it would be viable for the miners to extract tin ore deposits from new mines, thus, increase their production.

On the revitalisation of the tin mining industry, he said in terms of cost miners might have to pay more for mining equipment like water pumps, which are imported, due to the depreciation of the ringgit, but he added that at the end of the day they might get some profit.

He pointed out that only in Malaysia is tin enjoying a good price due to the depreciation of the ringgit while on the London Metal Exchange the price of three-month tin is still below US\$6,000 (RM26,400) per tonne.

NST, 15.1.1998

Perak lifts freeze on mining leases

Perak has lifted the freeze on the issuance of mining leases because of the high price of tin in the world market.

Last week, the price of tin hit RM23.78 a kg on the Kuala Lumpur Tin Market (KLTM). The about-turn began in late September when the spot price hit a high of RM18.62 a kg on the KLTM but miners and senior government officials were sceptical, arguing that it was a temporary phenomena brought on by the weakening ringgit.

Speaking to reporters after convening the weekly exco meeting yesterday, Mentri Besar Tan Sri Ramli Ngah Talib said the increasing price of tin had brought *"a glimmer of hope"* for Perak.

"In fact, we collected cess amounting RM21,651.20 sen from the industry last month."

"The revenue may be small, but it is a big thing for us because it is the first time that we managed to collect cess from tin ever since the downfall of the industry in the 1980's," he said, adding that the state used to collect RM30 mil cess annually.

Ramli said if the tin price could hover above RM20 per kg; it was a good sign for miners and hoped to collect RM5 mil in monthly cess from the sector by issuing 10 more mining leases.

"Now, there are 18 leases throughout Perak. We are willing to issue 10 more but activities will only be allowed in old mining areas," he said.

Ramli said newcomers to the sector must be

wary of the risk involved as it would be costly to buy new machinery now.

"Both newcomers and the old players must conduct a detailed study, especially on how to lower their production cost in view of the competitiveness of other tin producers such as

China which is able to produce tin at a cheaper cost."

"World tin stockpile may be inundated by supplies from such countries, forcing its price to go down," he said.

Star, 15.1.1998

Solution to Klang Valley water woes

The problem of taps running dry in the Klang Valley is expected to be alleviated when the construction of a new distribution supply system is completed by the end of the year.

Thousands of domestic and industrial consumers in the city and Gombak, and particularly Hulu Klang, will be the first to benefit from this RM317 million project, as part of the work involving supply to the two areas is scheduled to be completed as early as March.

Undertaken by Puncak Niaga (M) Sdn. Bhd., the partial completion of the work will allow 16 million litres per day from the existing water treatment plant of the Sungai Selangor water supply system Phase 1 (SSP1) to be supplied to the Hulu Klang area in case of a supply shortage from the Sungai Langat WTP.

The company, in a statement to the Kuala Lumpur Stock Exchange yesterday, said it had entered into a turnkey contract for the project with the Selangor Government on Jan 10.

The contract was executed pursuant to an earlier letter of award in April last year, issued by the State Government to Puncak Niaga.

Under the contract, the company is to complete the design and carry out the construction for the distribution supply system catering to areas of Kuala Lumpur, Gombak, Petaling Jaya, Hulu Klang and Shah Alam.

It will see the construction and installation of pipelines, reservoirs and pumping stations in

certain areas within the State.

Once completed, the new system will assist the existing ones to cope with the distribution of treated water to be produced by the WTP of the Sungai Selangor water supply system Phase 2 (SSP2).

The SSP2 project was commissioned by the Government to Puncak Niaga to meet the anticipated demand of treated water by the year 2000.

It will be constructed in two stages at Bukit Badong, Selangor, with the first to be ready by the year end.

Each stage has a production capacity of 475 million litres of treated water a day (mld).

When fully completed in the year 2000, it will complement Phase One of the project, which also has a similar capacity of 950 mld.

This total supply of 1,900 mld from SSP1 and SSP2 will account for two-thirds of the water needs in the Klang Valley and Selangor.

Puncak Niaga said with a total treatment capacity of more than 3,900 mld, including the present maximum of some 2,500 mld, there should be enough water up to the year 2005.

It added that with the completion of the new distribution supply system and the SSP2, it was envisaged the water problems faced by consumers in Kuala Lumpur and Selangor would be solved in the long run.

NST, 15.1.1998

Some component works on Bakun project to continue

The Government is to continue with current work on some components of the Bakun hydro-electric dam project such as the river diversion tunnel and relocation of villagers although the project has been deferred.

A Finance Ministry statement said yesterday that the Government, which has taken over implementation of the project, was aware that a number of companies involved, like Ekran Bhd., had spent some money to provide components

and facilities for the project.

These included the construction of the river diversion tunnel, jetty and resort, and equipment used especially for the Bakun project.

The Government would give due consideration to refunding such costs but payments would only be made after accounting firm Price Waterhouse had verified them, the statement.

Price Waterhouse had been appointed by

the Government to undertake a due diligence review of the accounts of Bakun Hydroelectric Corp. Bhd. (BHC) and costs related to the Bakun project. Ekran is the single largest shareholder of BHC.

The ministry statement also said that Price Waterhouse had completed its review on the state of affairs of the Bakun project and that the Government was studying the report.

Star, 22.1.1998

Gas found in M'sia-Thai joint development area

The Malaysia-Thailand Joint Authority (MTJA) yesterday announced that gas had been discovered at the Muda-5 appraisal well in the Muda gas field after its contractors in Block B-17 successfully completed drilling and testing there.

The contractors are PTTEP International Ltd. and Petronas Carigali (JDA) Sdn. Bhd.

In a statement released in Kuala Lumpur, MTJA said the field was first discovered by the Muda-1 well in November 1995 in Block B-17 of the joint development area (JDA).

The Muda-5 well was spudded on Dec 18,

1997 and drilled to a final depth of 2,480 m. The well was expected to firm up the reserves in the east central block of the Muda field for the first phase of gas development in Block B-19, the statement added.

MTJA is a statutory body vested with the exclusive rights, powers, liberties and privileges to explore and exploit petroleum resources in the JDA under the Malaysia-Thailand Joint Acts.

The Muda-5 well is located about 33 km north of the Muda-1 well in Block B-17 of the JDA.

Star, 22.1.1998

Samy Vellu: New highway will not go through varsity

The construction of a new highway cutting across Bangsar and Lembah Pantai will not go through Universiti Malaya, said Works Minister Datuk Seri S. Samy Vellu.

He said the mosque near the university would not be demolished as alleged by certain quarters.

"Anyone with a clear mind will not run a highway through the university, and if anyone says the highway is going through the university then he does not know anything about planning."

"The highway will be constructed between the university boundary and the mosque. The mosque or any existing building belonging to the university will not be affected," he told reporters yesterday.

Samy Vellu was commenting on a news report that a six-lane highway from the Federal

Highway through the Kampung Kerinchi interchange towards Jalan Bukit Kiara would pass through UM's Masjid Ar-Rahmah and its new law faculty.

The newspaper also reported that the university's senate had opposed the construction of the highway after taking into consideration the safety of students.

A letter of complaint was said to have been submitted to the Education Ministry.

Samy Vellu said the Economic Planning Unit had approved the project which would be carried out soon by a private company.

When asked how the project could proceed as the Government had stopped or deferred major projects, he said it had been approved earlier by the EPU.

"The Government wanted projects to be

studied carefully to see if there was any foreign investor interested in carrying out the projects."

"This project had a foreign investor," he said, adding that the private company would also build a special entrance to the university and conduct landscaping along the highway.

"I do not understand the attitude of our people. At one point they say the Government is not doing anything about the traffic problem, and when we want to do something, they oppose it."

"If everyone objects to construction of highways in front of their homes, how are we going to provide facilities to the people," he said.

Samy Vellu said the traffic volume in Lembah Pantai and Bangsar was getting increasingly heavier and the highway was necessary to ease the congestion.

In Petaling Jaya, Universiti Malaya public relations officer V.T. Ratnam, said the authorities had agreed to identify an alternate route after the university's board of directors appealed to the EPU and the Malaysian Highway Authority (MHA).

"We were aware of the proposed route ten months ago and asked for the original plan to be reconsidered."

"We also submitted our proposals for an alternative route," he said.

He did not disclose what the proposals were.

The highway is part of the *Skim Penyuraian Trafik Kuala Lumpur Barat* (Sprint).

"The EPU, MHA and Sprint have met twice to discuss possible alternatives. The discussions are still underway, but we are confident the project will not affect UM," said Ratnam.

Star, 24.1.1998

Tin smelting firm closes doors

Escoy Smelting Sdn. Bhd., which has been planning to relocate operations to Thailand since a few years ago, will finally close its doors end of March to some 320 workers.

Sources said the tin ore smelting factory, sited on a 7.6 ha area in Jalan Datuk Keramat in George Town, had about 450 workers until mid last year when news spread that it would close and many of the younger workers left.

"The factory is not closing down because of the currency problem," a source stressed, adding that the closure is to enable the company to expand its Thai factory in Phuket, where labour is cheaper.

He said a company, Malaysian Smelting Corporation in Butterworth, which is short of some 40 workers may be able to absorb some of those retrenched by Escoy.

It is learnt that Escoy management held a discussion over the closure yesterday with its in-house union representatives as well as representatives from the National Union of Industrial Mineral Smelting Workers, and they had agreed on the terms of retrenchment and

compensation package.

One source said the workers are generally satisfied with the compensation package which is more than what is stipulated in the collective agreement.

However, State Labour Department director Hashim Ariffin and State Industrial Relations director Ho Yee Seng, when contacted today, said they have yet to be officially informed by Escoy regarding its impending closure.

Hashim said Penang Joblink, newly set up on Jan 1 this year, also has to be notified whenever a factory retrenches its workers.

The Joblink, a labour watch group comprising the State Immigration Department, Industrial Relations Department, Labour and Manpower Department, is chaired by State Human Resource Committee chairman Datuk Dr. Kang Chin Seng.

Escoy, formerly known as Datuk Kramat Smelting and prior to that as Eastern Smelting, was established in 1908.

Its parent company is Amalgamated Metal Corporation Private Ltd., London.

Star, 28.1.1998

State pledges to ensure minimum hill-cutting

The State Government today gave its assurance that precautions will be taken to ensure that development projects on hill slopes above the 75 metres level will be carried out with minimum hill-cutting.

State Land Committee chairman Azahar Ibrahim's statement comes in the wake of apprehension expressed by environmentalists following the lifting of a 20-year freeze on development of land above 75 metres from the sea level on Penang Island on Jan 1.

He also assured that Penang Hill did not come under this ruling and that development on Penang Hill would be determined by the Local Plan which was being finalised and which included public input.

Azahar said stringent requirements were placed on such hillslope projects. These requirements were aimed at caring for the environment.

"Applications for such projects also will be vetted by the State Executive Council."

Up till Jan 1, the State Land Committee and local councils were the approving bodies for development projects.

"This new procedure will enable the State Exco to study each proposed project closely ...,"

Azahar said.

He said no applications for such projects had been received so far.

The decision to lift the freeze drew an outcry from public interest groups who had previously expressed concern over the indiscriminate mushrooming of high-rise buildings on some environmentally-sensitive hill slopes on the island.

They also claimed the decision was against the guidelines of the Penang Island Structure Plan gazetted in 1987.

"We have to allow this kind of development, owing to the scarcity of land in the State."

The tight restrictions include a three-storey height limitation for six buildings per 0.4 hectare, an Environmental Impact Assessment study to, among other things, determine if the hillslope gradient exceeds 20 degrees. Anything exceeding 20 degrees will not be accepted.

Also required is a report indicating the amount of earth to be removed and when it would be deposited, and a drainage system plan.

On land reclamation, Azahar said Penang would continue its land reclamation activities "as and when necessary".

NST, 29.1.1998

Only time will tell if Kinta Valley would see revival of mining industry

The question of whether to open new mines or revive old ones seems to be utmost in the minds of miners and ex-miners alike who, buoyed by the recent increase in tin prices, are itching to return to the once bustling industry.

Many are eager to have another go at the faltering industry despite being aware that regaining Perak's previous glory as the tin capital of the world seems almost impossible.

Although the prospects of short-term gain look promising, nobody can say for certain whether the bright outlook will last or is merely a flash in the pan.

Whatever it is, only time will tell if the 2,540 sq km Kinta Valley, which, in its heyday, contributed significantly to the State's economy, will see a revival of the tin mining industry.

The higher tin prices is basically attributed

to the weaker ringgit pegged against the US dollar and if that is so, what happens when the ringgit starts to make a recovery? Will the tin price then slide back to its previous low?

The State Government, however, following enthusiastic appeals from mining associations in Perak, despite its earlier scepticism, has agreed to issue mining licences in view of the indication of brighter prospects for the industry.

Menteri Besar Tan Sri Ramli Ngah Talib said the State Government would issue at least 10 mining licences with priority being given to operators who wish to revive abandoned mines and would consider issuing 10 more later.

He also said the State Government which had completely stopped receiving revenue from tin after the collapse of the tin price in 1985, had since last month, collected RM21,651 in revenue

from tin.

The "debate" on whether miners should return to their old profession was sparked off by Perak Chinese Mining Association president Chin Lean Choong, who said at the association's general meeting recently that miners in Perak were all fired up at the prospect of a projected increase in tin prices this year and many were looking at the possibility of reviving their abandoned mines or open new ones.

He then suggested the State Government should review its land alienation policy for mining activities. After the slump, the State stopped issuing such licences and is embarking on efforts to rehabilitate former mining land for farming and other activities.

According to Chin, a detailed analysis of the annual production and consumption of tin showed that world demand for the commodity had outstripped new supply by as much as 10,000 tonnes a year. The general consensus in the world market is that tin price will move upward this year.

Although the collapse of the tin industry has forced many mines to close down, there are still three dredges, 20 gravel pump, 13 open-cast and one underground mines in operation in the country.

In 1982, there were 376 mines in the State.

The fact that these mines are still operating, according to Chin, was due to the demand of the by-products, namely sand and gravel.

He did not deny that the recent depreciation of the ringgit had pushed up the tin price at the Kuala Lumpur Tin Market.

