

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

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PERSATUAN GEOLOGI MALAYSIA

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About the Society

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

Granite-limestone intrusive contact — an interesting outcrop at Gunung Datok, Tambun, Perak

TAN BOON KONG
Department of Geology
Universiti Kebangsaan Malaysia

INTRODUCTION

During a recent survey of limestone cliffs in the Tambun area in early-mid October, 1996, the author "bumped" into an interesting outcrop on the northeastern face of Gunung Datok, namely an entire section of cliff showing granite-limestone with a sharp, intrusive contact. This short note is written for the following purposes:

- i) to document this interesting outcrop,
- ii) to attract perhaps the mineralogists, petrologists, geochemists etc. to this outcrop for further studies (just make sure you don't disturb the **stability** of the cliff!)
- iii) to suggest conservation of this outcrop for benefits of students of geology and geo-tourism purposes, since the upper portions of the outcrop also provide a panoramic view of the scenic Tambun limestone cliffs and parts of the Kinta Valley.

LOCATION

Figure 1 shows the location of the outcrop. The geologic map is extracted from Ingham and Bradford (1960). It is accessible by car from the Tambun-Tg. Rambutan road via a dirt road going east towards the Main Range Granite, and then turning south towards the outcrop. A rentis/dirt track then follows the base of the limestone cliff and gradually climbs towards the upper portions of the cliff. Figure 3 shows the limestone cliff concerned (Hill X) as viewed from the north.

BRIEF DESCRIPTION OF OUTCROP

Figure 2 shows schematic views of the outcrop. The lower 'half' of the cliff comprises GRANITE (grade II, i.e. slightly weathered rock; weathering grade in accordance with Little (1969)), while the upper 'half' comprises LIMESTONE/MARBLE. The granite shows a dome-shaped bedrock surface and the granite-limestone contact follows this dome-shaped feature, hence defining a sharp, intrusive contact. Thus, proceeding from the plain level upslope, the contact is first gently dipping before changing to subhorizontal near the top. Figures 4 to 6 show some examples of the contact. The sharp contact is observed easily since the granite appears pinkish/reddish in colour, while the limestone is greyish/whitish in colour.

The granite rock shows steep slopes (70–80° slopes) with well defined joint sets, while the limestone shows a major overhang. Solution feature (stalactites, cavities, etc.) abound in the limestone cliff. An interesting solution slot in the limestone cliff terminates abruptly at the granite-limestone contact (for obvious reason). There are also 1 or 2 small granitic dykes filling fractures in the limestone at the contact zone (Figure 6).

FURTHER COMMENTS

While the intrusive nature of the granite-limestone contact in the Kinta Valley is well known, in particular for the eastern boundary of the Kinta Valley, Ingham and Bradford (1960), good exposures of granite(rock)-limestone

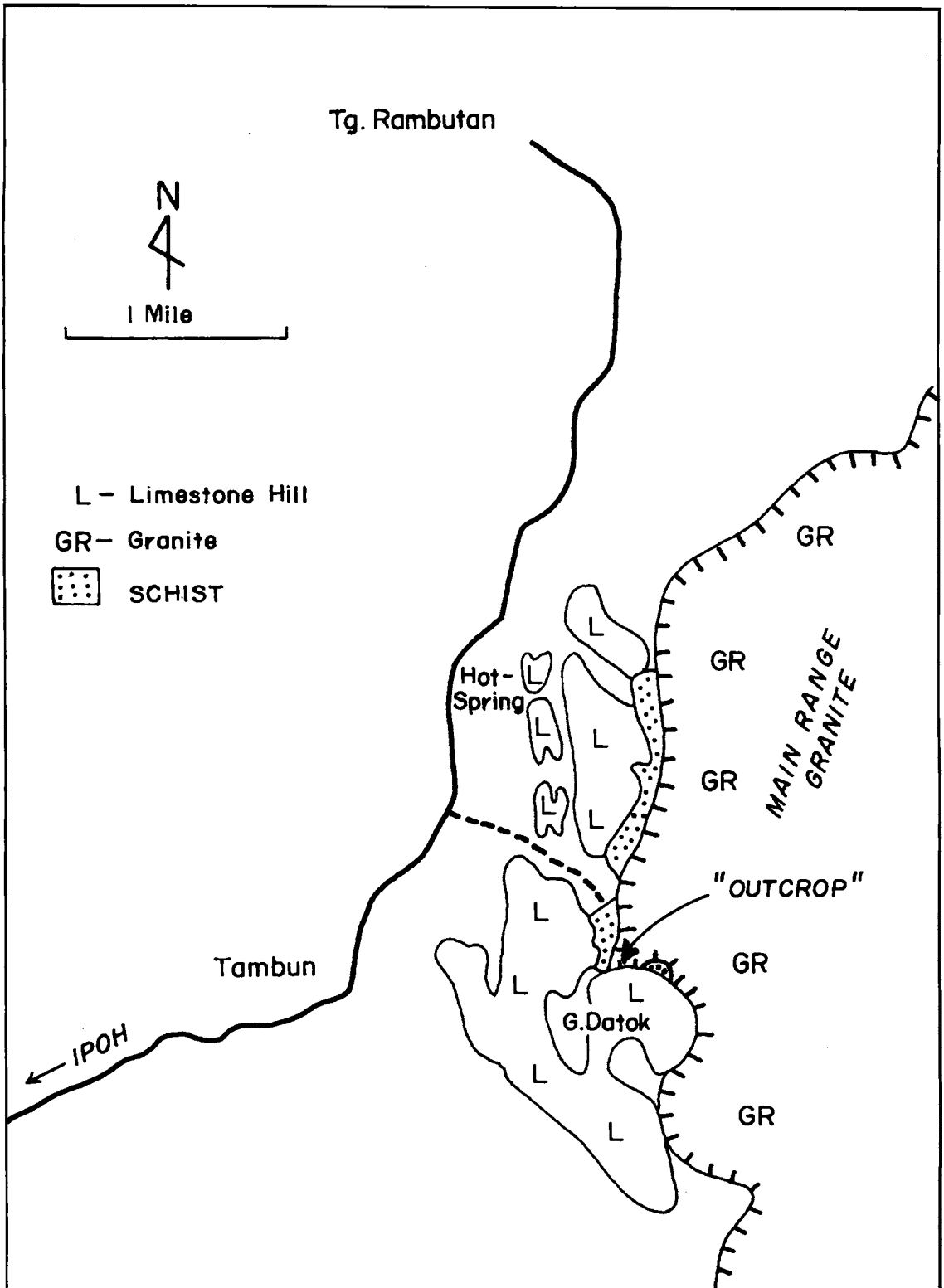


Figure 1. Location of outcrop. Geology after Ingham and Bradford (1960).