Since July 1977, tin price had increased steadily from RM14 per kg to a high of RM21.13 per kg last month and since then, said Chin, tin prices had been hovering at between RM18 per kg and RM21 per kg at the KLTM. On Tuesday, a day before Chinese New Year, the price of tin at the KLTM was RM23.26 per kg.

It is widely believed, he said, that the exchange rate of the US dollar to the ringgit would eventually stabilise and this is reflected in the tin price at above RM17 per kg, assuming

the supply and demand remain at the current level.

Chin said the fundamentals were changing for the better with the current world production of 215,000 tonnes compared with an estimated consumption of 225,000 tonnes.

He said if the projected consensus was true, many ex-miners who have abandoned their mines would consider reviving them. This, however, depended on their viability.

"The sudden change in outlook in tin price has rekindled the enthusiasm of many miners to pool their resources and mining management skills to start mining for tin and other mineral resources in the country as long as there is available mining land."

However, All Malays Chinese Mining Association vice-president Datuk Hew See Tong had a different view and was against miners reviving old mines.

This, according to him, was because the increase did not reflect the "actual" situation in the industry as the recent hike was mainly a result of the depreciation of the ringgit.

He said it would cost at least RM500,000 to open up a mine which was a large investment given the current economic situation.

"While they may be excited with the unexpected increase, they should not rush into reviving their mines especially when tin mining is considered a sunset industry."

His theory was supported by metallurgist and mineral technologist S. Pakianathan who said it would not be viable to revive abandoned mines as it would be difficult to source skilled mine workers.

He said to revive the mines would mean renewing most of the workforce which required skilled workers, foremen and tractor operators.

"We are coming to a stage where demand for tin is reaching a maximum. Once it reaches that point, the price will be constant. But with the slowly depleting world stockpile of tin, perhaps a certain number of mines will need to be opened," he said.

NST, 30.1.1998

3-storey limit for hill projects in Penang

Development on the state's hill slopes will be limited to three storeys under new construction

guidelines formulated by the government.

This is to preserve and protect slope integrity

and water catchments in the state.

The move, one of several new restrictions imposed by the state, follows a recent decision to lift the 20-year development freeze on hill slopes higher than 75 m above sea level.

Commenting on criticisms by environmentalists concerned about the ecological effects caused by the lifting of the freeze, Penang land committee chairman Azahar Ibrahim said that the new requirements would ensure slopes are protected in order to prevent unfortunate incidences such as the tragic Highland Towers incident in Kuala Lumpur in 1993.

He said the removal of the freeze, necessary due to the acute shortage of land in Penang, will not necessarily pave the way for all forms of development on the state's hill slopes.

"Development will be limited to three-storey structures and will only be allowed after a comprehensive environmental impact assessment (EIA) report is approved by the state authorities," he said.

He said all applications for hill slope

development will have to be approved by the state executive council before being assessed by the local government and land office, to ensure that the government directly oversees the protection of hill slopes.

The system will also help the exco ensure "minimum hill cutting" in the state, he added at the Gongxi-Raya open house of Chief Minister Tan Sri Dr. Koh Tsu Koon at Dewan Sri Pinang on Wednesday.

He added that the state has held discussions with professionals such as engineers and the Housing Developers Association (HD A) to ensure precautions are taken when any development on hill slopes is approved.

"The local government authorities will then monitor the new buildings to ensure that they are made according to our stipulations," he added.

Azahar also stressed that the new requirements will apply to the zones without any local plans.

Sun, 1.2.1998

Oil, gas industry forecast to grow

Malaysia's oil and gas industry will continue to expand until the first quarter of the 21st century with increasing demand for the two commodities.

The technical operations manager of Esso Production Malaysia Incorporated Zaidah Ibrahim said Malaysia's oil and gas reserves were in abundant supply and the industry was very profitable.

The known oil reserves would last for about

30 more years while the known gas reserves for another 60 years, she said.

"Gas is now being supplied directly to households, for example, in Terengganu," she said in an interview.

The Seligi oil field off Kuala Terengganu was Malaysia's biggest and covered 86 square kilometres from which each day could be pumped 300,000 barrels as well as one billion cubic feet of gas.

NST, 2.2.1998

Beris dam construction to start soon

The construction of the controversial RM270 mil Beris dam will start by the middle of the year.

State Agriculture and Information Committee chairman Ahmad Lebai Sudin said yesterday the structure, covering a 16 sq km area and having a storage capacity of 102 million cubic metres, would take three years to complete.

"The Drainage and Irrigation Department had already awarded the pre-qualification tender for construction of the dam last month. We are now working to relocate affected families from the area," he said in an interview.

Ahmad Lebai said the resettlement programme for the 2,530 people would be handled by a special consultancy team from Universiti

Malaya.

He said the Federal Government had earlier approved RM45 mil to provide housing for the affected families.

Residents in 13 villages including Kg. Sungai Batang, Kg. Telaga Batu, Kg. Seketul and Kg. Terenas in the Sik district are affected by the project.

Ahmad Lebai said the first phase of the relocation plan would comprise 1,483 houses.

The Beris dam has been a problem to both the previous and new administration following the setting up of the Beris Dam Action

Committee, a pressure group which had opposed the project, in 1993.

The residents had demanded RM50,000 compensation per 0.4 ha compared with the RM24,000 offered by the state.

Ahmad Lebai said the matter was being studied on a case-by-case basis based on recommendations by the Valuation and Property Services Department.

The residents wanted to be shifted to the Sg. Pau area instead of the 506 ha site in the Cheba forest reserve.

Star, 6.2.1998

Local ceramics getting popular abroad

Local ceramics are getting more popular abroad following the performance of the ringgit against the greenback, especially in the United States.

Last year's export volume of ceramics from Perak went up by 10 per cent, up RM5 million over the previous year's export figures of RM42 million, say industry sources.

Manufacturers, who attended three ceramics exhibitions in Denver, Chicago and Los Angeles in the United States last month, also say their volume of orders for the US, a new market, had been sizeable.

A local manufacturer Tan Kee Meng, who attended the exhibitions, said this was due to the improved quality, colour and variety of garden pots, ornamental urns and vases for the export market.

But it is learnt that the local ceramics industry is struggling to cope with the higher costs of fuel and imported pigments. Manufacturers are expected to raise their prices for the export market by 30 per cent in July. This is because they have to stick to the contractual prices stipulated under their agreements with overseas buyers until the next season.

However, the price increase which is already in effect locally, may affect demand overseas, but it will still not be as expensive as Italian pottery which is currently twice the price of Malaysian pots.

Malaysian pottery is cheaper than Italian or Spanish terracotta pottery and its advantage is that it is frost free and able to withstand cold temperatures.

NST, 6.2.1998

Penang to review guidelines for hill slope development

The Penang State Government will review hill slope development guidelines, including its recent decision to lift the 20-year freeze on development of land 75 m above sea level, if these cannot control such development.

Chief Minister Tan Sri Dr. Koh Tsu Koon said today the guidelines were to ensure proper control over development on hills and hill slopes in view of the fact that Penang island lacked flat land.

The guidelines for development of hill land

75 m and above, includes a three-storey height limitation for six buildings per 0.4 hectare and an Environmental Impact Assessment study to, among others, determine if the hill slope gradient exceeds 20 degrees.

Anything exceeding 20 degrees will not be accepted.

"However, we are prepared to review the guidelines if there are cases where we cannot properly control such development," he said at his weekly Press conference at Komtar.

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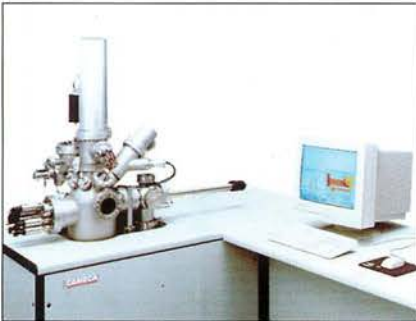
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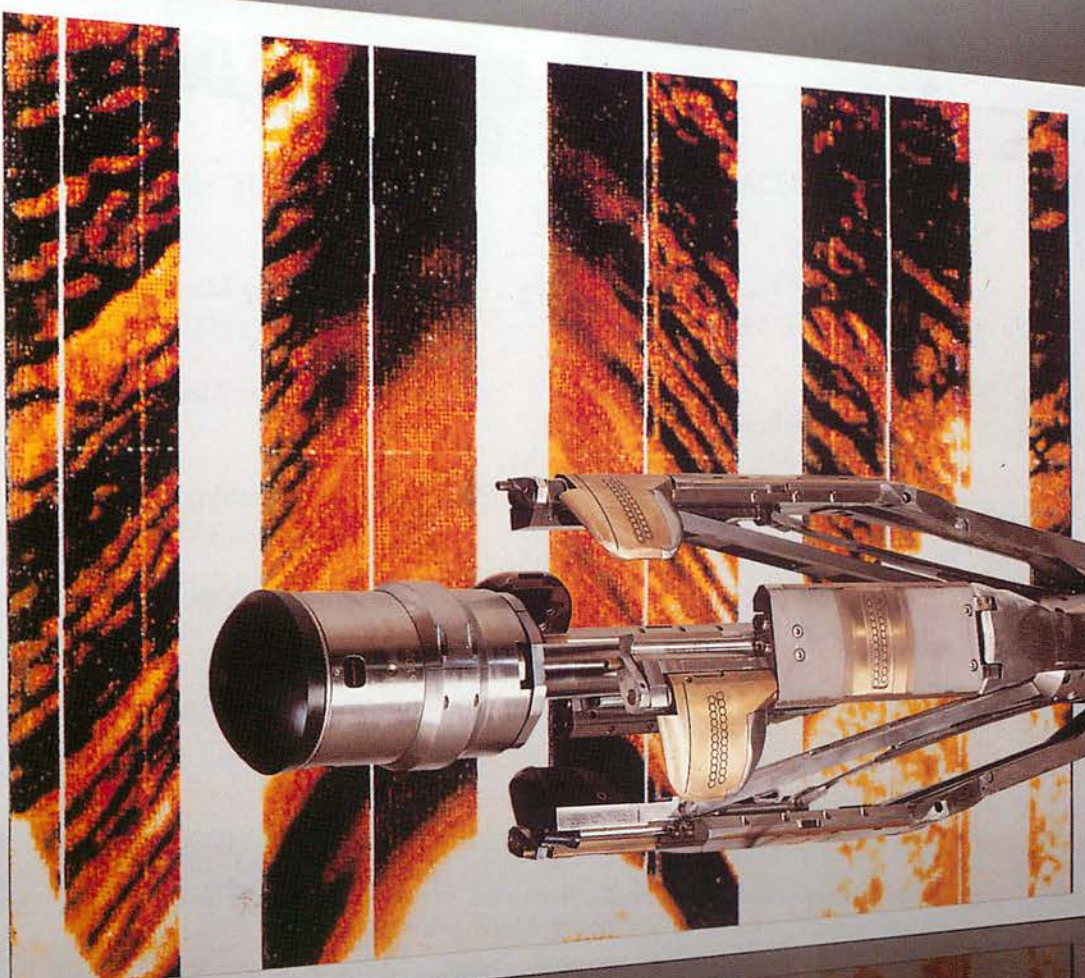
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Common Rocks of Malaysia

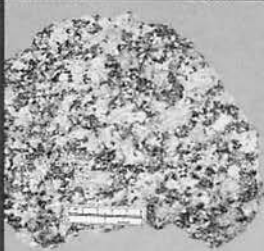
A full colour poster illustrating 28 common rocks of Malaysia. With concise description of the features and characteristics of each rock type including common textures of igneous, sedimentary and metamorphic rocks.

Laminated

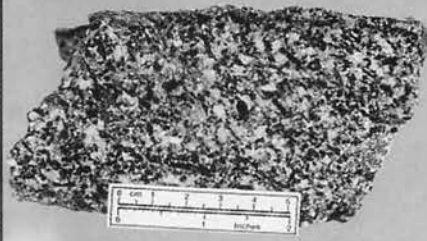
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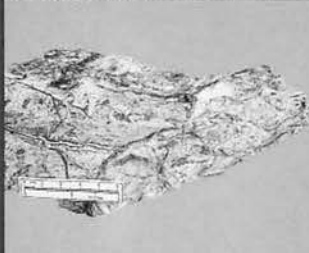
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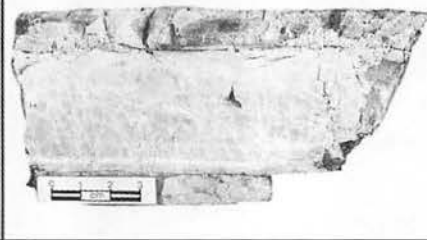
12. Pegmatite (Bukit Mor, Johor)



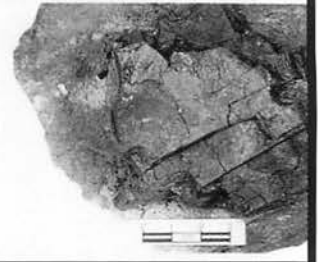
13. Conglomerate (Pulau Redang, Terengganu)



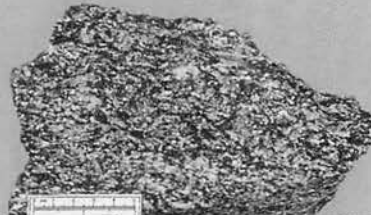
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Koh was commenting on concern expressed by environmental groups over the State Government's lifting of the freeze effective Jan 1.

The Consumers' Association of Penang said the decision would allow indiscriminate mushrooming of high-rise buildings on some environmentally-sensitive hill slopes on the island.

Koh said: *"The State Government has always been careful about approving development projects on hill land."*

"Even before we lifted the freeze, anyone with a piece of land was entitled to build at least a house."

"In allowing development on such land, we have made the procedures clearer so that there is

proper control,"

Koh said the Paya Terubong hills for example, had been degazetted as hill land "long ago and development had taken place on hills as high as 600 ft to 700 ft (180 m to 210 m)" above sea level.

Plans had been approved in the past, he said.

Koh said since he became Chief Minister, some hill land had been degazetted but most of them were on the mainland and many were well below 75 m in height as even hillocks had in the past been lumped under hill land.

Compared to illegal hill cutting and illegal farming activities on hill slopes, the extent of problems from development on land above 75 m would be small, he said.

NST, 6.2.1998

Kedah Cement gets export permit

In view of the softening demand for cement in the country due to the economic slowdown, Kedah Cement Holdings Bhd. (KCHB) has been given a permit to export the product.

And the company is looking at Singapore, Bangladesh, Sri Lanka and Myanmar as its target markets.

KCHB chairman Datuk Wira Saleh Sulong said that with many projects deferred as part of efforts to address the country's current account deficit, there would be an excess supply of cement for the year.

"So as much as we are looking at reactivating demand here, it is now important for us to spread our wings and go for the export business."

"We have just been given the export permit last week," he said after the company EGM in Kuala Lumpur yesterday.

KCHB joint managing director Lim Yen Haat said the company had a meeting with the Cement Association of Singapore some two weeks ago to explore the possibility of exporting cement to the republic.

"As an Asean country, Singapore should help Malaysia by giving us some priority."

"Being so close by gives us some advantage

over our competitors such as South Korea, Japan and Taiwan which export to Singapore but which are far away," he said.

Lim said KCHB was looking at exporting 500,000 tonnes to Singapore and was prepared to start shipment immediately once the value and price of the contract had been confirmed.

"We would like to do more. If we could export more than a million tonnes there, we would be so happy."

Although Singapore had also been affected by the slowdown in the region, Lim said, demand for cement there was expected to drop by only 10%.

This was because even during times of recession, the Singapore government had pumped a lot of money into construction to keep the economy going.

Saleh added: *"In any case, Singapore imports all of its cement and even if there was a drop in demand, it would still be importing. That is why we are telling them to look at us instead of importing from countries located so far away."*

KCHB has a 20% share of the domestic cement market.

Star, 7.2.1998

Hottest spell in country in recent years

The hot spell affecting the country is the result of the Equatorial Cross Flow wind pattern which causes clouds and rain to occur in the southern hemisphere, leaving Malaysia hot and dry.

Although the wind pattern is a common condition during the end of the northeast monsoon, a Meteorological Services Department spokeswoman said this year's temperatures were higher than previous years.

On Tuesday and yesterday, temperatures reached a record 37.5 degrees Celsius at the Petaling Jaya meteorological station, the highest this year.

Alor Star recorded a high of 36 Celsius after Kuala Lumpur on Tuesday, followed by Langkawi at 35 Celsius. Penang recorded a high of 33 Celsius.

The maximum recorded in Petaling Jaya at

3 pm today was 36.5 Celsius.

The highest temperature in Petaling Jaya for January was 37.2.

The spokeswoman said the northeasterly winds were currently blowing clouds away towards the southern hemisphere, leading to clear skies during this period.

"We are currently experiencing the end effects of the northeast monsoon which results in dry and hot weather," she said.

She said rain was expected in April with the intermonsoon season ending the current dry spell.

"As we are in a tropical country, we cannot go for long without some rainfall," she said.

The equinox, expected soon with the sun over the equator, would result in hot, dry weather.

NST, 13.2.1998

Tin can makers hopeful of duty waiver

Local tin can makers are optimistic that their appeal to be exempted from the 20 per cent duty on imported tinplate will succeed, following the assurance by the International Trade and Industry Ministry to give it fair consideration.

Malaysian Tin Can Manufacturers Association president Datuk Anthony See said the ministry "needs to do a lot of investigation" before making the final decision.

"MTCMA representatives met (International Trade and Industry Minister) Datuk Seri Rafidah Aziz on Jan 12 with regards to the appeal and she promised to look into it."

"She said her ministry would have to determine how significant is the industry's exposure to imported materials."

MTCMA appealed to the Government to abolish the 20 per cent import duty following sole supplier Perusahaan Sadur Timah Malaysia Bhd.'s move to raise its tinplate price by at least 40 per cent.

The duty exemption would allow MTCMA's 31 members to source for cheaper tinplate overseas.

The price of tinplate sold by Perstima now is about RM3,100 per tonne against RM2,200 per tonne previously, while imported tinplate

without the duty would cost about RM2,500.

Perstima had implemented the new price on Jan 1 to cover the escalating cost.

The company claimed it has good basis in doing so as its raw materials — sourced mainly from Japan which make up about 90 per cent of the requirement to produce tinplate — become more expensive due to the appreciating yen against the ringgit.

Perstima recorded a group pre-tax loss of RM685,000 for the half-year ended Sept 30, 1997, against a pre-tax profit of RM3.71 million in the previous corresponding period.

Group turnover was lower at RM171.51 million from RM178.81 million while after-tax loss was RM519,000 against the after-tax profit of RM2.74 million previously.

"(During the meeting) we also briefed Rafidah about the members' dilemma after Perstima decided to raise the price of its products," See said in a telephone interview.

"She was very supportive ... she was upset that Perstima did not consult the ministry on its intention to raise the price."

He noted that the Minister also agreed to meet MTCMA representatives for further discussion, adding that the association was likely

to meet her again "within this week or next week".

Following the new price charged by Perstima, See and MTCMA members had no choice but to charge packers the new price.

The outcome was the increase in prices of can-based end-products by packers.

See said consumers were now paying RM2 more for a 1.5 kg tin of Milo chocolate beverage.

Despite the deadlock in the previous negotiations between MTCMA and Perstima over the price issue, See was optimistic following the latest development in the company.

NST, 16.2.1998

Eco-tourism plan for Maliau Basin

A comprehensive management plan is being drawn for the Maliau Basin in efforts to promote the area for research, education and eco-tourism.

The management plan, being worked out by Yayasan Sabah and other relevant government agencies, is aimed at ensuring that proper studies are done before any major activities including eco-tourism is carried out at the Maliau Basin.

Yayasan Sabah's Innoprise Corporation Sdn. Bhd. group manager Awang Mohdar Hamzani said the management plan would take about three years to complete.

The plan was necessary to avoid any ad hoc or uncontrolled development at the basin, he added.

"They should be based on sound and sustainable management principles including long-term planning and detailed baseline research," he said.

The Maliau Basin, in the lower Kinabatangan region near Sandakan, reportedly rich with coal reserves, was recently made a first-class forest reserve along with Danum Valley Field Centre which is managed by Yayasan Sabah.

Awang Mohdar said there were no plans to declare Maliau Basin off-limits to tourists but various considerations had to be made including the difficulty of the terrain and limited emergency facilities.

"Safety and security of the visitors are of paramount importance to us," he added.

He said the Maliau Basin, which was far more remote than the Kinabalu National Park, would play a vital role in eco-tourism and environmental education.

"However, given the remoteness, inaccessibility, uniqueness and fragility of the area, it is essential that a thorough ecological assessment be made of the basin along with its strengths and weaknesses in terms of opportunities and threats from development," he added.

He said only 10% to 20% of the Maliau Basin had been explored and very little was known about the river systems and natural habitat.

"The challenge is to combine research, education and eco-tourism with conservation of the environment itself for mutual benefit," he added.

Star, 16.2.1998

TRA Mining strikes gold at Selinsing project in Pahang

TRA Mining (Malaysia) Sdn. Bhd., a gold prospector, announced yesterday that it had struck gold at its Selinsing project near Kampung Sungai Koyan in Lipis, Pahang.

In a statement in Kuala Lumpur, TRA executive director Peter Carter said assays from drilling samples obtained in November and December 1997, revealed "impressive results including an intersection of three metres at 538 g/t of gold from a depth of only 27 metres below

surface".

He said a feasibility study received by TRA Mining's parent company, Australian publicly listed Target Mining Corporation Limited, had shown open pit mining at a depth of about 100 m was possible.

The open pit was expected to have an initial life of five years and produce about 38,000 ounces per annum for an average cash cost of US\$165 (RM630.30) per ounce.

"The companies rounding the exploration interest were expected to provide additional gold resources, thereby extending the life of the project, for the modern 550,000 tonnes per annum gold processing plant which was expected to be

constructed," he said.

Carter said financing options were being studied to allow a final feasibility study to be completed by June 1998. *"It is possible that development of the mine could start in late 1998,"* he said.

NST, 18.2.1998

Petronas Carigali scores with twin-well technology

Petronas Carigali Sdn. Bhd. (PCSB) has achieved another breakthrough in drilling technology with the design and construction of a twin-well in its Sarawak operations.

PCSB, the exploration, development and production arm of national oil company Petroliaam Nasional Bhd. (Petronas), said the twin-well technology was expected to reduce development costs by at least 20%.

The new technology secured by PCSB was driven by the need to source for more oil at lower cost, in line with the company's efforts to add value to its assets, said a PCSB statement yesterday.

The twin-well technology, the first of its kind in the country, is being applied in the Tukai field off Sarawak and involves the drilling

of two wells instead of one under conventional design from a single bore.

The Tukai twin-well was different from other twin-wells in that it was more compact and innovative which allow for three production strings, believed to be the first of its kind in the world, the statement added.

Plans are now in the pipeline to merge the twin-well technology with the trilateral well technology developed by PCSB in 1996, to enable the construction of four wells from a single bore.

This would result in improved project profitability and make future developments of smaller fields more viable because the combined technologies would reduce the number of wells and the size of platforms required.

Star, 20.2.1998

Weaker ringgit pushes up price of tinsplate

Perusahaan Sadur Timah Malaysia Bhd. (Perstima) had to increase the price of tinsplate by 40 per cent in January because of a weaker ringgit, said its executive chairman Datuk Moehamad Izat Emir.

The price increase was necessary to cover losses, he said, adding that Perstima had absorbed losses in full during the July-December period last year.

In fact, he said, the company still had to absorb a remaining eight per cent as a result of increasing costs.

Perstima's cost exposure to the currency fluctuation is around 92 per cent. It has to import all basic plat material, major processing chemicals and specialised machinery.

Also, local tin is traded in US dollars.

Izat said Perstima would endeavour to sell its tinsplate at competitive prices at regional and international markets.

In this regard, it will make regular reviews of material procurement and negotiate with international suppliers in an effort to lower its manufacturing costs.

NST, 21.2.1998

Fixed prices for bottled water

The Domestic Trade and Consumer Affairs Ministry announced yesterday fixed retail prices for bottled mineral and drinking water to put a stop to excessive profiteering by retailers.

It set the retail price for mineral water at RM1.20 for a 0.5 litre bottle and RM2.20 for 1.5 litres.

For drinking water, which included distilled water, the price was set at RM1 for a 0.5 litre bottle and RM2 for 1.5 litres.

The prices would take effect on May 30.

In announcing this, Deputy Minister Datuk S. Subramaniam said the prices were reasonable.

"We decided on these prices after discussions between the ministry and those in the industry," he said.

"The prices were fixed after taking into consideration the costs and profit margin and the interests of all parties concerned."

"Therefore, retailers must sell (the bottled water) at that price, if not lower," he told a press conference at the ministry here.

Subramaniam said those caught selling

higher than the recommended retail price (RRP) would be charged under the Trade Description Act 1972.

Under the Act, the offender could be fined not more than RM100,000 or jailed three years, or both, for the first offence.

The penalty would be doubled for every subsequent offence.

However, Subramaniam said the prices were only applicable to normal retail outlets such as supermarkets, sundry shops and convenience stores but did not include entertainment outlets, hotels or places which provided services.

He said a three-month grace period would be given to the manufacturers and distributors to clear stocks and display the RRP label on new stocks.

Subramaniam said that after a thorough study, the ministry decided to do away with the distributors price labelling as it was more convenient for the public to use the RRP as a yardstick.

Star, 24.2.1998

Corporatised universities will not be profit-driven, says Najib

Local universities will not become profit-driven after corporatisation but will continue to uphold the principle of academic excellence.

Education Minister Datuk Seri Najib Tun Razak said corporatisation should not be misconstrued as wanting to make profits because it dealt purely with the governance of the university.

"Some parties liken corporatisation to privatisation but this is inaccurate as corporatisation deals purely with the governance and has nothing to do with profit-making."

"Further, the corporatisation of governance

is to empower the universities to become more dynamic and efficient institutions."

"However, the true aim of any university should still be the attainment of educational idealism and these institutions cannot ignore quality in their services," he said.

Speaking at the ground-breaking ceremony for Universiti Teknologi Malaysia's new student hostels here yesterday, Najib said idealism was still lacking in local universities, which tended to concentrate on science and technological education.

Star, 25.2.1998

Petronas signs two production sharing contracts with US firm

Petroleum National Bhd. (Petronas) has signed two production sharing contracts (PSCs) with US-based Amerada Hess Corp. for the

exploration and production of two blocks located offshore Terengganu and Sarawak.

The PSCs, which also included Petronas

exploration arm Petronas Carigali Sdn. Bhd. (PCSB) sees Amerada Hess holding 70% and 80% interests in block PM304 and block SK306 respectively, with PCSB holding the balance 30% and 20% in these blocks.

The agreement signed in Kuala Lumpur yesterday marked the entry of Amerada Hess into Malaysia's upstream oil activities after it decided to expand into this region five years ago. Amerada Hess will be the operator of both blocks.

Petronas president and chief executive officer Tan Sri Hassan Marican said worldwide experience of Amerada Hess and its proven capability to bring on-stream oil fields of different sizes in the North Sea augured well for the company to apply successfully its technological innovation and expertise to these two blocks.

"With this, we now have eight PSCs signed since the revenue over cost concept was introduced in 1997 to further promote exploration activities in the country," Hassan said during the signing of the agreements.

Under block PM304, which covers 10,200 sq km, Amerada Hess would acquire and process 2,000 line-km of new 2D and 50 sq km of new 3D seismic data and also reprocess 3,000 line-km of old 2D and 100 sq km of old 3D seismic data.

Amerada Hess would also be required to drill one wildcat well and two exploration wells to a minimum aggregate depth of 5,500 metres. Its minimum financial commitment to this block is US\$12.9 mil.

Block SK306, which covers 4,400 sq km, is located between the gas-rich Central Luconia Province and the oil producing Balingian

Province offshore Sarawak.

Amerada Hess would acquire and process 2,000 line-km of 2D and 100 sq km of 3D seismic data and reprocess 2,000 line-km of old seismic data under this block.

Two firm wildcat wells would also be drilled and the company would undertake studies to provide a regional framework to define the petroleum systems within the block.