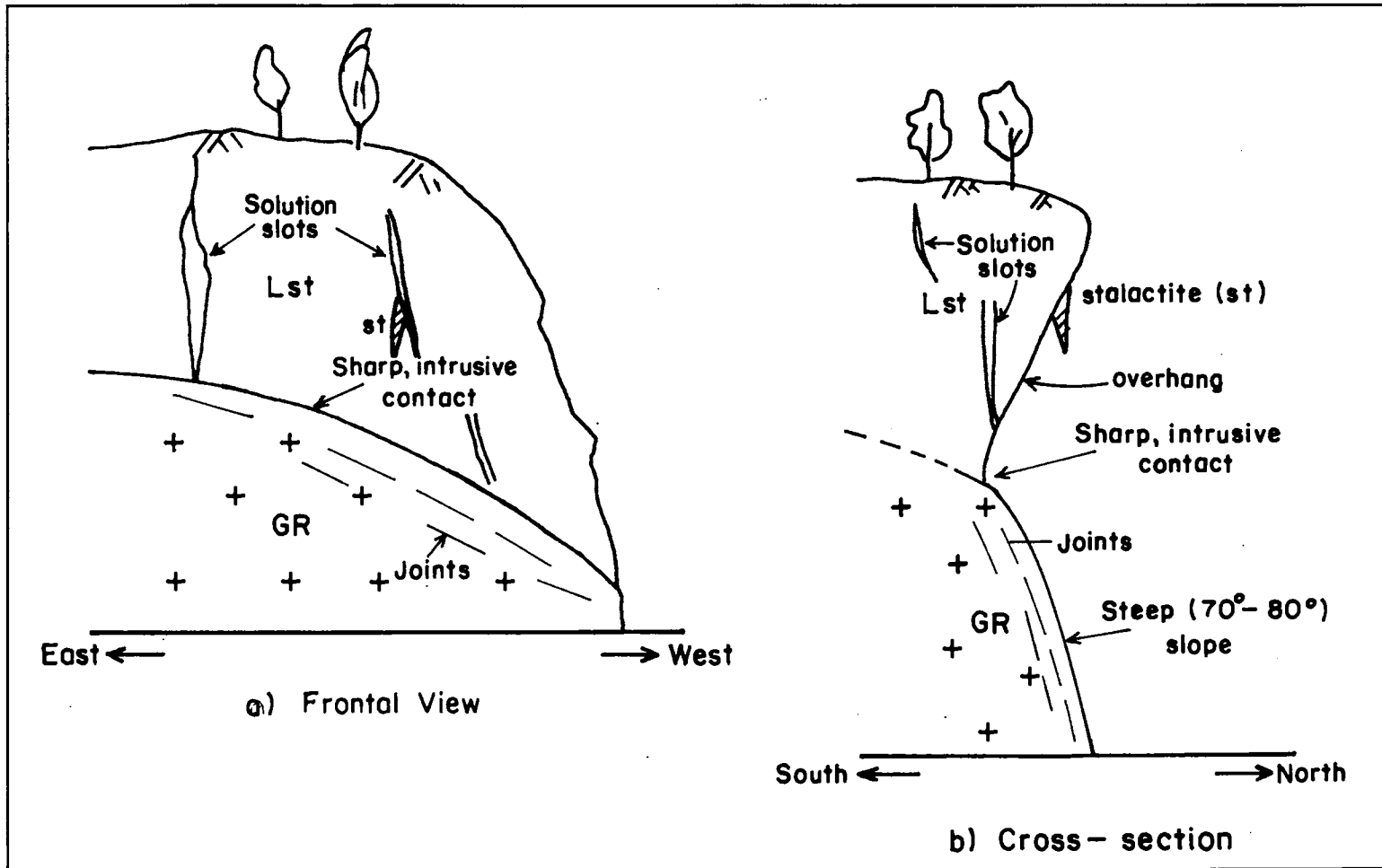


Figure 2. Schematic views of the granite-limestone contact.

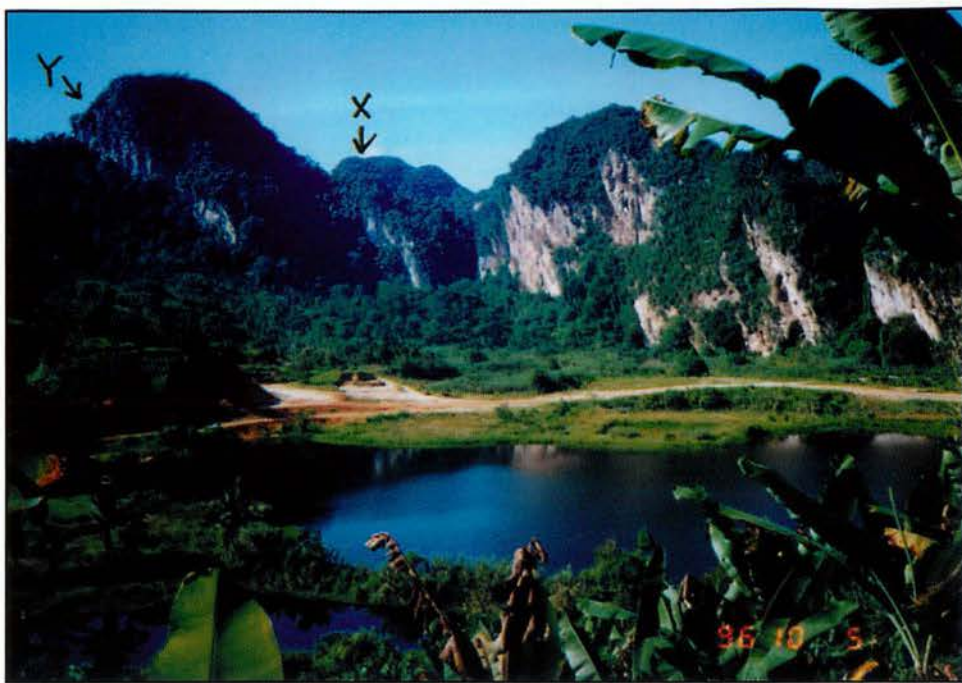


Figure 3. Hill 'X' (outcrop) and 'Y' as viewed from the north.



Figure 4. Granite (pinkish)-limestone (greyish) intrusive contact near base of hill (western end of hill).

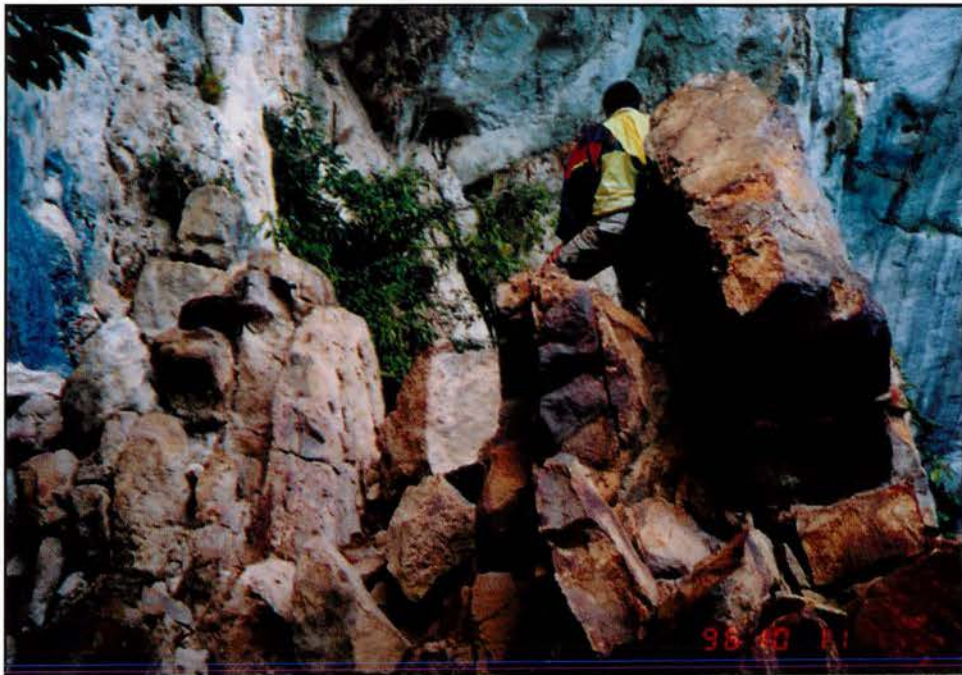


Figure 5. Well-developed joints in granite(blocky). Contact with limestone on the extreme left. Extreme right and behind



Figure 6. Another view showing highly fractured granite, and 2 granitic dykes (d)

contacts are hard to come by or are rarely reported. Past reports of granite-limestone intrusive contacts are mainly from tin mines, where the limestone appears as bedrock, and the granite is mostly "soils" highly to completely weathered, i.e. grades IV to V. For example, Ong (1971), reported such a granite(soil)-limestone(bedrock) contact from a tin mine in the Tambun area.