Its total commitment to this block is US\$12 mil.

Amerada Hess president and chief operating officer Sam Laidlaw said the company's first objective would be to get on with exploration works on the two blocks.

"We plan to shoot 3D seismic data in June and would start drilling the wells next year," Laidlaw said.

He said that longer term aims would be to seek additional oil exploration and production opportunities in the country.

Both blocks have had small oil discoveries under previous PSCs and those earlier operators have since relinquished their roles.

On the direction of world oil prices, Laidlaw said it would probably remain soft for sometime as the market had weakened due to a fall in world demand.

"Low oil prices are probably going to be with us for a little while due to an unusually warm winter and more supply expected when Iraq starts to produce larger volumes," Laidlaw said.

Amerada Hess is one of the world's leading oil and gas companies with annual sales of US\$9 bil and interests in 14 countries.

Star, 24.2.1998

Palm oil and tin regaining lead roles

Malaysia's palm oil and tin are in the limelight again, enjoying starring roles again in the nation's economy and shoring up export revenue with their bullish prices.

Plummeting commodity prices led to a slowdown in Malaysia's economic growth in the mid-80s, prompting Malaysia to diversify into manufacturing and other economic activities.

Tin has also regained its lustre of late. In the last few weeks, it has been trading between RM20/kg and RM22/kg, a far cry from the depressing prices of between RM11/kg and RM16/kg since the early 90s.

This gloomy scenario came on the heels of the floor price crash at the London Metal Exchange when the price of tin touched a heady RM29.15/kg in October 1985.

Optimally, the tin price should be above RM19/kg for tin producers to enjoy a certain profit margin.

Primary Industries Minister Datuk Seri Dr. Lim Keng Yaik is understandably pleased with the bumper prices, but he tempers this with caution in commenting on producers' wish to re-start mines as well as on the palm oil situation.

Although the tin industry has bounced back

to life recently, the rise in price is mainly a result of the weakening ringgit. As such, he says, miners will have to be very careful about re-starting mines.

They will have to study whether there are grounds with "good enough" grades. The Minister remarks that it is more a matter of good grade grounds and not so much about efficiency and productivity.

"Miners must be prepared for the price to drop below RM20/kg or say, even below RM15/kg, and they should be prepared to hold, otherwise they may not find it worth their while," Dr. Lim says.

Datuk Ajib Anuar, chief executive officer of Malaysia Smelting Corporation, a member of the Malaysia Mining Corporation group, believes selectivity is the key to opening up new mines.

This is a matter of dollars and sense. Miners prepared to invest in such a venture have to take into account the cost which will also be based on the viability of re-working old areas.

There are some mines which can be revitalised, and, because of the nature of the deposits left, are better mined using gravel pumps and not dredges.

To revitalise tin mining, another option is for State Governments concerned to make available new land for mining purposes. If good grade ores are available, the production cost will

be lower which will also translate into better profitability.

As revitalising of the tin industry is an investment on the part of miners, it is best left to the private sector. Of course, the public sector has its role to play, too, for bullish tin prices mean a boost in revenue for State coffers.

Says Ajib: *"We need support from the Government in the form of new leases or renewal of leases for old areas."*

As for the tin industry, demand for tin is steadily increasing. The revival of tinplate usage and new uses found for tin in the chemicals industry and in soldering, for example, have contributed to this.

Malaysia's consumption of tin is about 6,000 tonnes while production amounts to some 5,000 tonnes. The shortfall will have to be imported to meet demand.

Muhammad Nor Muhammad, executive director of the Malaysian Chamber of Mines, says the chamber is essentially studying how it can re-activate and supply domestic requirements, increase production, cut imports, add value to local products and attract more foreign exchange earnings.

While prevailing prices for tin and palm oil remain attractive, their long-term appeal will depend on the demand for these commodities and new uses found for them.

NST, 26.2.1998

Path makes for easier trek into cave

A new 1 km-long concrete footpath has made Gua Tempurung's limestone formations more accessible to visitors.

A pregnant woman, various animals, a cascading waterfall, all rendered in stone by Mother Nature, can now be viewed from platforms strategically placed along the RM3 mil walkway.

Previously, intrepid cave explorers had to wade along a small river running through the subterranean cave.

Project manager David Tan Suan Hoong of Heritage Acres, the company which built the metre-wide pathway, said visitors could view the formations from 10 raised platforms inside the cave which had been lit up.

Five of the 10 platforms are open to the

public while the rest would be opened later.

"The pathway is similar to the one in the Jenolan caves in New South Wales, Australia," he said, adding that it took nine months to complete.

Tan said Gua Tempurung was sure to leave visitors gaping in wonder at the strange shapes of the stalactites and stalagmites.

"One of the more distinguished shapes is an elephant's head with its trunk protruding from the cave wall," he added.

Tour supervisor Daniel Khalidi, 55, said the limestone formations resembled a dolphin, panda, and a pig.

And at another spot, there is a pregnant woman and a face of the Buddha.

Khalidi also said relics left behind by

members of the defunct Communist Party of Malaya (CPM), such as tunnels dug to extract tin ore and utensils like spades, sickles and iron rods, could be seen.

On the third platform, which is about 300 m high, he said there were wall drawings of Rolls-Royce cars and anti-Japanese slogans written in Chinese, one of which read "The Japanese are too strong. We must be united to chase them away from Malaya."

There is also a large dome-shaped cavern which is said to have been a meeting place of the

CPM faction and can accommodate about 200 people at any one time, and their sleeping holes.

Several metres away there is a wind tunnel where tired visitors can catch a cool breeze while watching dripping waters run down like a waterfall.

"Nobody knows where the wind comes from. There are no holes or other caves here," said Khalidi.

The wonders of the cave, about 25 km from here, promise thrill excitement for the more adventurous, he added.

Star, 27.2.1998

Chance for tin mining to revive glory days

Malaysia's tin reserves are the third largest in the world, thus giving the country an opportunity to cash in on the metal should prices remain attractive.

According to studies by the Malaysian Geological Survey Department and the United States Geological Survey, Malaysia has a substantial amount of tin which could be economically exploited.

However, the current state of the local tin industry, once a thriving industry, is only a shadow of what it used to be.

Malaysia supplied the world with over 75,000 tonnes per year at the height of the tin industry in the early 1970's.

Today, the production is less than 6,000 tonnes per year from 35 tin mines nationwide which is not even sufficient for domestic needs.

However, interest in the industry has been revived with the increase of tin prices on the Kuala Lumpur Tin Market recently.

"KLTM prices have been hovering at rather high levels not seen since 1989."

"This has certainly awakened many of us and many have also asked if the good old days of tin are returning," said Malaysian Chamber of Mines president Shukor Shahar at a seminar on "The Revitalisation of the Malaysian Tin Industry" in Ipoh yesterday.

He said this encouraging factor should spur efforts to respond to the Prime Minister's call to return to basics.

"The revitalisation of the tin industry can be part of the short and long-term strategies towards helping revive the country's economy," he added.

Tin is an essential and environmental-friendly metal required for semi-processed or finished products.

Malaysia has been consuming increasing amounts of tin in recent years and, with the drive towards industrialisation under Vision 2020, more tin will be required in the years ahead.

"Without any appreciable increase in domestic tin production, Malaysia will have to continue to import the metal, resulting in heavy foreign exchange outflow," said Shukor.

Commenting on the revitalisation of mines, he said the cost to re-operate tin mines would very greatly and depend on the type and conditions of the mines.

"To revive a dredge, it could cost RM1 million," he said.

Meanwhile, State Mines Department director for the north zone, Abdul Rahman Rafek said the overall trend in current mining activities was very negative.

In 1996 in Perak, there were no applications for tin prospecting compared to 134 applications in 1986 and 242 applications in 1976.

There were only four applications for mining land in 1996 compared to 120 in 1976.

"Competition for land, especially around the major built-up areas of the Kinta Valley is quite severe and development of industrial parks and other industries reduces the availability of land for mining."

Rahman said State policy currently only allowed for the renewal of mining leases which are being actively mined.

NST, 27.2.1998

World consumption expected to grow

World tin consumption is expected to grow in the next 10 years at a compounded rate of 2.5 per cent on average with more consumption in developing countries.

The matured or fully industrialised economies such as the United States, Japan and Western Europe will have lower consumption growth rates at only one per cent per annum.

Similarly, less dynamic regions such as Russia, Eastern Europe and Africa can also expect low growth, said Malaysia Smelting Corporation Bhd. general manager (commercial) Ong Kee Beng.

Presenting a paper at a seminar organised by the Malaysian Chamber of Mines on "The Revitalisation of The Malaysian Tin Industry" in Ipoh yesterday, Ong said consumption of tin has been showing encouraging signs of recovery in recent years.

"Use of tin in solder has been growing steadily, especially in the fast developing countries of Asia," he said, adding that this had propelled the solder industry to the top end-user position, accounting for 31 per cent of world tin consumption.

Meanwhile, even in tinplate, where the metal has been losing out to aluminium and other packaging materials, prospects have been improving.

Ong said tinplate now enjoyed a cost advantage over aluminium and is forcing canmakers and their customers to consider switching from aluminium back to tin.

"This resurgence of tinplate can have a significant impact on world tin consumption," Ong added.

China, where current consumption of tin per capita is only a fraction of that in the industrialised world, has great growth potential.

"Given the size of China, it will not be surprising if Chinese consumption equals or even overtakes that of US, which is now the largest tin consuming country, in the next one or two decades," he said.

In comparison, the global tin mining industry has undergone tremendous change in recent years.

Malaysia and Thailand, once the world's top producers now only contribute a small percentage, replaced by China and Indonesia while Peru is fast becoming a major force.

Nevertheless, Asia still remains the most important tin producing region in the world with China and Indonesia alone accounting for more than half of the world's total tin production, said Ong.

World production of tin began declining from 1982 to 1986 but started rising again in 1987, reaching a peak of 231,000 tonnes metal content in 1989.

However, the tin slump following that saw production hitting a low of 176,000 tonnes of tin metal content in 1992, a 24 per cent drop from its 1989 peak, after which it started increasing again from 1993.

Overall, said Ong, world tin production is expected to increase at a gradual pace over the next 10 years. Aside from tin mines, the metal is available from the Defence Logistics Agency (DLA) of the US which still holds 110,000 tonnes of stockpiled tin.

Although these stocks are mainly old brands which do not meet current market standards, it can be sold at discounted prices.

Meanwhile, global tin recycling from scraps and residues supplies some 10,000 tonnes per year.

NST, 27.2.1998

OSEA 98

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Deepwater Prospecting for Oil & Gas in Asia-Pacific Region

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Singapore Suntec Centre

The Asia-Pacific region has seen, in recent months, a steady increase in exploration activities. Deepwater acreage in Southeast Asia alone has reached 199,086 square kilometres with an increase in the number of countries that are producing oil and/or gas from offshore waters. This is a remarkable advance from the old days when traditionally exploration was done mainly by Malaysia, Brunei, Indonesia, India and Japan. Today, China, the Philippines, Thailand and Vietnam have joined their ranks.

Technological advancements in 3D seismic, extended reach-drilling, sub-sea completions, FPSO and minimal facilities platforms are in demand as exploration heads towards hitherto unexplored deeper waters. New discoveries in deepwater areas around the region include the Timor Gap in Indonesia/Australia (about 850 m), in the Philippines, and Linhua 11-1 (about 362 m) indicate that deepwater exploration has gone to depths never before explored. The latest discovery by the Atlantic Richfield Co (ARCO) off Irian Jaya is estimated to be about thirteen trillion cubic feet of natural gas.

There is an increasing need for advanced seismic imaging and other methods of probing the deep more effectively. Many national oil companies are moving into overseas activities and expanding beyond their traditional areas of influence. Increasingly, Indonesia, Malaysia and India are encouraging exploration into greater depths by offering better production sharing contracts and concessionary contractual terms to investors.

Destination 1998 — Singapore

OSEA98 is held in Singapore, the region's most technologically advanced international exhibition and convention centre. Her strategic

location serves the Asia Pacific as the main banking and business hub. Often used to pioneer entry into new developing markets of ASEAN, Singapore is a base for many conglomerates and businesses trying to gain a foothold in this region. This makes her an ideal backdrop for OSEA98.

The Venue

OSEA98 will be held at the Singapore Suntec Centre — Singapore's most established facility for the exhibition and convention centre. This world-class exhibition and convention complex comes equipped with state-of-the-art facilities and amenities. It has played host to many internationally acclaimed events. In addition, its proximity to the central business district and several deluxe hotels make it an ideal exhibition centre.

The Organiser

OSEA98 is organised by Singapore Exhibition Services Pte. Ltd. (SES), the longest and leading exhibition organiser in Singapore. SES is part of The Montgomery Network of exhibition organisers with offices in more than 30 countries worldwide. Established since 1895, the Network holds more than 200 exhibitions worldwide regularly. SES has built up a comprehensive portfolio of more than 30 trade shows, each a recognised premium event for its respective industry.

Further Information

Mr. Victor Wong
Singapore Exhibition Services Pte. Ltd.
2 Handy Road, #15-09 Cathay Building
Singapore 229233
Tel: 65 338 4747
Fax: 65 339 5651

PETEX 98

Scaling the Peaks

1-3 December 1998

Business Design Centre, London

The UK's Leading International Conference and Exhibition

General Information

This is the sixth in the series of PETEX conferences and exhibitions organised by the Petroleum Exploration Society of Great Britain (PESGB). PETEX originated in 1987, at the request of PESGB members and has gradually evolved into the largest UK exploration/production event both in terms of the number of exhibitors and delegates. Yet the original concept of PETEX remains — this is an event anyone can afford to attend and benefit from — it is low-cost and value for money.

Conference

PETEX 98 will be held in conjunction with the Geological Society's Petroleum Group North Sea Fields conference. Thus, in addition to a technical program which reflects the changing emphasis within the industry, examines the benefits of applying new techniques and highlights international exploration challenges, there will be an update on the geological and geophysical characteristics of the oil and gas fields from all areas of the UK and Norwegian continental shelves.