The author, Tan (1972), and Teh (1969), also reported a granite-limestone intrusive contact on the eastern face of G. Lanno (limestone hill) and Tekka Hill (granite) in the Kramat Pulai area. The limestone cliff there was being quarried, and the base of the quarry face showed a relatively small dome-shaped granite, but in the form of granitic soil.

Thus, this present outcrop is rather unique since the granite exists as grade II "Rock" and not "Soil" like many of the other exposures reported. It also shows granite "punching" into the limestone hill.

FOLLOW-UP WORKS

Unfortunately, due to time constraint and also partly accessibility problem, Hill 'Y' (in Fig. 3) could not be visited. While tracking upslope toward Hill 'Y', some large blocks of schist were encountered (some displaced, some perhaps *in-situ*). Large granite boulders were also strewn along the small valley nearby. Whether Hill 'Y' would show a similar granite(rock)-limestone contact, or granite-schist-limestone contact, or otherwise, the

answer awaits future confirmation.

Fortunately, the Tambun area is now undergoing rapid development (no more sleepy, pomelo hollows!?), and so access to these interesting outcrops would be no problem in the near future. Hopefully, more geological notes (including topics on mineralogy, petrology, geochemistry, skarn(?), etc.) would be forthcoming in the future.

ACKNOWLEDGMENT

The trip was financed by Terra Geotechnics Sdn. Bhd. Field assistance provided by Sdr. Zul and Farid are also kindly acknowledged.

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Manuscript received 21 October 1996

Common Rocks of Malaysia

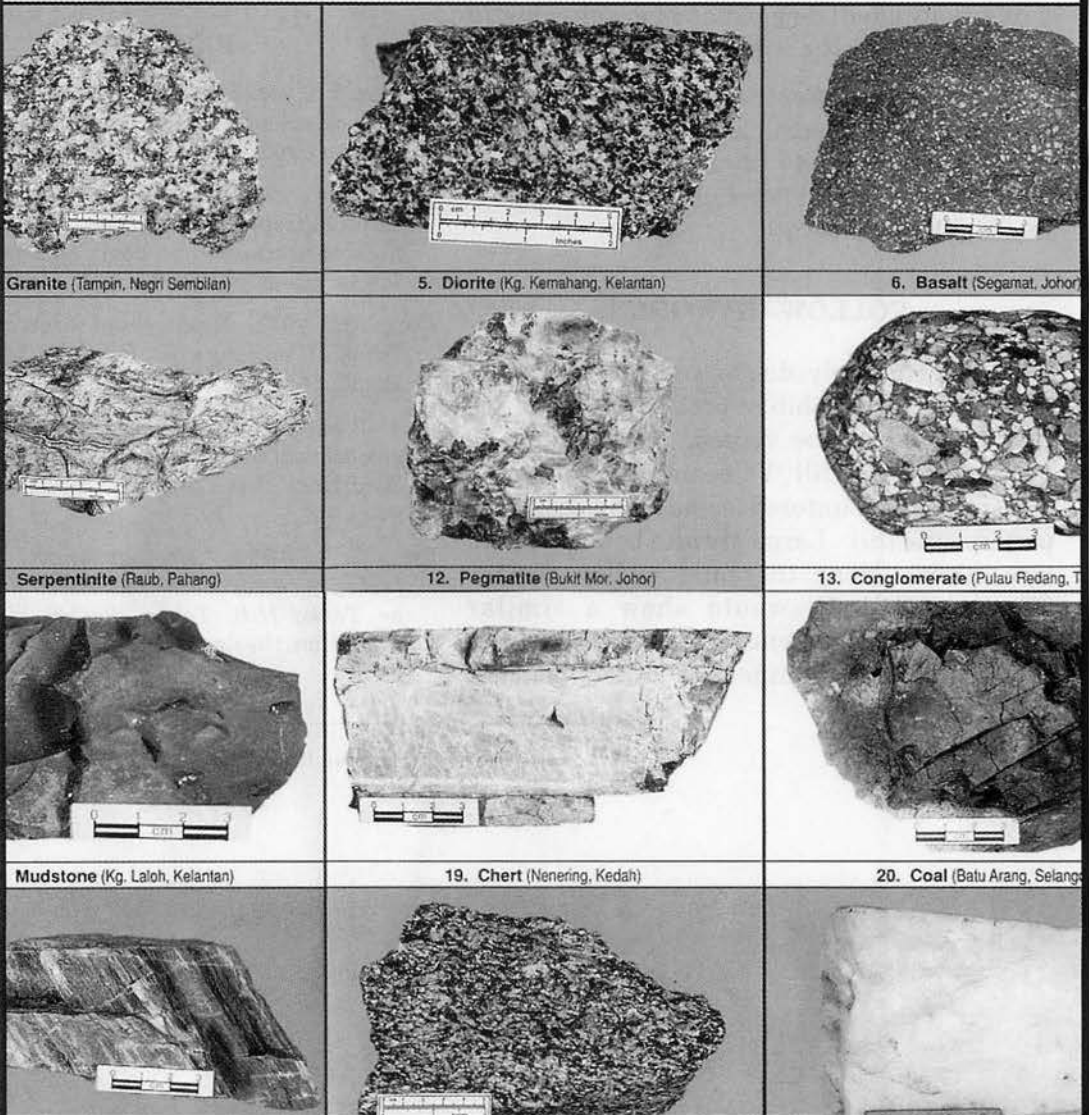
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PERTEMUAN PERSATUAN Meetings of the Society

Ceramah Teknik (Technical Talk)

Developing the IUCN Guidelines for cave and karst protection

DAVID GILLIESON

Laporan (Report)

Dr. David Shaw Gillieson, senior lecturer, School of Geography and Oceanography, University College, Australian Defence Academy, Canberra, Australia, gave the above talk on 20th January 1997 at the Conference Room, Geological Survey Department, Ipoh. Dr. Gillieson's research interests include karst (limestone) landscape processes, management and rehabilitation and he is a member of the International Geographical Union Commission on sustainable development and management of karst terrains (1996–1999).

Abstrak (Abstract)

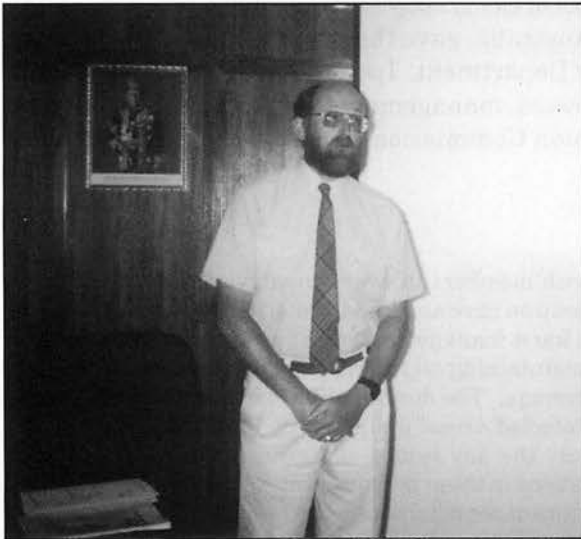
IUCN is the World Conservation Union with members in every country. Its World Commission on Protected Areas has a working group on cave and karst protection which has recently produced a set of guidelines for cave and karst management. This was drafted by a small group of experts and feedback obtained by maintaining an Internet site for six months. Over 120 responses were gained with a global coverage. The document has been drafted in a similar style to the "Guidelines for Mountain Protected Areas" published by IUCN in 1992. Initially Spanish and French translations of only the key issues and guidelines will be included in the volume. At a later date full translations in those languages may be published. We believe that these guidelines will make a significant contribution to our knowledge of the special management considerations essential for protection of caves and karst. They are a "first step" and the challenge now is for the national and site specific strategies to be developed in karst areas around the world.

Effective planning for karst regions demands a full appreciation of all their economic, scientific and human values within the local cultural and political content. The integrity of any karst system depends upon an interactive relationship between land, water and air. Any interference with this relationship is likely to have undesirable impacts, and should be subjected to thorough environmental assessment. Land managers should identify the total catchment area of any karst lands, and be sensitive to the potential impact of any activities within the catchment, even if not located on the karst itself. Destructive actions in karst, such as quarrying or dam construction, should be located so as to minimise conflict with other resource or intrinsic values. Pollution of groundwater poses special problems in karst and should always be minimised and monitored. All other human uses of karst areas should be planned to minimise undesirable impacts, and monitored in order to provide information for future decision-making. Management in karst and caves should aim to maintain natural flows and cycles of air and water through the landscape in balance with prevailing climatic and biotic regimes. Managers should recognise that in karst, surface actions may be sooner or later translated into impacts directly underground or further downstream.

While recognising the non-renewable nature of many karst features, particularly within caves, good management demands that damaged features be restored as far as is practicable. The development of caves for tourism purposes demands careful planning, including consideration of sustainability. Where appropriate, restoration of damaged caves should be

undertaken, rather than opening new caves for tourism. Governments should ensure that a representative selection of karst sites is declared as protected areas under legislation which provides secure tenure and active management. Priority in protection should be given to areas or sites having high natural, social or cultural value; possessing a wide range of values within the one site; which have suffered minimal environmental degradation; and/or of a type not already represented in the protected areas system at their country. Where possible, a protected area should include the total catchment area of the karst. Where such coverage is not possible, environmental controls or total catchment management agreements under planning, water management or other legislation should be used to safeguard the quantity and quality of water inputs to the karst system.

International, regional and national organisations concerned with aspects of karst protection and management should recognise the importance of international co-operation and do what they can to disseminate and share expertise. The documentation of cave and karst protection/management policies should be encouraged, and such policies made widely available to other management authorities. Data bases should be prepared listing cave and karst areas included within protected areas, but also identifying major unprotected areas which deserve recognition. Karst values of existing and potential World Heritage sites should be similarly recorded.



DAVID GILLIESON



P. Loganathan introducing the speaker.



BERITA-BERITA PERSATUAN **News of the Society**

PETUKARAN ALAMAT (Change of Address)

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

1. Senusi Mohamed Harsha
Department of Geophysics, Faculty of
Science, University of Al-Fateh, P.O. Box
13379, Tripoli, Libya.

GSM

CURRENT ADDRESSES WANTED

The GSM is seeking the addresses of the following members. Anyone knowing the new addresses please inform the Society.

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Nor Zaini Karim
Geological Survey Dept., Locked Bag 2042,
88999 Kota Kinabalu, Sabah. | <ol style="list-style-type: none"> 2. Sriyane De Silva
XEX/4, Business Unit, Exploratie, NAM,
Schepersmaat 2, 9405 TA Assen, The
Netherlands |
|--|---|

GSM

PERTAMBAHAN BAHARU PERPUSTAKAAN **(New Library Additions)**

The Society has received the following publications:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. U.S. Geological Survey Yearbook, Fiscal
Year 1995. 2. Geological Bulletin of Turkey, vol. 38, no.
2, 1995. 3. Bulletin of the Geological Survey of Japan,
vol. 47, nos. 5-8, 1996. 4. Publications of the Geological Survey of
Japan, 1996. 5. American Museum Novitates, nos. 3182,
3183 and 3184, 1996. 6. Science & Technology, Sept. 1996. 7. AAPG Explorer, Nov & Dec 1996 and Feb
1997. | <ol style="list-style-type: none"> 8. Bulletin of the American Museum of
Natural History, no. 229, 1996. 9. Tin International, vol. 69, no. 7 & 8, 1996. 10. AAPG Bulletin, vol. 80/12, 1996. 11. Institute of Geological & Nuclear Sciences
(New Zealand), Monograph 10 & 11 (1995),
12, 14 & 15 (1996). 12. Bulletin of the National Science Museum,
vol. 22, nos. 3 & 4, 1996. 13. U.S. Geological Survey, Bulletin, 1996: nos.
1969-A, 2083-A-K. 14. U.S. Geological Survey, Professional Paper,
1996: nos. 1266, 1421-B. |
|--|--|

GSM

Results of GSM Council 1997/98 Elections

The Election Officer, Dr. Lee Chai Peng, in his letter to the Council dated 16 January 1997, announced the results of the GSM Council 1997/98 elections for the 4 two-year Councillors posts.

A total of 121 ballots were received and the following are the successful candidates (in alphabetical order).

1. Azhar Hj. Hussein
2. Kadderi Md. Desa
3. K.K. Liew
4. Tan Boon Kong

Society's Homepage

The Society has a temporary website at:

<http://www.geocities.CapeCanaveral/Lab/4838/>

Members are invited to visit the site and give suggestions for items to be included or improvements.

The Society is at the same time looking for a permanent website.

Happy Surfing!

OBITUARY



Chung Sooi Keong
30.3.1929 – 10.1.1997

Chung Sooi Keong commonly known as S.K. passed away suddenly on 10 January, 1997. His demise was quite unexpected for only three months or so before he had tramped the mountains of Sabah helping an old colleague survey a reservoir site; a no-mean effort for his 67 years.

S.K. was born in Kuala Lumpur in 1929 and received his early education at King George V School in Seremban where he excelled both academically and in sports. In sports he was particularly good at hockey, rugby, badminton and soccer. He carried on playing hockey and rugby into his university days and had on many occasions represented St. George's College where he lived. In his later years he took up golf and quickly attained single handicap status. He had been on the practice tee the day before his tragic death.

S.K. set sail for his tertiary education on the "Charon" (better known as the *floating bathtub*) in February, 1951 and after 8 days of sailing (5 of which he was terribly seasick) he landed in Perth, Western Australia. He enrolled at the University of Western Australia and stayed at St. George's College. He assimilated quickly into college life and made many Australian and Asian friends many of whom he still remained in touch with till the end. He graduated in 1957 with B.Sc (Hons.) majoring in Geology and returned that year to join the Geological Survey of Malaya as a Temporary Geologist. He was confirmed on the establishment as Geologist in April 1961 and after a short period of post graduate studies at the University of Edinburg in Scotland he rose to Senior Geologist in July 1965, Principal Geologist in July 1966, Assistant Director in July 1967 and finally the first Malaysian Director-General in July 1968. He opted for early retirement in 1983 to join United Nation's CCOP as Director, Technical Secretariat and was based in Bangkok till his final retirement in 1985.