In recognition of the importance with which the oil and gas industry regards environmental issues, contributions on how the industry is taking proactive measures to ensure minimum environmental disruption are encouraged. It is planned that speakers from environmental NGO and academic institutions will be invited to participate in the conference to promote dialogue and exchange of ideas. Additionally, submissions on renewable and alternative energy sources are requested.

Presentations on a wide range of applied techniques including innovative geophysical acquisition and processing methods, sub-basalt exploration, 4D techniques, multi-component marine seismic, organic and inorganic

geochemistry, geodynamics, rock physics and reservoir engineering are welcomed.

For the North Sea Fields Update papers which emphasise how advanced technologies and new geological concepts have assisted in the discovery and development of new fields and improved the understanding of existing fields are encouraged. Case histories which illustrate the construction of 'state-of-the-art' reservoir models and their implication on predicted and actual field performance will be given preference.

Contributions on International exploration in the Atlantic margins — both North and South — and the challenges in the deep water areas offshore West Africa and in the Gulf of Mexico are requested. Submissions on other areas such as the Caspian Sea or Western Australia are also encouraged.

All potential contributors are requested to submit an abstract, comprising no more than 250 words, to the PESGB office before 28 March 1998. The authors of those presentations selected by the Technical Committee will be asked to submit an extended abstract for inclusion in the Conference proceedings. The details of the format of this extended abstract will be provided later. In addition to the oral presentations poster papers will also be included in the Technical program.

General Information

Contact the

PETEX/PETEX Office

2nd floor

17/18 Dover Street

London W1X 3PB

Telephone: 0171 495 6800 or 5800

Fax: 0171 495 7808

E-mail: pesgb@pesgb.demon.co.uk

Website: <http://www.pesgb.org.uk>

Second Circular
International Symposium
SHALLOW TETHYS (ST) 5

1-5 February, 1999

Hosted by

The Department of Geological Sciences
Faculty of Science
Chiang Mai University, Chiang Mai
Thailand

OBJECTIVE

The Symposium subjects are stratigraphy, paleontology, paleoecology, biogeography, and tectonic evolution concerning the Tethys Sea from Late Paleozoic through Cenozoic time. Both oral and poster sessions will be held. There will be four days of oral technical presentations, a pre-symposium field excursion, and a mid-symposium field excursion. The symposium will also include a workshop of the IGCP Permian Research Group.

DATE, VENUE, LANGUAGE

Symposium : 1-5 February 1999
Place : Chiang Mai Phucome Hotel,
Language : English will be the official language for all presentations
Excursion : Pre-symposium field excursion — 29-31 January, 1999
 Mid-symposium field excursion — 3 February, 1999

TECHNICAL PROGRAM

The four-day technical program will include technical papers from representative key persons. The oral and posters sessions will include contributions in the fields of stratigraphy, paleontology, paleoecology, biogeography, and tectonics. Abstract for both oral presentations and posters should be limited to between 300 and 500 words and should be sent direct to the symposium secretary.

FIELD EXCURSION

A three-day pre-symposium field excursion concerning the shallow Tethys of Northern Thailand will be conducted during 29-31 January, 1999. Marine Carboniferous, Permian, Triassic, and Jurassic deposits in Lampang, Phrae, Tak, and Mae Sod will be visited and discussed. The historic importance of Sukhothai and the ruby and sapphire market at Mae Sod will be highlighted in complementary to the beautiful scenery along the highways from Chiang Mai to Lampang, Denchai, Sukhothai, Tak, and Mae Sod. Overnight stops will be made in Sukhothai and Mae Sod.

A one-day mid-symposium field excursion will be conducted on 3 February, 1999. Early Mesozoic-Late Paleozoic outcrops on the road from Chiang Mai to Fang will be examined.

LEADERS

- Benjavun Ratanasthien
- Sampan Singharajwarapan
- Chongpan Chonglakmanee

REGISTRATION

Depending on the time of registration, registration fees are as follows:

	<i>Before 15.12.1998</i>	<i>After 15.12.1998</i>
Technical Program		
Participant	US\$150	US\$180
Accompanying person	US\$100	US\$120
Excursion		
Pre-symposium excursion	US\$400	US\$450
Mid-symposium excursion	US\$50	US\$70

The registration fee for participants covers admission to all scientific sessions, a copy of the symposium proceedings, morning and afternoon tea/coffee, lunch and attendance at a social function.

PROCEEDINGS

The proceedings of the symposium will be distributed to all participants.

SEND ALL CORRESPONDENCE TO:

Shallow Tethys (ST) 5 Symposium Secretary
 Department of Geological Sciences
 Faculty of Science
 Chiang Mai University, Chiang Mai 50200
 Thailand
 Fax: 66-53-892261, 66-53-222268

KALENDAR (CALENDAR)

1998

March 8-15

CASE HISTORIES IN GEOTECHNICAL ENGINEERING (International Conference), St. Louis, Missouri, USA. (Contact: Continuing Education, University of Missouri-Rolla, 103 ME Annex, Rolla, MO 65409-1560, USA. Fax: 1 573 341 4992)

March 9-11

INTEGRATED GEOPHYSICAL TECHNIQUES IN SEISMIC INTERPRETATION (Seminar), Kristiansand, Norway. (Contact: Norwegian Petroleum Society, P.O. Box 1897 Vika, N-0124 Oslo, Norway. Fax: 47 22 55 46 30; E-mail: karin.haugness@npf.no)

March 9-11

SOCIETY FOR MINING, METALLURGY, AND EXPLORATION (Annual Meeting), Orlando, Florida, USA. (Contact: SME, P.O. Box 625002, Littleton, CO 80162, USA. Tel: 1 800 763 3132; Fax: 1 303 979 3461)

March 10-13

GEOCHEMICAL EARTH REFERENCE MODEL (Workshop), La Jolla, California, USA. (Contact: E-mail: germ@igpp.ucsd.edu; WWW: <http://www-ep.es.llnl.gov/germ>)

March 16-20

LUNAR AND PLANETARY SCIENCE (International Conference), Houston, Texas, USA. (Contact: LeBecca Simmons, Conference Administrator, LPI Publications and Program Services Department, 3600 Bay Area Boulevard, Houston, TX 77058-1113, USA. Tel: 1 281 486 2158; Fax: 1 281 486 2160; E-mail: simmons@lpi.jsc.nasa.gov)

24-26 March

COAL SEAM GAS AND OIL (International Conference), Brisbane, Australia. (Contact: Intermedia Convention and Event Management, P.O. Box 1280, Milton QLD 4064, Australia. Fax: 617 3369 0477; E-mail: csgo98@im.com.au)

March 23-24

ASIA PACIFIC CONFERENCE ON INTEGRATED MODELLING FOR ASSET MANAGEMENT (Conference), Kuala Lumpur, Malaysia. (Contact: SPE Kuala Lumpur Office, Lot F1/01, First Floor, Citypoint, Kompleks Dayabumi, Jalan Sultan Hishamuddin, 50050 Kuala Lumpur, Malaysia. Tel: 6-03-294-7211; Fax: 6-03-294-5158)

March 30 - April 3

BIOEROSION (2nd International Workshop), Fort Pierce, Florida, USA. (Contact: Dr. Debra Krumm, Harbor Branch Oceanographic Museum, 5600 U.S. 1 North, Fort Pierce, FL 34946, USA. Tel: +1 561 465 2400, ext: 428; Fax: +1 561 465 5743; E-mail: krumm@hboi.edu)

March 30 - April 4

WATERROCK INTERACTION-9 (International Conference of International Association of Geochemistry and Cosmo-chemistry), Taupo, New Zealand. (Contact: B.W. Robinson, Secretary General. Tel: 64 737 48211; Fax: 64 737 48199; E-mail: wri-9@gns.cri.nz; WWW: <http://ruamoko.gns.cri.nz/wri-9>)

April 13-17

15TH INTERNATIONAL SEDIMENTOLOGICAL CONGRESS, Alicante, Spain. (Contact: 15th International Sedimentological Congress, Departamento de Ciencias de la Tierra y Medio Ambiente, Facultad de Ciencias, Campus de San Vicente de Raspeig, Universidad de Alicante, Apardo 99, 03080 Alicante, Spain. Tel: 34 65903552; Fax: 34 65903552; E-mail: ctierra@vm.cpd.ua.es)

April 13-17

KIMBERLITES (5th International Conference), Cape Town, South Africa. (Contact: J.J. Gurney, 71KC, Department of Geological Sciences, University of Cape Town, Private Bag, Rondebosch 7700, South Africa. Tel: 27 21 531 3162; Fax: 27 21 650 3783; E-mail: 71KC@GEOLOGY.UCT.AC.ZA; URL: <http://www.uct.ac.za/depts/geolsci/71KC/>)

April 14-18

GEOSCIENCE '98 (International Conference of the Geological Society), Keele, UK. (Contact: Conference Department, The Geological Society, Burlington House, Piccadilly, London, W1V 0JU, UK. Fax: 44 0171 439 8975; E-mail: conf@geolsoc.cityscape.co.uk)

April 16-17

MAGMATISM AND MINERALIZATION IN ARCS AND OCEAN BASINS (Multidisciplinary Symposium, held as part of Geoscience '98), Keele University, Staffordshire, UK. (Contact: Conference Department, The Geological Society, Burlington House, London, W1V 0JU, UK. Tel: 0171 434 9944; Fax: 0171 439 8975; E-mail: harrisona@geolsoc.org.uk; WWW: <http://www.geolsoc.org.uk>)

April 19-22

SITE CHARACTERIZATION (ISC '98, International Conference). Atlanta, Georgia, USA. (Contact: Chair of Technical Affairs Committee, ISC '98, Prof. P.K. Robertson, Dept. of Civil Engineering, University of Alberta, Edmonton, Alberta T6G 2G7, Canada. Fax: 1 403 492 8198; E-mail: pkrobertson@civil.ualberta.ca)

April 19-23

COMPUTER APPLICATIONS IN THE MINERALS INDUSTRY — APCOM '98 (27th International Symposium), London, UK. (Contact: Conference Office, Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, UK. Tel: +44 (0)171 580 3802; Fax: +44 (0)171 436 5388; E-mail: 106115.233@compuserve.com)

April 20-22

GEO '98 (Middle East Geosciences Exhibition and Conference), Bahrain. (Contact: Stephen Key, Arabian Exhibition Management WLL, P.O. Box 20200, Manama, Bahrain. Tel: 973 550033; Fax: 973 553288)

April 20-23

HYDROLOGY, WATER RESOURCES AND ECOLOGY IN HEADWATERS (International Interdisciplinary Conference — Head-Water '98), Merano, Italy. (Contact: HeadWater '98, c/o European Academy, Weggensteinstrasse 12/A, 1-39100 Bozen/Bolzano, Italy. Tel: 39 471 30 61 11; Fax: 39 471 30 60 99; E-mail: HeadWater98@ms.sinfo.interbusiness.it)

April 27-30

MODERN PREPARATION AND RESPONSE SYSTEMS FOR EARTH-QUAKE, TSUNAMI AND VOLCANIC HAZARDS (International Conference), Santiago, Chile. (Contact: Bruce A. Bolt, Dept. of Geology and Geophysics, University of California, Berkeley, CA 94720, USA. Fax: 1 510 845 4816; E-mail: boltuc@socrates.berkeley.edu; or J. Gutierrez, Inst. Geografica Militar, Santiago, Chile. Fax: 562 698 8278; E-mail: seisvolc@conf.dgf.uchile.cl)

April 29 - May 4

PRE-VARISCAN TERRANE ANALYSIS OF GONDWANAN EUROPE, Dresden, Germany. (Contact: Bernd D. Erdtmann, TU Berlin, Institut für Andewandte Geologie II, Ernst-Reuther-Platz 1, Sekr. EB 10, D-10587 Berlin, Germany. Fax: +49 30 314 21107; E-mail: erdt0936@mailszrz.zrz.tu-berlin.de)

May 3-7

MINING, METALLURGY AND PETROLEUM, Montreal, Quebec, Canada. (Contact: Chantal Murphy, Canadian Institute of Mining, Metallurgy and Petroleum, 3400 de Maisonneuve Blvd. West, Suite 1210, Montreal, Quebec H3Z 3B8, Canada. Tel: 1 514 939 2710; Fax: 1 514 939 2714; E-mail: cmcim@login.net)

May 12-15

WATER QUALITY, Wuhan, China. (Contact: Prof. Xia Jun, Local Organizing Committee, International Workshop on Barriers to Sustainable Management of Water Quantity and Quality. Wuhan University of Hydraulic and Electric Engineering, No. 8 Southern Road of East Lake, Wuhan 430072, China. Tel: 86 27 8313502; Fax: 86 27 7878318; E-mail: jxia@sun20.wuhee.edu.cn)

May 12-16

CRETACEOUS-PALEOGENE TRANSITIONS IN TUNISIA (K-T BOUNDARY) (International Workshop and Field Excursion), Tunis, Tunisia. Jointly sponsored by the International Commission on Stratigraphy (ICS) and the Geological Survey of Tunisia. (Contact: Dr. Gerta Keller, Department of Geosciences, Princeton University, Princeton NJ 08544, USA. Tel: 609 258 4117; Fax: 609 258 1671; E-mail: keller@geo.princeton.edu)

May 14-18

LINKING SPATIAL AND TEMPORAL SCALES IN PALEOECOLOGY AND ECOLOGY (Penrose Conference of the Geological Society of America), Solomons, Maryland, USA. (Contact: Andrew Cohen, Department of Geosciences, University of Arizona, Tucson, AZ 85721, USA. Tel: 1 520 621 4691; Fax: 1 520 621 2672; E-mail: acohen@geo.arizona.edu)

May 17-20

SOCIETY FOR SEDIMENTARY GEOLOGY (Annual Meeting, in conjunction with AAPG), Salt Lake City, Utah, USA. (Contact: SEPM, 1731 E, 71st St., Tulsa, OK 74136, USA. Tel: 1 800 865 9765; WWW: <http://sepm.tulsa.net>)

May 17-20

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (Annual Meeting), Salt Lake City, Utah, USA. (Contact: AAPG Conventions Department, P.O. Box 979, 1444 S Boulder Ave., Tulsa, OK 74101-0979, USA. Tel: +1 918 560 2679; Fax: +1 918 560 2684; E-mail: dkeim@aapg.org)