Upon his appointment as the first Malaysian Director-General of the Geological Survey of Malaysia for both East and West Malaysia, S.K. became an administrator and spent most of his time putting things right. Malaysia was going through rapid changes with the civil service being Malayanised with all the expatriate geologists leaving the Survey and their positions had to be replaced by Malaysians. He tapped most of the geologists among graduates from the University of Malaya and a few from overseas.

His congeniality gained co-operation and his ability gained respect from the staff and together they made the Geological Survey what it is today. In January 1973 the Headquarters of the Geological Survey moved to the Federal Capital, Kuala Lumpur leaving Ipoh as the geological centre where the physical work of geology and geological research remained.

The term of his Directorship also coincided with a period of increased exploration especially for oil. S.K. was involved in this exciting activity advising the Government and had also helped in the formation of Petronas, the national oil company. This was also a period of general increase in geological activities in the country and it was thought prudent to form a national geological society. S.K. was made a member of the Pro-tem Committee in 1966 and ultimately became Vice-President of the Geological Society of Malaysia for the period 1968-69. He was awarded a Honorary Fellowship of the Society in 1983.

S.K. made use of his administrative ability and diplomacy internationally as Director of CCOP Technical Secretariat in Bangkok where he co-ordinated geological research and development in Asia among the Asian countries. His work was well appreciated and when he finally retired the organisation found it difficult to select his replacement.

S.K. was well liked by everybody. He had always been very helpful to his friends. He was fair in his decisions and in his dealing with the people he worked with. He had never allowed his personal emotions to interfere with his judgement and decisions. He was always warmly welcomed whenever he visited the Survey after retirement. His demise is indeed a great loss not only to his loving family but also to the geological fraternity in Malaysia and Asia.

S.K. is survived by his wife Mee Ling, 2 sons and a daughter.

J.H. Leow

BERITA-BERITA LAIN Other News

Local News

Pahang mines yield RM55m in minerals

Minerals worth a total of RM54.9 million have been extracted from Pahang since 1991.

Deputy Mentri Besar Datuk Hasan Arifin said granite mining topped the list as the biggest earner for the government with RM31.9 million worth extracted from more than 10 quarries in the state.

"The liberal mining policies adopted by the government was instrumental in bringing more foreign mining companies to the state."

"The government is considering giving more incentives for gold mining companies to woo more foreign companies to mine the precious metal in central Pahang," he said in an interview at his office here yesterday.

Hasan, who is the investment and infrastructure committee chairman, also said that the government collected at least RM2 million in mining rights revenue from mining companies and this did not include equity profits.

Star, 5.1.1997

Digging of underground tunnel for LRT completed

The digging of a section of the 4.4 km tunnel beneath the city which will form the underground section of the Light Rail Transit (System Two) was completed on Friday.

The M\$680 million (S\$387.6 million) parallel tunnel project is being undertaken by concession holder Projek Usahasama Transit Ringan Automatik Sdn. Bhd., which had awarded the contract to two companies in equal proportion.

The Hazama Corporation is in charge of building the section between the Pasar Seni, Benteng, Sultan Ismail and the Kampung Baru stations while the Hyundai Consortium is in charge of the section covering the Kampung

Baru, KLCC, Ampang Park and Damai stations.

Hazama contract manager, Mr. Tak Oka, said the completed section was the 650-m 'inbound' tunnel between the Sultan Ismail and Kampung Baru stations.

"The other tunnel, the 'outbound' one from Sultan Ismail to Benteng, is also completed. A 650-m stretch has been dug and the rest of the 850-m tunnel is expected to be completed in March."

Covering 30 km, the LRT System Two will link the eastern and western suburbs of Kuala Lumpur from Lembah Subang depot to Taman Melati in Gombak.

S. Times, 5.1.1997

US experts to explore Mulu caves and jungles

A team of scientists and geologists from the United States will be coming to northern Sarawak soon to undertake a large-scale

expedition into the jungles and mountains of the Mulu National Park.

The main aim of the expedition team,

comprising 25 experts and seasoned travellers, is to unearth what has long been believed to be another huge undiscovered network of fascinating underground cave system.

Mulu National Park manager David Gill said the team was scheduled to arrive by the end of this month.

"The five-week expedition to Mulu is expected to start in February," he said after a briefing

session at the Royal Mulu Resort for officials from the state Ministry of Tourism, Merpati Intan Sdn. Bhd., Hornbill Skyways and the Royal Brunei Airlines.

The Mulu National Park is now home to the world's largest cave chamber and cave tunnel.

The last major expedition into the two million-year-old caves was in 1995.

Star, 6.1.1997

Pahang Cement expected to be fully operational by August

Pahang Cement Sdn. Bhd. is expected to be fully operational by August this year, producing some one million tonnes of cement produced worth RM200 million yearly.

Its operational manager Tan Check Hong said the company's plant in Bukit Sagu, Kuantan, was conducting tests on the facilities at present as Tenaga Nasional Bhd. had begun supplying power from Dec 26 last year.

He also said the plant was expected to employ some 100 people to operate the high-tech plant.

"The plant will be producing for the national market but its main ones are the east coast states," he said.

Tan told reporters this after signing an

agreement between Pahang Cement and Tenaga for the supply of 22MW electricity to its plant.

Pahang Cement were represented by Tan and its general manager M. Davindran and Tenaga by its Pahang regional manager Mohamed Ghazali Osman. Tenaga customer service general manager Datuk Mohamed Anuar Yusof witnessed the ceremony.

Pahang Cement is a 50:50 joint venture between YTL Corp. and the Pahang state government.

Work began on the plant started on September 1995 on 80 ha with investments worth some RM560 million.

Star, 7.1.1997

World-class beauty

Gua Tempurong near Gopeng in Perak is set to become a major tourist attraction when its natural beauty is lit up for visitors this year.

In an ambitious project which will cost RM650 million and span 12 years, Heritage Acres (a joint-venture between Yayasan perak and MKDV Sdn. Bhd.) aims to develop the place into a "world-class" attraction.

The first phase of development, which includes the construction of concrete walkways and the installation of lights costing RM2.6 million, will be completed by next month.

Heritage Acres' cave manager Stephen James Reilly said the development would protect the cave, adding that care had been taken to ensure minimal disturbance to the wildlife inside the cave.

"The cave and some of its formations are about one million years old. If they are destroyed we'd have to wait for another million years," he pointed out.

Gua Tempurong is a 2 km-long river cave inside Gunung Tempurong, an elliptical hill 25 km south of Ipoh, and close to the North-South Expressway.

This limestone hill has numerous caves of different shapes, sizes and lengths — mostly still not explored or surveyed.

In the cave are three huge chambers, connected by smaller chambers and the river. Above the river are high-level chambers which are still being explored.

According to Reilly, the caverns house rare collections of picturesque calcite crystals, the

size and beauty of which have been acknowledged by cave scientists and visitors alike.

"The cave also contains a diverse range of minerals and cave insects. They are truly extraordinary gifts of Nature," he added.

Discovered early this century, Gua Tempurong only became popular after the opening of the North-South Expressway.

During the Emergency, it was a favourite hide-out of communist terrorists; in the 60s there were attempts at tin mining. Today, it is a popular spot for cave enthusiasts.

The development plan is divided into two. The first is to provide better facilities for the cave; the second, a master plan, is to develop the Gunung Tempurong plain.

Star, 11.1.1997

More solid waste by 2000

Malaysians are expected to generate seven million tonnes of solid waste a year by 2000 compared to 5.5 million tonnes in 1995.

According to World Wide Fund for Nature Malaysia report entitled *Waste Management in Malaysia: Issues and Initiatives Related to Conservation of Biodiversity and Critical Habitats*, Malaysia's growing population and the increase in living standard would cause more than 19,000 tonnes of waste to be generated daily by 2000 compared to 13,500 tonnes in 1995.

"Studies show that by then, each person is expected to generate 0.95 kg of waste daily," WWF conservation director Dr. Isabelle Neermala Louis said when commenting on the report.

She said Kuala Lumpur and Selangor were expected to produce 8,000 tonnes of waste a day by 2000 and 11,700 tonnes by 2010.

She said most local authorities in Malaysia still dumped solid waste in landfills even though 80 per cent of the 230 sites in the country could no longer be used since 1992.

"Landfills are expected to remain the major waste disposal system because it is very much cheaper than incineration and composting," she

said.

Dr. Louis said it was increasingly difficult to obtain new sites within a suitable distance from waste generation areas while old ones faced closure because of commercial and residential development.

"This has emphasised the urgency for municipalities to secure new landfills before the existing ones are exhausted," she said.

She said the need for more sanitary landfills to deal with the increase in solid waste generation resulted in the degazettement of the forest reserve in Ayer Hitam, Selangor even though it was one of the few remaining forested areas in the state.

"The use of idle, undeveloped land as landfills should be encouraged as an alternative instead," she said.

Dr. Louis said studies had shown that garbage and paper accounted for 70 per cent of solid waste in the 1980s but in the 1990s, this amount was reduced by 15 per cent as plastics increased two-fold.

"Affluent and urban communities were found to produce more plastic and paper waste compared to rural areas," she added.

Star, 12.1.1997

Petronas and partners sign new PSC

The partners involved in the development of five gas fields in offshore Sarawak to produce and supply natural gas to the Malaysia Liquefied Natural Gas (MLNG) plant in Bintulu have signed a new RM14-billion production sharing contract (PSC).

The new PSC, between Petroliaam Nasional Bhd. (Petronas), Petronas Carigali Sdn. Bhd. and Sarawak Shell Bhd. (SSB), would take effect on April 1, 1997 till Dec 31, 2020.

(It replaces the old PSC signed between Petronas and SSB in 1976.)

Petronas president and chief executive Datuk Hassan Marican said the new PSC would optimise the production of gas from the five fields in the Central Luconia province.

"The new PSC, which results in the early termination of the old PSC meant to expire in 2002, will give leeway to the two contractors to go about ensuring a reliable and secure supply of natural gas to MLNG over the next 20 years or so," he said.

Hassan, who was speaking at the signing of the PSC in Kuala Lumpur yesterday, also witnessed the signing of a Joint Operating Agreement between Petronas Carigali and SSB.

This agreement would see both contractors taking up a 50:50 equity interest in the development and production of gas from the five fields, with SSB remaining as operator.

The new PSC would see Petronas Carigali and SSB investing a total of RM14 billion over the duration of the contract to install compression

facilities in three producing fields and develop the remaining two.

Hassan said SSB was retained in the new PSC as the company had been a capable partner and had kept to its word in effectively transferring technology to Petronas under the old PSC.

Most of the funding requirements under the new PSC would be generated from internal funds of both contractors, with minimum reliance on borrowed funds, said Shell Malaysia chairman and chief executive Megat Zaharuddin Megat Mohd Nor.

At the PSC signing, Petronas was represented by Hassan, SSB by Zaharuddin and Petronas Carigali by its managing director and chief executive officer Datuk Mohamed Idris Mansor.

Malaysia's current gas reserves stand at 80 trillion cu ft, with about 38 trillion cu ft each found in offshore Sarawak and Peninsular Malaysia, and the balance in offshore Sabah.

Star, 15.1.1997

Firm to boost output of titanium dioxide

Tioxide Malaysia hopes to increase its production of titanium dioxide to 75,000 tonnes a year, 15,000 tonnes more than the plant's "name-plate" capacity.

General manager (operations) Rozano Saad said increased production at their Telok Kalong plant would save the company the cost of building a new one.

"The increase in production is in tandem with the demand for titanium dioxide in the Asia Pacific region, which now stands at 100,000 tonnes a year for various grades of the pigment," he said.

He was replying to questions from members of the Terengganu Press Club who had earlier been briefed on the company's operations at its plant on the Telok Kalong industrial estate in Kemaman, Terengganu yesterday.

Rozana said Tioxide Malaysia produced high quality grades of titanium dioxide which were used as pigment in the production of quality paints and other industrial products.

The plant currently produces 40,000 tonnes of the pigment a year which is expected to increase to 50,000 tonnes by middle of the year. Some 30 per cent of its production is sold locally.

Tioxide Malaysia' overseas markets range from Asean countries to Japan, Korea, Taiwan, Hong Kong, India and Australia. The company is a wholly-owned subsidiary of the ICI Group of Companies.

In addition to titanium dioxide, Rozano said the plant had started commercial production of a by-product called copperas (ferric sulphate) which is used in the water treatment process and animal feed.

"We have started producing about 3,000 tonnes of copperas which will be exported to Coogee Chemicals of Australia, which is also our joint-venture partner in a project to set up a copperas factory in Telok Kalong."

"The new plant is expected to be commissioned this year and when commercial production starts, we will have another product that will contribute to the company's profits."

Rozana said the company was also trying to get the Department of the Environment's approval to produce white gypsum which is used in making plaster, panelling boards and ceilings.

He said white gypsum was still listed as a scheduled waste because it contained traces of radioactive elements.

"But I am confident that through discussion and information dissemination, people will understand that the by-product is not hazardous."
Similarly, he said red gypsum, which could

be used in road construction and civil engineering projects, had been piling up in the Tioxide Malaysia plant "because people were still sceptical about its safety".

NST, 18.1.1997 (?)

First occupants of twin towers

A total of 166 Petronas employees will become the first batch of occupants of the Petronas Twin Towers, the world's tallest buildings, when they move in and work there from Monday onwards.

They are a section of the 5,000-odd Petronas employees from the Klang Valley who will occupy the entire Menara Satu (Tower One) in stages and the move-in exercise is expected to be completed by August.

The two 88-storey Petronas Twin Towers, with a height of 451.9 metres from street level, are within the Kuala Lumpur City Centre (KLCC) which is being developed and form part of the Multimedia Super Corridor (MSC).

The buildings are 8.9 metres taller than the Sears Towers in Chicago, which were previously

the world's tallest buildings.

The twin-towers' structural works were completed at the end of last year — some four years after the project was launched by Prime Minister Datuk Seri Dr. Mahathir Mohamad on Sept 15, 1992.

The two buildings, Menara Satu and Menara Dua, are linked by a sky bridge on the 41st and 42nd floors. Each tower has 29 double deck high speed passenger lifts.

Petronas said the other staff would move onto the floors from ground level to the top from April onwards as partitioning and furnishing works were still in progress.