May 18-20

QUEBEC 1998 (Joint Meeting of Geological Association of Canada, Mineralogical Association of Canada, and Association Professionnelle des Geologues et des Geophysiciens du Quebec), Quebec, Canada. (Contact: Agathe Morin, Department of Geology, Universite Laval, Pavillon Adrien-Pouliot, Sainte-Foy, Quebec G1K 7P4, Canada. Tel: 1 418 656 2193; Fax: 1 418 656 7339; E-mail: quebec1998@ggl.ulaval.ca; WWW: <http://www.ggl.ulaval.ca/quebec1998.html>)

May 26-29

AMERICAN GEOPHYSICAL UNION (Spring Meeting), Boston, Massachusetts, USA. (Contact: AGU Meetings Dept., 1998 Spring Meeting, 2000 Florida Ave., NW, Washington, DC 20009, USA. Tel: 1 202 462 6900; Fax: 1 202 328 0566; E-mail: meetinginfo@kosmos.agu.org; WWW: <http://www.agu.org>)

May 27-30

GROUND-PENETRATING RADAR '98 (International Conference), Lawrence, Kansas, USA. (Contact: Richard Plumb, Electrical Engineering and Computer Science, Radar Systems and Remote Sensing Laboratory, The

University of Kansas, 2291 Irving Hill Road, Lawrence, KS 66045-2969, USA. Tel: 1 913 864 7735; Fax: 1 913 864 7789; E-mail: gpr98@rsl.ukans.edu; WWW: www.rsl.ukans.edu/~gpr98)

May 27-31

SOCIETY AND RESOURCES MANAGEMENT (International Symposium), Columbia, Missouri, USA. (Contact: Sandy Rikoon, ISSRM Co-Chair, University Building 108, Columbia, MO 65211, USA. Tel: 1 573 882 0861; Fax: 1 573 882 1473; E-mail: srsrjr@muccmail.missouri.edu)

May 31 - June 4

SEISMIC DESIGN AND MITIGATION FOR THE THIRD MILLENNIUM (U.S. National Conference on Earthquake Engineering), Seattle, Washington, USA. (Contact: Earthquake Engineering Research Institute, 499 14th St., Suite 320, Oakland, CA 94612-1934, USA. Tel: 1 510 451 0905; Fax: 1 510 451 5411; E-mail: eeri@eeri.org)

June 1-4

PANAMERICAN CURRENT RESEARCH ON FLUID INCLUSIONS (International Conference, PACROFIVII), Las Vegas, Nevada, USA. (Contact: Jean S. Cline, Dept. of Geosciences, University of Nevada, Las Vegas, Nevada 89154-4010, USA. Fax: +1 702 895 4064; E-mail: jcline@nevada.edu)

June 1-5

INTERNATIONAL CONFERENCE ON PRECAMBRIAN AND CRATON TECTONICS (14th International Conference on Basement Tectonics), Ouro Preto, MG, Brazil. Sponsored by Departamento de Geologia, Escola de Minas, Universidade Federal de Ouro Preto, Brazil and International Basement Tectonics Association. (Contact: E-mail: basement98@degeo.ufop.br)

June 2-6

5TH NATIONAL OPEN PIT MINING CONFERENCE WITH INTERNATIONAL PARTICIPATION "State and Development of Open Pit Mining in Market Economy, Varna, Bulgaria. (Contact: Scientific and Technical Union of Mining, Geology and Metallurgy, Open Pit Mining Conference, 108 Rakovski Str., 1000 Sofia, Bulgaria. Tel: +3592 80 07 47; 80 41 74; Fax: +3592 80 07 47)

June 3-5

ROCK MECHANICS (ISRM International Symposium), "Rock Mechanics, Earth Crust Mechanics", Cancun (Quintana Roo), Mexico. (Contact: Sociedad Mexicana de Mecánica de Rocas, Camino a Santa Teresa No. 187, Col. Bosques del Pedregal, MEX-14020 México, D.F., MEXICO. Tel/Fax: +52 5 5282089; E-mail: asg_smmr@intmex.com)

June 4-12

EVOLUTION OF OCEANIC ISLAND VOLCANOES (Penrose Conference of the Geological Society of America), Galapagos Islands, Ecuador. (Contact: Dennis J. Geist, Department of Geology, University of Idaho, Moscow, ID 83844, USA. Tel: 1 208 885 6491; E-mail: dgeist@uidaho.edu)

June 7-13

EUROPEAN ASSOCIATION FOR CONSERVATION OF GEOLOGICAL HERITAGE (ProGEO) MEETING '98, Bulgaria. (Contact: Dr. Todor Todorov, Sofia 1113, P.O. Box 121. Tel: +359 2 713 2271; Fax: +359 2 75 91 04; E-mail: todorov@geology.acad.bg or uptech@ttm.bg)

June 8-11

GLOBAL WARMING (International Conference and Expo), Hong Kong, China. (Contact: World Resource Review, 22W381 75th Street, Naperville, Illinois, USA 60565-9245; Fax: +1 630 910 1561)

June 8-12

EUROPEAN ASSOCIATION OF GEOSCIENTISTS AND ENGINEERS (EAGE) (60th Conference), Leisig, Germany. (Contact: EAGE, E.H. Bornkamp, P.O. Box 298, NI 3700, AG Zeist, The Netherlands. Tel: 31/3069 62 655; Fax: 31/3069 62 640)

June 16-20

PACIFIC CONGRESS ON MARINE SCIENCE AND TECHNOLOGY: TOWARDS THE 21ST CENTURY — A PACIFIC ERA (8th International), Seoul, Korea. (Contact: N. Saxena, P.O. Box 11568, Honolulu, HI 96828, USA. Tel: +1 808-956-6163; Fax: +1 808-956-2580; E-mail: saxena@wiliki.eng.hawaii.edu)

June 23-25

THE ROLE OF A NATIONAL GEOLOGICAL SURVEY IN SUSTAINABLE DEVELOPMENT (International Conference), Gaborone, Botswana. (Contact: The Secretariat (Attention: Mr. B.K. Paya), 50th Anniversary Conference, Department of Geological Survey, Private Bag 14, Lobatse, Botswana. Tel: (267) 331721; Fax: (267) 332013; E-mail: 100076.1001@compuserve.com)

June 24-26

EUROPEAN CONODONT (International Symposium), Bologna and Modena, Italy. (Contact: M.C. Perri, Dipartimento di Scienze della Terra e Geologico Ambientali, Via Zamboni 67, 40126 Bologna, Italy. Fax: 39 51 354522; E-mail: perri@geomin.unibo.it)

June 24-27

MINERAL AND THERMAL GROUNDWATER (International Symposium of the Romanian Association of Hydrogeologists/IAH). Miercurea Ciuc, Romania. (Contact: Romanian Association of Hydrogeologists, Symposium Secretariat, c/o Iulian Popa (Executive Secretary), 6 Traian Vuia Str., R-70139 Bucharest, Romania. Tel/ Fax: +40 1 21 23385)

June 28 - July 5

EVENT STRATIGRAPHY OF GONDWANA (Gondwana 10, International Symposium), Cape Town, South Africa. (Contact: Organising Committee Gondwana 10, Department of Geological Sciences, University of Cape Town, Rondebosch, South Africa. Tel: 27 21650 3171; Fax: 27 21650 3167; E-mail: Deborah@medicine.uct.ac.za; URL: <http://www/uct.ac.za/depts/cigc/gondwana10.htm>)

June 29 - July 2

15TH CARIBBEAN GEOLOGICAL CONFERENCE, Kingston, Jamaica. (Contact: Dr. Trevor Jackson, c/o Department of Geography and Geology, University of the West Indies, Kingston 7, Jamaica. Fax: 809 927 1640)

June 29 - July 15

8TH INTERNATIONAL PLATINUM SYMPOSIUM (IAGOD/CODMUR), Johannesburg, South Africa. (Contact: Dr. C.A. Lee, P.O. Box 68108, Bryanston, South Africa. Tel: 1127 373 2580; Fax: 1127 836 0371; E-mail: cleee@amplats.co.za)

July 4-11

PROCESSES OF CRUSTAL DIFFERENTIATION (Penrose Conference of the Geological Society of America), Verbania, Italy. (Contact: Tracy Rushmer, Department of Geology, University of Vermont, Burlington, VT 05405, USA. Tel: 1 802 656 8136; Fax: 1 802 656 0045; E-mail: trushmer@zoo.uvm.edu)

July 6-10

AUSTRALIAN GEOLOGICAL CONVENTION, Townsville, Australia. (Contact: Debbie Buckley, School of Earth Sciences, James Cook University, Townsville QLD 4811, Australia. Tel: 077 81 5047; Fax: 077 25 1501; E-mail: jcu.edu.au; WWW: <http://www.jcu.au/dept/Earth/AGC14.html>)

July 6-10

HYDROLOGY IN A CHANGING ENVIRONMENT (International Symposium of the British Hydrological Society), Exeter, UK. (Contact: Bruce Webb, Department of Geography, University of Exeter, Exeter, EX4 4RJ, UK. Fax: +44 (0) 13392 263342; E-mail: B.W. Webb@exeter.ac.uk)

July 8-10

GEOCONGRESS '98 (Conference of the Geological Society of South Africa), Pretoria, South Africa. (Contact: Tel: 27 12 8411167; Fax: 27 12 8411221; E-mail: eaucamp@geoscience.org.za)

July 8-17

CRYOSOLS (Congress of International Society of Soil Science), Montpellier, France. (Contact: Dr. D.A. Gilichinsky, Institute of Soil Science and Photosynthesis, Russian Academy of Sciences, 124292 Pushchino, Moscow region, Russia. E-mail: gilichin@issp.serpukhov.su)

July 11-17

IAVCEI INTERNATIONAL VOLCANOLOGICAL CONGRESS '98, Rondebosch, South Africa. (Contact: Secretariat, IAVCEI 1998, Dept. of Geological Sciences, University of Cape Town, Rondebosch, South Africa. Fax: 27 21 650 3783; E-mail: ivc98@geology.uct.ac.za; WWW: <http://www.uct.ac.za/depts/geolsci/ivc98/>)

July 12-16

FUTURE GROUNDWATER RESOURCES AT RISK (FGR-98) (2nd International Conference), Changchun, China. (Contact: Dr. Zhao Yongsheng and Dr. Sui Weiguo, FGR '98 Conference Secretariat, P.O. Box 298, Changchun University of Earth Sciences, 6 Ximinzhu Street, Changchun, Jilin 130026, China. Fax: +86 431 892 8327)

July 15-22

IGCP PROJECT 420 WORKSHOP (Continental growth in the Phanerozoic: Evidence from East-Central Asia) (with field excursion in the Altai Mountains) Urumqi, China. (Contact: Prof. Hong Dawei, Institute of Geology, CAGS, 26 Baiwanzhuang Road, Beijing 10037, China. Tel: 86 10 6831 1133 ext. 2309; Fax: 86 10 6831 0894, or Prof. Bor-ming Jahn, Geosciences Rennes, Universite de Rennes 1, 35042 Rennes Cedex, France. Tel: 33-2-99 28 60 83; Fax: 33-2-99 28 67 72 or 33-2-99 28 67 80; E-mail: jahn@univ-rennes 1.fr)

July 21-25

WESTERN PACIFIC GEOPHYSICS (Meeting), Taipei, Taiwan, China. (Contact: American Geophysical Union, Meetings Dept., 2000 Florida Ave., Washington, DC, USA; Tel: 1 202 462 6900; Fax: 1 202 328 0566; E-mail: meetinginfo@kosmos.agu.org; WWW: <http://www.agu.org>)

August

10TH IAGOD SYMPOSIUM, Broken Hill, Australia. (Contact: Prof. I.R. Plimer, University of Melbourne, Parkville, VIC 3052, Australia. Tel: 613 3446520; Fax: 613 3447761)

August

EUROCK '98 (ISRM Regional Symposium), "Rock Mechanics in Petroleum Engineering", Trondheim, Norway. (Contact: Prof. Rune M. Holt, Dept. of Petroleum Technology and Applied Geophysics, NTH, N-7034 Trondheim, Norway, Tel: +47 73 591187; Fax: +47 73 591102; E-mail: rune.holt@iku.sintef.no)

August 4-8

MODERN APPROACHES TO ORE AND ENVIRONMENTAL MINERALOGY, Ottawa and Guelph, Ontario, Canada. A Short Course sponsored by the Mineralogical Association of Canada, Natural Resources Canada, The

Commission on Ore Mineralogy and the International Mineralogical Association. Limited registration as the course will focus on specialized laboratories available in the Booth Street area. (Contact: Louis, J. Cabri, CANMET, 555 Booth Street, Ottawa, Ontario, Canada, K1A 0G1. Tel: +1 613 995 4073; Fax: +1 613 996 9673; E-mail: lcabri@nrca.gc.ca)

August 9-12

ENVIRONMENTAL GEOTECHNOLOGY (International Symposium), Boston, Massachusetts, USA. (Contact: H.I. Inyang, 4th International Geoenvironmental Symposium, CEEST, James B. Francis College of Engineering, University of Massachusetts-Lowell, One University Ave., Lowell, MA 01854, USA. Tel: 1 508 934 2285; Fax: 1 508 934 3092; E-mail: inyangh@woods.uml.edu)

August 9-15

INTERNATIONAL MINERALOGICAL ASSOCIATION: IMA '98 (17th General Meeting), Toronto, Canada. (Prof. A.J. Naldrett, Department of Geology, University of Toronto, Canada M5S 3B1. Tel: (461) 978 3030; Fax: (416) 978 3938; E-mail: ima98@quartz.geology.utoronto.ca)

August 10-16

GENERATION AND EMPLACEMENT OF OPHIOLITES THROUGH TIME (International Symposium and Field Excursion), Oulu, Finland. (Contact: J. Vuollo, Department of Geology, University of Oulu, FIN-90570 Oulu, Finland. Fax: 358 81 5531 484; E-mail: vuollo@sveka oulu.fi)

August 15-20

HISTORY OF OCEANOGRAPHY (International Congress), Qingdao, China. (Contact: G.-K. Tan, First Institute of Oceanography, SOA, 3A Hongdao N ranch Road, Qingdao 266003, China. Tel: 86 532 28883127; Fax: 86 532 2879562; E-mail: fiokjc@ns.qd.sd.cn)

August 17-19

GEOSEA '98 (Ninth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia), Kuala Lumpur, Malaysia. (Contact: The Organising Secretary, GEOSEA '98, Geological Society of Malaysia, c/o Department of Geology, University of Malaya,

50603 Kuala Lumpur, Malaysia. Tel: +(603) 757 7036; Fax: +(603) 759 3900; E-mail: geologi@po.jaring.my)

August 17-20

THE JURASSIC SYSTEM (5th International Symposium), Vancouver, Canada. (Contact: P.L. Smith, Earth and Ocean Science, University of British Columbia, 6339 Stores Rd., Vancouver, BC, V6T 1Z4 Canada. Tel: (604) 822-6456; Fax: (604) 822 6088; E-mail: psmith@cos.ubc.ca; WWW: <http://www.eos.ubc.ca/jurassic/announce.html>)

August 17-20

GLACIERS AND THE GLACIATED LANDSCAPE (International Symposium), Kiruna, Sweden. (Contact: Secretary General, International Glaciological Society, Lensfield Road, Cambridge CB2 1ER, UK. Tel: 44 1223 355974; Fax: 44 1223 336543; E-mail: 100751.1667@compuserve.com)

August 20-26

ICOG-9: GEOCHRONOLOGY, COSMOCHRONOLOGY AND ISOTOPE GEOLOGY (9th International Conference), Beijing, China. (Contact: ICOG-9 Secretariat, Chinese Academy of Sciences, 26 Baiwanzhuang Road, Beijing 100037, China. Tel: +86 10 68311545 or 68326456; Fax: +86 10 68311545)

August 20-26

CRYOSOLS AND THEIR RELATIONSHIP TO GLOBAL CLIMATE CHANGE (World Congress of Soil Science, Symposium 39), Montpellier, France. (Contact: Agropolis-Avenue, Agropolis-34394, Montpellier. Cedex 5, France. Tel: 33 6704 7538; Fax: 33 6704 7549)

August 23-28

PALEOCEANOGRAPHY (6th International Conference), Lisbon, Portugal. (Contact: Fatima Abrantes, Assoc. Portuguesa de Paleocnografia, Apt. 7618 Alfragide, 2700 Amadora, Lisbon, Portugal. Tel: 351 1 346 3915; Fax: 351 1 342 4609; E-mail: icp6fatima@mail.telepac.pt)

August 24-25

SOCIETY FOR ORGANIC PETROLOGY (Annual Meeting), Halifax, Nova Scotia, Canada. (Contact: Prasanta K. Mukhopadhyay. Tel/Fax: 1 902 453 0061)

August 25–28

INTERNATIONAL SYMPOSIUM ON URBAN WATER RESOURCES IN THE 21ST CENTURY (ISUWR'98), Beijing, China. Sponsored by Beijing Association for Science & Technology. (Contact: Chinese Academy of Geological Sciences, 26 Baiwanzhuang Road, Beijing 100037, China. Tel/Fax: +86-10-6832 6186; E-mail: geophy@bj.col.com.cn)

August 30 – September 3

V.M. GOLDSCHMIDT CONFERENCE (8th Annual of The Geochemical Society), Toulouse, France. (Contact: E-mail: goldconf@lucid.upstlse.fr; WWW: <http://www.obs-mip.fr/omp/umr5563/goldconf98.html>)

August 30 – September 4

CLAY MINERALOGY AND PETROLOGY (International Conference and Workshop of IGCP Project No. 405), Brno, Czech Republic. (Contact: Petr Sulovsky, Dept. of Mineralogy, Petrology and Geochemistry, Faculty of Science, Masaryk University, Kotlarska 2, CZ 611 37 Brno, Czech Republic. Fax: 420 541211214; E-mail: clays@sci.muni.cz)

September

SEDIMENTARY ROCKS (International Symposium), Taipei, Taiwan, China. (Contact: Dr. Ou Chin Der, Director General, Taiwan Area National Expressway Engineering Bureau, Ministry of Transportation and Communications, Taipei Taiwan, China. Tel: +886 2 5156777; Fax: +886 2 5041281)

September 1–12

ANATOMY AND TEXTURES OF ORE-BEARING GRANITOIDS OF SIKHOTELIN (PRIMORYE REGION, RUSSIA) AND RELATED MINERALIZATION (Joint Field Conference of IAGOD, IGCP-373, SGA, and Russian Academy of Sciences), Vladivostok, Russia. (Contact: Dr. Galina Gonevchuk, Far East Geological Institute of FEB of Russian Academy of Sciences, 159, Prospect 100-letya, Vladivostok, 690022, Russia. Tel: 7 4232 318 750; Fax: 7 4232 31 78 47; E-mail: fegi@online.marine.su; WWW: <http://www.immr.tu-clausthal.de/lager/announcement1.html>)

September 5–9

ANTARCTIC GLACIOLOGY, Lanzhou, China. (Contact: Secretary General of ISAG-6, Laboratory of Ice Core and Cold Regions Environment, Lanzhou Institute of Glaciology and Geocryology, CAS, Lanzhou 730000, China. Fax: 86 931 8885241; E-mail: icecore@ns.lzb.ac.cn)

September 5–14

INTERNATIONAL "THE GEOLOGY OF TODAY FOR TOMORROW" (Conference on radioactive waste disposal, protection of drinking water resources, integrated stratigraphy and sequence analysis. GIS in geology — on the occasion of the 150th anniversary of the Hungarian Geological Society), Budapest, Hungary. (Contact: Hungarian Geological Society, P.O. Box 433, H-1371 Budapest. Tel: (361) 251 0889; Fax: (361) 156 1215; E-mail: csaszar@mafi.hu)

September 6–11

EARTHQUAKE ENGINEERING (International Conference), Paris, France. (Contact: French Association for Earthquake Engineering, 4 Avenue du Recteur Poincare, 75782 Paris Cedex 16, France. WWW: <http://dfc2.enpc.fr/ecee11>)

September 6–16

DEPOSIT AND GEOENVIRONMENTAL MODELS FOR RESOURCE EXPLOITATION AND ENVIRONMENTAL SECURITY (International Conference of NATO Advanced Study Institute), Matrahaza, Hungary. (Contact: Dr. A.G. Fabbri, Intern. Inst. for Aerospace Survey & Earth Sciences (ITC). Hengelosestr 99, P.O. Box 6, 7500 AA Enschede. The Netherlands. Fax: 31-53-487-4336; E-mail: fabbri@itc.nl)

September 7–9

SEDIMENT TRANSPORT AND DEPOSITION BY PARTICULATE GRAVITY CURRENTS (Conference), Leeds, UK. (Contact: Ben Kneller, Earth Sciences Department, University of Leeds, Leeds, LS2 9JT, UK. Tel: +44 113 233 6625; Fax: +44 113 233 5259; E-mail: ben@earth.leeds.ac.uk; WWW: <http://earth.leeds.ac.uk/turbidites/conference/html>)

September 7-10**DRINKING WATER CONTAMINATION**

(International Conference of International Association of Hydrological Sciences), Santiago, Chile. (Contact: Eric G. Reichard, U.S. Geological Survey, 5735 Kearny Villa Road, Ste. O. San Diego, California 92123, USA. Tel: 1 619 637 6834; Fax: 1 619 637 9201; E-mail: egreich@usgs.gov)

September 7-11**EARLY WARNING SYSTEMS FOR THE REDUCTION OF NATURAL DISASTERS**

(Conference), Potsdam, Germany. (Contact: E-mail: ewc98@gfz-potsdam.de)

September 7-14**INTERNATIONAL INHIGEO HISTORY OF GEOLOGY CONGRESS**

"From Folds to Nappes to Plates" "The History of Ideas About Glaciation", Neuchâtel, Switzerland. (Contact: Prof. Jean-Paul Schaer, Université de Neuchâtel, Institut de Géologie, Emile-Argand 11, 2007 Neuchâtel, Switzerland. Fax: 4132 7182601; E-mail: sabine.robert@geol.unine.ch)

September 8-10**COASTAL ENVIRONMENT 98 — ENVIRONMENTAL PROBLEMS IN COASTAL REGIONS**

(Conference), Cancun, Mexico. (Contact: Liz Kerr, Conference Secretariat, COASTAL ENVIRONMENT 98, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK. Tel: 44 (0) 1703 293223; Fax: 44 (0) 1703 292853; E-mail: liz@wessex.ac.uk; <http://www.wesses.ac.uk>)

September 9-11**REMOTE SENSING** (Annual Conference, Natural Resource Institute and University of Greenwich), Kent, UK. (Contact: RSS98, School of Earth and Environmental Sciences, University of Greenwich, Medway Towns Campus, Chatham Maritime, Kent ME4 4AW, UK. Tel: 44 0181 3319803; Fax: 44 0181 3319805; E-mail: rss98@gre.ac.uk)
September 10-20**IGCP PROJECT 367 (FINAL MEETING) AND INQUA SHORELINES AND NEOTECTONICS COMMISSIONS**

, Corinth and Samos, Greece. (Contact: Stathis Stiros, Inst. of Geology and Mineral Exploration, 70

Mesoghion St., Athens 11527, Greece. Tel: 30 1 771 5522; Fax: 30 1 775 2211; E-mail: stiros@prometheus.hol.gr or Paolo Antonio Pirazzoli, CNRS, URA 141-Lab de Géographie Physique, 1 Pl. Aristide Briand, 92190 Meudon-Bellevue, France. Tel: 33 1 4507 5558; Fax: 33 1 4507 5830; E-mail: pirazzol@cnrs-bellevue.fr)

September 11-14**ASSOCIATION OF EARTH SCIENCE EDITORS** (32nd Annual), Council of Biology Editors, and Association of European Science Editors (Joint Meeting), Washington, DC, USA. (Contact: Arly Allen, Sheridan Electronic Systems, Suite 832, 400 E. Pratt St., Baltimore, MD 21202, USA. Fax: +1 410 347 1641; E-mail: aallen@ses.sheridan.com)
September 13-15**PETROLEUM GEOLOGY AND HYDROCARBON POTENTIAL** (Conference), Neptune/Constanta, Romania. (Contact: Dr. Akif A. Narimanov, Azerbaijan Society of Petroleum Geologists. Tel: 0099412 92 3511; Fax: 0099412 92 3297; E-mail: Akifnar@Socar.baku.az)
September 13-17**ENVIRONMENTAL AND ENGINEERING GEOPHYSICS** (4th International Conference), Barcelona, Spain. To receive the First Announcement sent E-mail request. (Contact: Lluís Rivero, Ass't of Applied Geophysics, Faculty of Geology, University of Barcelona, Barcelona 08071, Spain. Tel: 34-3-402.14.30; Fax: 34-3-402.13.40; E-mail: rivero@natura.geo.ub.es.)
September 14-17**MODERN EXPLORATION AND IMPROVED OIL AND GAS RECOVERY METHODS** (2nd International Conference), Kraków, Poland. (Contact: DEXTER Congress and Symposium Bureau, Wroclawska 37A, 30-011 Kraków, Poland. Tel: 48 12 340 808; Fax: 48 12 336313; E-mail: kongresy@dexter.krakow.pl)
September 21-23**EPICONTINENTAL TRIASSIC** (Symposium), Halle, Germany. (Contact: Gerhard Beutler, Institut für Geologische Wissenschaften und Geiseltalmuseum, Domstr. 5, D-06108 Halle/oaale, Germany. Fax: 49 0 345 55 27 178)

September 21-25

INTERNATIONAL ASSOCIATION OF ENGINEERING GEOLOGY (8th International Congress), Vancouver, Canada. (Contact: Kim Meidal, Secretariat, 8th Congress IAEG, c/o BC Hydro, 6911 Southpoint Dr., Burnaby, BC V3N 4X8, Canada. Tel: 1 604 528 2421; Fax: 1 604 528 2558; E-mail: kim.meidal@bchydro.bc.ca; WWW: <http://www.bchydro.bc.ca/bchydro/IAEG/IAEG98.html>)

September 21-25

GROUNDWATER QUALITY (International Conference), Tübingen, Germany. (Contact: Conference Secretariat GQ '98, c/o Lehrstuhl für Angewandte Geologie, Sigwart-strasse 10, D-72076 Tübingen, Germany. Tel: 49 7071 2974692; Fax: 49 7071 5059; E-mail: mike.herbert@uni-tuebingen.de)

September 26-27

EVOLUTION OF STRUCTURES IN DEFORMING ROCKS, Canmore, Alberta, Canada. (Contact: Shoufa Lin, c/o Geological Survey of Canada, 601 Booth St., Ottawa, Ontario K1A 0E8, Canada. Fax: 1 613 995 7997; E-mail: slin@gsc.nrcan.gc.ca; WWW: <http://www.nrcan.gc.ca/ess/cgd/ctg98/>)

September 27 - October 2

GAMBLING WITH GROUND WATER: PHYSICAL, CHEMICAL AND BIOLOGICAL ASPECTS OF AQUIFER-STREAM INTERRELATIONS (28th Congress of the International Association of Hydrogeologists), Las Vegas, Nevada, USA. (Contact: John Van Brahana, IAH Las Vegas, USGS, 118 Ozark Hall, University of Arkansas, Fayetteville AR 72701, U.S.A. Tel: +1 501 575 2570; Fax: +1 501 575 3846; E-mail: jbrahana@jungle.uark.edu)

September 29-30

IMPROVING THE EXPLORATION PROCESS BY LEARNING FROM THE PAST, Haugesund, Norway. (Contact: Norwegian Petroleum Society, P.O. Box 1897 Vika, N-0124 Oslo, Norway; Fax: 47 22 55 46 30; E-mail: karin.haugness@npf.no)

September 30 - October 3

SOCIETY OF VERTEBRATE PALEONTOLOGY (Annual Meeting), Salt Lake City, Utah, USA. (Contact: SVP, 401 N. Michigan Ave., Chicago, IL 60611-4267, USA. Tel: 1 312 321 3708)