The twin towers will be officially opened at the end of the year.

NST, 25.1.1997

MB: Hot spring in Ulu Slim can be spa resort

The state government has identified a natural hot spring in Ulu Slim which can be turned into a holiday spa resort, said Menteri Besar Tan Sri Ramli Ngah Talib yesterday.

He said the hot spring would be developed through a joint venture between the relevant government agencies and the private sector.

"It is time for us to further exploit the state's natural hot springs for economic gains," he told reporters after visiting the hot spring here.

Ramli said the Ulu Slim hot spring is one of

the biggest among the 15 found in the state, spouting about 27 litres of hot water per second from the ground.

He said the site was suitable for development because about 400 ha of government land surrounding the hot spring could be developed to include a hotel and golf course.

He added that the name of the private company to be involved in the development project would only be announced later.

Star, 25.1.1997

Penang Hill balding by the day

Penang Hill is getting balder by the day and the islanders are worried.

Amidst the pockets of cleared land, a large scar — the size of several football fields — has

emerged, marring the greenery of Penang's most famous hill.

Over the past week, *The Star* has received several calls from the public voicing concern

over the fate of the hill.

"The hill is bleeding with red blotches exposed here and there. We want a Penang Hill with trees and not a laterite mount," cried an outraged nature lover B.C. Tan.

The diagonal cutting across the hillslope is believed to be due to illegal farming, which has been blamed for numerous landslides in the past.

When contacted, the authorities were in the dark over the recent bald patch which is believed to have expanded from a small clearing to its present size.

Checks with the Department of Environment (DOE) and Penang Municipal Council showed that there was no Environment Impact Assessment (EIA) approval nor any greenlight given for development projects on the hill.

Illegal hill farming is not new as Chief Minister Tan Sri Dr. Koh Tsu Koon had two years ago warned that the state government would close down such farms and put hillslope projects under scrutiny to prevent landslides and environmental degradation.

The recently completed Penang Hill Local Plan Report also described erosion risk at Penang Hill as severe, adding that the opening up of forest land and increase in agricultural activities had exposed bare soil to rain.

State DOE director Raja Rokiah Raja Saigon said excessive clearing would cause high surface run-off during wet weather.

"Soil erosion will increase, leading to sedimentation of streams and cause floods," she cautioned.

Star, 25.1.1997

Perak to preserve limestone hills

The state has directed the Mines Department to identify parts of the limestone range in the state which should be preserved for historical and tourism purposes.

Menteri Besar Tan Sri Ramli Ngah Talib said such scenic limestone areas would be protected from quarrying works.

He said the move was necessary as the limestone hills found in the state were among the best in the country.

"We believe that steps must be taken to preserve the caves for the future," he told reporters after breaking fast at his residence on Wednesday.

He was asked to comment on claims by a non-governmental organisation that some mining ponds in Keramat Pulai and Gunung

Rapat had been polluted by nearby quarrying works and the authorities should intervene to protect the remaining ponds.

Ramli said the department would carry out a survey to identify the caves to be preserved and that which could be used for quarrying works.

"We still need to carry out blasting in some limestone areas to supply gravel for roadworks and cement plants," he said.

He said the state also planned to look into the possibility of underground blasting to source for stones.

"This will make blasting less polluting to the environment," he said.

Ramli said the state government had stopped issuing quarrying licences four years ago to reduce blasting activities.

Star, 29.1.1997

Gold rush pushes sales up 50pc

Gold prices, now the lowest in the last three years, and the coming Chinese New Year and Hari Raya Aidilfitri have brought early celebrations to goldsmiths and jewellers as their sales recorded growths as high as 50 per cent.

Federation of Goldsmith and Jewellers Association executive secretary Shum Seng Kam

said that prior to festive season, most traders recorded increases of between 30 and 40 per cent over sales on normal days.

"Every time there is a celebration, the sale will increase. However, this time around, some traders have sales increased to 50 per cent than normal as the price of gold is at its lowest," he

said.

The price of gold of the 916 standard for this month is RM34 per gram, which is considerably lower than last year's RM36 per gram for the same month.

In the world market, gold is priced at US\$354 (RM885) per ounce (or 28.3 g) this month compared with the January 1996 peak of US\$418 (RM1,045).

Shum said gold buyers should take the opportunity to buy and invest in gold, adding that "now should be the lowest point (price)."

Vernon Siow jewellery shop branch manager said customers started buying more gold since last September when the price was first down to RM34 per gram.

"From then on, customers have bought gold to celebrate Christmas and now for the Chinese

New Year and Hari Raya, and they are likely to buy for Valentine's Day also," he said.

On the customers' purchasing trend, he said the Chinese would buy gold or jewellery for specific reasons such as festivities, weddings, birthdays, gifts or anniversaries.

He said the Chinese also believed that buying gold for the Lunar New Year would bring luck in their life, business or career.

"Malays, however would buy them at any time for their own use. Indian customers prefer their own traditional designs," he added.

Siow said that at present the popular designs among customers, regardless of their race, are the modern creations, especially the ones with mixed white and yellow gold.

"The design is popular among the younger generation."

Star, 30.1.1997

Esso's Lawit A to begin sale of gas in April

Esso Production Malaysia Incorporated's largest gas production platform, Lawit A, is expected to begin its first sale of gas by April.

EPMI technical manager Zainal Abidin Jalil said production drilling would commence on Feb 1.

At present, work to transfer the drilling equipment for the platform from a barge has been completed.

"We expect between 30 million and 40 million scf/d (standard cubic feet per day) to be produced from the first well," he told reporters during a visit to EPMI's Lawit A platform, located about 240 km off the coast of Terengganu near Kerteh on Monday.

Zainal said in nine months a total of 28 wells would be producing gas. This would enable

Lawit A to produce some 450 million scf/d based on free flow.

"By August next year, our compression unit, utilising the RB211 Rolls Royce turbine engines, similar to ones used on the Boeing 747 jetliners, will be commissioned."

"This will further boost Lawit A's output to its maximum 700 million scf/d," he said.

The RM2 billion Lawit A gas production platform will be the largest platform built by EPMI. It will be 100 metres long and 38 metres wide.

Development of the Lawit field is also Esso's second major gas project in Malaysia under the National Gas Project Sales Agreement with Petronas. Its first was the Jerneh field, said to be the biggest gas field in the Malay Basin.

Star, 30.1.1997

Pahang Cement to expand plant if demand increases

Pahang Cement Sdn. Bhd., a joint venture between YTL Industries and the Pahang Government, will immediately expand its plant in Bukit Sagu, 50 km from Kuantan, should its production capacity of one million tonnes per annum not meet demand.

The first production line of the RM500 million venture located on an 80 ha area, is expected to commence operation in August, 14 months ahead of schedule.

YTL managing director Datuk Francis Yeoh said the second line could be set up within 15

months on a 40 ha site in a same area. It would have a similar capacity as the first line.

"The plant will initially serve the East Coast States. If demand increases, we will start building the second line," he told reporters after accompanying Menteri Besar Tan Sri Mohd Khalil Yaakob on a visit to the plant.

Yeoh said the presence of the plant in the region would help boost development in the eastern corridor.

He said Pahang Cement was also eyeing the Indo-China market, especially Vietnam, which was being reconstructed at a frenetic pace.

Yeoh said the company was also identifying other areas in Pahang where there were large deposits of limestone for the company's expansion.