October 5-7

FIFTH INTERNATIONAL CONFERENCE ON REMOTE SENSING FOR MARINE AND COASTAL ENVIRONMENTS, San Diego Princess Convention Center, San Diego, California, USA. Organized by ERIM with sponsors that include NASA, NOAA/NESDIS, U.S. DOE Nevada Operations Office and Remote Sensing Lab., GER Corporation, RadarSat International, and National Wetlands Research Center. (Contact: ERIM Marine Conferences, Box 134001, Ann Arbor MI 48113-4001 USA. Tel: +1 313 994 1200, ext. 3234; Fax: +1 313 994 5123; E-mail: wallman@erim.org)

October 5-9

INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOLOGY (Annual Conference), Ischia Island, Naples, Italy. (Contact: Conference Secretariat, IAMG '98, c/o Antonella Buccianti, Dipartimento di Scienze della Terra, Università di Firenze, Via La Pira 4, 50121 - Firenze, Italy. Tel: +39 55 275 7496; Fax: +39 55 284 571; E-mail: buccianti@cesit1.unifi.it)

October 6-9

GERMAN GEOLOGICAL SOCIETY (150th Annual Meeting), Berlin, Germany. (Contact: Johannes Schroeder, Inst. für Angewandte Geowissenschaften II, Ernst-Reuter-Platz 1, D-10587 Berlin, Germany. Tel: 49 30 314 23650; Fax: 49 30 314 21107; E-mail: Geo-Berlin-98@tu-berlin.de)

October 7-9

COMPUTER SIMULATION IN RISK ANALYSIS AND HAZARD MITIGATION (International Conference), Valencia, Spain. (Contact: Paula Doughty-Young, RISK ANALYSIS '98 Conference Secretariat, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK. Fax: +44 1703 292 853; E-mail: paula@wessex.ac.uk)

October 19-21

WILLISTON BASIN SYMPOSIUM (8th International), Regina, Saskatchewan, Canada. (Contact: Dr. Dough Paterson, Saskatchewan Geological Society, P.O. Box 234, Regina, Saskatchewan, Canada S4P 2Z6. Tel: +1 306 787 2625; Fax: +1 306 787 4608; E-mail: dpaterson@gov.sk.ca; WWW: <http://www.gov.sk.ca/enermine/about/semnew.htm>)

October 26-29

GEOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING, Toronto, Ontario, Canada. (Contact: GSA Meetings Department, P.O. Box 9140, Boulder CO, 80301 USA. Tel: +1 303 447 2020; Fax: +1 303 447 1133; E-mail: meetings@geosociety.org; WWW: <http://www.geosociety.org/meetings/index.htm>)

October 26-29

SOCIETY OF ECONOMIC GEOLOGISTS (Annual Meeting, with GSA), Toronto, Canada)

October/November

PHYSICAL, CHEMICAL AND BIOLOGICAL ASPECTS OF AQUIFER-STREAM SEDIMENT INTERRELATIONS (28th IAH Congress) (Contact: Dr. J. Rosenschein, USGS MS 414, National Center, Reston Va 22092, USA; Fax: 703 648 5722)

November 8-11

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (International Conference and Exhibition), Rio de Janeiro, Brazil. (Contact: AAPG Conventions Department, P.O. Box 979, 1444 S Boulder Ave., Tulsa, OK 74101-0979, USA. Tel: +1 918 560 2679; Fax: +1 918 560 2684)

November 16-20

THIRTEEN SOUTHEAST ASIAN GEOTECHNICAL CONFERENCE (Conference), Taipei, Republic of China. (Contact: Dr. John Chien-Chung Li, Secretary General/SEAGC 13, c/o Public Construction Commission, Executive Yuan, Fl. 9, No. 4, Chung Hsiao West Road, Sec. 1, Taipei, Taiwan, Republic of China. Tel: 886-2-388-4962; Fax: 886-2-388-4959; E-mail: seagc13@mail.pcc.gov.tw)

December 1-3

ORIGIN OF THE EARTH AND MOON (International Conference of the Geochemical Society), Monterey, California, USA. (Contact: LeBecca Simmons, Lunar and Planetary Institute, 3600 Bay Area Boulevard, Houston TX 77058-1113, USA. Tel: 1 281 486 2158; Fax: 1 281 486 2160; E-mail: simmons@lpi.jsc.nasa.gov)

December 2-3

SEAPEX SILVER JUBILEE EXPLORATION CONFERENCE, Suntec City Exhibition Center, Singapore. (Contact: Mr. T.C. Chew, Southeast Asia Petroleum Exploration Society, P.O. Box

423 Tanglin Post Office, Singapore 812. Tel: (65) 338-9108; <http://web.singnet.com.sg/~seapex>)

December 6-10

AMERICAN GEOPHYSICAL UNION (Annual Fall Meeting), San Francisco, California, USA. (Contact: AGU Meetings Department, 1998 Fall Meeting 2000 Florida Avenue NW, Washington, DC 20009, USA. Tel: +1 202 462 6900 (in Washington, D.C. area and outside North America), or +1 800 966 2481 (toll-free in North America); Fax: +1 202 328 0566; E-mail: meetinginfo@kosmos.agu.org; WWW: <http://www.agu.org>)

1999**February 1-5**

SHALLOW TETHYS (International Symposium), Chiang Mai, Thailand. (Contact: Shallow Tethys 5 Symposium Secretary, Dept. of Geological Sciences, Chiang Mai University, Chiang Mai 50200, Thailand. Fax: 66 53 89 2261)

March 1-3

THIRTEENTH INTERNATIONAL CONFERENCE AND WORKSHOPS ON APPLIED GEOLOGIC REMOTE SENSING: Practical Solutions for Real-World Problems. Hotel Vancouver, Vancouver, British Columbia, Canada. Organized by ERIM with sponsors that include NASA, U.S. DOE Nevada Operations Office and Remote Sensing Lab, and USGS. (Contact: ERIM Geologic Conferences, Box 134001, Ann Arbor, MI 48113-4001 USA. Tel: +1 313 994 1200, ext. 3234; Fax: +1 313 994 5123; E-mail: wallman@erim.org)

March 1-4

SOCIETY FOR MINING, METALLURGY, AND EXPLORATION (Annual Meeting), Denver, Colorado, USA. (Contact: SME, 8307 Shaffer Parkway, P.O. Box 625002, Littleton, CO 80162-5002, USA. Tel: 1 303 973 9550; E-mail: smenet@aol.com)

March 9-11

INTERNATIONAL CONFERENCE ON PANGAEA AND THE PALEOZOIC-MESOZOIC TRANSITION, Wuhan, Hubei, China. (Contact: Dr. Tong Jinan, Faculty of Earth Science, China University of Geosciences, Wuhan, Hubei

430074, China. Tel: +86-27-7482031; Fax: +86-27-7801763; E-mail: jntong@dns.cug.edu.cn)

April 11-14

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (Annual Meeting), San Antonio, Texas, USA. (Contact: AAPG Conventions Department, P.O. Box 979, 1444 S. Boulder Ave., Tulsa, OK 74101-0979, USA. Tel: +1 918 560 2679; Fax: +1 918 560 2684; E-mail: dkeim@aapg.org)

May 26-28

GEOLOGICAL ASSOCIATION OF CANADA-MINERALOGICAL ASSOCIATION OF CANADA, JOINT ANNUAL MEETING, Sudbury, Ontario. (Contact: Dr. P. Copper, Dept. of Earth Sciences, Laurentian University, Sudbury, Ontario P3E 2C6, Canada. Tel: (705) 657-1151 ext. 2267; Fax: (705) 675-4898; E-mail: gacmac99@nickel.laurentian.ca)

June

FOURTH INTERNATIONAL AIRBORNE REMOTE SENSING CONFERENCE AND EXHIBITION, Ottawa, Ontario, Canada. Organized by ERIM. (Contact: ERIM Airborne Conferences, Box 134001, Ann Arbor, MI 48113-4001 USA. Tel: +1 313 994 1200, ext. 3234; Fax: +1 313 994 5123; E-mail: wallman@erim.org)

June 7-11

EUROPEAN ASSOCIATION OF GEOSCIENTISTS AND ENGINEERS (EAGE, 61st Conference), Helsinki, Finland.

July 19-30

INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS, Birmingham, UK. (Contact: IUGG99, School of Earth Sciences, University of Birmingham, Edghaston, Birmingham B15 2TT, UK. Fax: 44 121 414 4942; E-mail: IUGG99@bham.ac.uk)

August 3-12

INTERNATIONAL UNION FOR QUATERNARY RESEARCH (INQUA) (15th Congress), "The Environmental Background to Hominid Evolution in Africa", Durban, South Africa. (Contact: Dr. D. Margaret Avery, INQUA XV CONGRESS, P.O. Box 61, South Africa Museum, Capetown 8000, South Africa. Tel: +27 21 243 330; Fax: +27 21 246 716; E-mail: mavery@samuseum.ac.za; WWW: <http://inqua.geoscience.org.za>)

August 4-12

AFRICA, CRADLE OF HUMAN KIND DURING THE QUATERNARY (XV INQUA Congress), Durban, South Africa. (Contact: Prof. T.C. Partridge, Climatology Research Center, University of Witwatersrand, 13 Cluny Rd., Forest Town, Johannesburg 2193, South Africa. Tel: +27 11 646 3324; Fax: +27 11 486 1689; E-mail: 141tcp@cosmos.wits.ac.za)

August 14-25

CARBONIFEROUS-PERMIAN (XIV International Congress), Calgary, Alberta, Canada. (Contact: Dr. Charles Henderson, Associate Professor, Department of Geology and Geophysics, The University of Calgary, N.W. Calgary, Alberta, Canada T2N 1N4. Tel: 403 220 6170; Fax: 403 285 0074; E-mail: henderson@geo.ucalgary.ca)

August 22-25

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS (SGA) (5th Biennial Meeting), "Mineral Deposits: Processes to Processing," London, UK. Imperial College Natural History Museum. (Contact: Dr. Chris Stanley, Department of Mineralogy, Natural History Museum, Cromwell Road, London, SW7 5BD, UK. Tel: +44 171 938 9361; Fax: +44 171 938 9268; E-mail: cjs@nhm.ac.uk)

September

THE CONTINENTAL PERMIAN OF THE SOUTHERN ALPS AND SARDINIA (ITALY): Regional reports and general correlations (International Field Conference), Brescia, Italy. (Contact: Prof. G. Cassinis, Dipartimento di Scienze della Terra, Università di Pavia, Via Ferrata, 1, I-27100 Pavia, Italy. Tel: 39 382 505834; Fax: 39 382 505890; E-mail: cassinis@ipv36.unipv.it)

September

INTERNATIONAL ASSOCIATION OF HYDROGEOLOGISTS (29th Congress), Bratislava, Slovakia. (Contact: Prof. L. Melioris, Comenius University, Mylinska Dolina, 84215 Bratislava, Slovakia. Tel/Fax: +42 7 725 446; E-mail: podzvody@fns.uniba.sk)

September

INTERNATIONAL SOCIETY OF ROCK MECHANICS (9th International Congress), Paris, France. (Contact: Dr. S. Gentier, Secrétaire Général du CFMR, BRGM/DR/GGP,

Avenue Claude Guillemin, B.P. 6009, F-45060
Orléans Cedex 2, France. Tel: +33 2 38 64 38 77;
Fax: +33 2 38 64 30 62)

September 12-15

**AMERICAN ASSOCIATION OF PETROLEUM
GEOLOGISTS** (International Meeting),
Birmingham, UK. (Contact: AAPG Conventions
Dept., P.O. Box 979, Tulsa, OK 74101-0979,
USA. Tel: 1 918 560 2679; Fax: 1 918 560 2684)

October 25-28

GEOLOGICAL SOCIETY OF AMERICA
(Annual Meeting), Denver, Colorado, USA.
(Contact: GSA Meetings Dept., P.O. Box 9140,
Boulder, CO 80301-9140, USA. Tel: +1 303 447
2020; Fax: +1 303 447 1133; E-mail:
meetings@geosociety.org; WWW: [http://
www.geosociety.org/meetings/index.htm](http://www.geosociety.org/meetings/index.htm))

October 30 - November 4

SOIL SCIENCE SOCIETY OF AMERICA
(Annual Meeting), Salt Lake City, Utah, USA.
(Contact: SSSA, 677 So, Segoe Rd., Madison,
WI 53711, USA. Tel: 1 608 273 8090; Fax: 1 608
273 2021; E-mail: rbarnes@agronomy.org)

2000

March 6-9

**SOCIETY FOR MINING, METALLURGY,
AND EXPLORATION** (Annual Meeting), Salt
Lake City, Utah, USA. (Contact: SME, 8307
Shaffer Parkway, P.O. Box 625002, Littleton,
CO 80162-5002, USA. Tel: 1 303 973 9550; E-
mail: smenet@aol.com)

August 6-17

**31ST INTERNATIONAL GEOLOGICAL
CONGRESS**, Rio de Janeiro, Brazil. Theme of
the Congress: Geology and Sustainable
Development: Challenges for the Third
Millennium. (Contact: Prof. Hernani Chaves,
President of the Preparatory Commission for
the 31st IGC, Ave. Pasteur, 404, Urca: Cep
22290-204, Rio de Janeiro, Brazil. Tel: +55 21
295 5337; Fax: +55 21 542 3647; E-mail:
Hernani@uerj.br)

October

**INTERNATIONAL MILLENIUM CONGRESS
ON GEOENGINEERING**, Melbourne,
Australia. (More information soon)

November 13-16

GEOLOGICAL SOCIETY OF AMERICA
(Annual Meeting), Reno, Nevada, USA.
(Contact: GSA Meetings Dept., P.O. Box 9140,
Boulder, CO 80301-9140, USA. Tel: +1 303 447
2020; Fax: +1 303 447 1133; E-mail:
meetings@geosociety.org; WWW: [http://
www.geosociety.org/meetings/index.htm](http://www.geosociety.org/meetings/index.htm))

2001

June 3-6

**AMERICAN ASSOCIATION OF PETROLEUM
GEOLOGISTS** (Annual Meeting), Denver,
Colorado, USA. (Contact: AAPG Conventions
Department, P.O. Box 979, 1444 S. Boulder
Ave., Tulsa, OK 74101-0979, USA. Tel: +1 918
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