Limestone deposits at the Bukit Sagu plant are enough to cater for the company's operation for the next 60 years, if it continues to operate on a single production line.

"Machinery for the plant is in place. We hope to start the no-load run by end of March or early April and have it commissioned in June before commencing operation in August," he said.

He said as most of the operations of the plant would be automated, it would have a workforce of 110 only. Under normal circumstances, a plant of that size would require 330 workers.

Meanwhile, Khalil said he was confident that the cement plant was a viable venture due to the growing demand for cement, especially with the inflow of numerous investments to the eastern corridor.

NST, 31.1.1997

Tunnel option to link Penang with mainland

A 3.5 km underwater tunnel linking the Butterworth-Kulim highway with Weld Quay on Penang island is one of two options submitted by Penang Bridge operator Mekar Idaman as the third island-mainland link.

State Infrastructural Facilities, Transportation and Communication Committee chairman Datuk Dr. Hilmi Yahaya said the other option is a 14 km bridge linking Batu Maung with batu Kawan on the mainland.

The state government is studying both proposals and will make its decision in a few months.

Hilmi said the building of the third link has to be expedited because of the massive traffic jam on the Penang bridge.

The bridge is expected to reach its full

capacity before 2,000, he said at the Penang Island Municipal Council's Gong Xi-Raya open house.

Among those present were Yang di Pertua Negri Tun Hamdan Sheikh Tahir, his wife, Chief Minister Tan Sri Dr. Koh Tsu Koon and his wife.

Hilmi said both options had their merits but if the second option will help spur development in Batu Kawan and Batu Maung.

Hilmi also said that the National Hydrographic Institute Malaysia is conducting a study on the proposed tunnel and the impact of a Kedah land reclamation project in Penang waters.

"We can only decide on the tunnel proposal after that," he said.

Sun, 12.2.1997

Pahang plans to sell water to Selangor, Negri and Singapore

Pahang will start supplying water to Selangor, negri Sembilan and Singapore by the year 2000, Deputy Menteri Besar Datuk Hasan Ariffin said today.

He said the three States were expected to experience a water crisis between 2000 and

2010.

He said the State Government had engaged a Kuala Lumpur-based consultant, Syed Mohammad, Hooi & Binnie Sdn. Bhd., to study how the resource could be exported.

The consultant has also been entrusted with

completing the design and EIA report of a RM300 million dam that will be constructed in Sungai Chereh, in the Sungai Lembing district.

Hasan said Pahang would collaborate with Syarikat Air Johor in supplying water to Singapore. It would also work closely with Puncak Niaga, the company undertaking the privatisation of water supply in Selangor.

He added a committee had been formed to study and manage related aspects of the sale to the State and the republic.

It is understood that a committee has also been formed at the Federal-level on supply to Singapore.

The committee comprises high-ranking officers from the State Government, Economic Planning Unit of the Prime Minister's Department, Treasury and the Johor Government.

By 2000, it is projected that Singapore would need 220 million litres of water daily with demand doubling by 2010.

Hasan added that exports notwithstanding, Pahang would ensure sufficient supply for its

domestic and industrial users.

Hasan, who is also Pahang Industries and Basic Utilities Committee chairman, said the State Government agreed to the sale after it was found to be viable and beneficial.

"We know the demand for water will increase tremendously in the years to come."

"However, the State Government will make sure that industries are not disrupted due to insufficient supply."

On the Sungei Chereh dam, he said it would be capable of supplying about 200 million litres of water per day.

Besides the dam, three rivers, — Sungai Pahang, Sungai Rompin and Sungai Kuantan — have also been listed as the State's main water source.

The three rivers have a combined catchment area of 35,000 square kilometres.

"These rivers are set to make Pahang the biggest water supplier in the country. Water from these rivers is more than sufficient to meet not just the needs of Pahang residents but also those in other States,"

NST, 15.2.1997

'Buffer zone for quarry' idea rejected

The Perak Government has rejected a proposal for buffer zones between quarries and development projects.

Menteri Besar Tan Sri Ramli Ngah Talib said the operators, who submitted the proposal, and residents had no choice but to bear being close to each other because prime land was becoming scarce.

"Development and quarries in the state must co-exist," he said.

Ramli said development projects were planned and approved after taking into consideration the location of the quarries.

Due to the growing scarcity of land, especially in the city, all land should be utilised and not wasted, Ramli said.

"At the same time, we need natural resources for the economic development of the state. These also must be exploited."

"So I hope there will be no need for buffer zones to separate development and the quarries," he said yesterday.

Ramli was commenting on the Perak Quarry

Association's appeal for the state government to keep development areas at least one kilometre away from quarries so that they would not encroach on quarry works.

The association also said that several quarries were forced to close after neighbouring areas were converted for industrial and residential use.

To satisfy residents living near quarries, Ramli said, the Mines Department had instructed quarries to keep vibration and noise levels caused by blasting within the permissible limits.

"With the latest technology, this is possible," he said.

He said the effects of vibrations caused by blasting at quarries were now below the permissible limits of 3.5 mm a second.

The noise caused by the blasting is also below the permissible level of 125 decibels.

Ramli added that the state government was also very strict with the volume of dust produced during the blasting.

Star, 15.2.1997

Pahang bans export of river stones

Pahang has banned the export of river stones from the state with immediate effect to safeguard the environment.

State Fisheries and Agriculture Committee chairman Datuk Tan Aminuddin Ishak said the decision, which was made during the recent executive councillors meeting, also included the banning of sand exports as decided by the Federal Government.

"We want to ban such exports because it has been found to cause many environmental problems."

"The extraction of stones will alter the course of the river and lead to flood and siltation," he said in an interview.

Tan Aminuddin said that this decision came following the environmental destruction of a river in Rompin after thousand of tones of stones were exported to a neighbouring country.

The operations have ceased after the

government intervened.

"This has prompted the government to really look into the matter seriously as the works at the river had caused several problems," he added.

Tan Aminuddin also said a contractor had to get the approval from the Drainage and Irrigation Department and the Department of Environment before extracting any commodity.

The approval is to be submitted to the exco for decision.

"The government wants to preserve rivers as the heritage of the state and any work near them will certainly mar the beauty of the rivers," Tan Aminuddin said.

He said the government would study in detail all applications by any contractors or individuals who intend to extract the stones for development purposes.

He also warned that those caught extracting stones illegally would be severely dealt with.

Star, 15.2.1997

Malayan Cement's RM800m expansion

Malayan Cement Bhd. expects to maintain its 30 per cent share of the increasingly competitive cement manufacturing industry, with the completion of an expansion programme this year.

Managing director Jeffery C. Pope said the company which has been a leading supplier since its inception in 1953, plans to maintain its position in line with the increasing demand for cement.

The RM800 million expansion programme would improve the company's profitability from this year, Pope told reporters after the company's extraordinary general meeting in Kuala Lumpur yesterday.

He said a new plant belonging to an associate company Associated Pan Malaysia Cement Sdn. Bhd. in Kanthan, near Ipoh, Perak would be

commissioned in the middle of this year.

The plant will have an annual capacity of 1.8 million tonnes of clinker (a mixture of rocks which is ground into cement), increasing APMC's capacity to 4.6 million tonnes of clinker per year.

Last year, the demand for clinker in Peninsular Malaysia was 13.3 million tonnes.

Pope added that a grinding plant in Pasir Gudang, Johor, by Southern Cement Industries Sdn. Bhd. which is a subsidiary of APMC, was already selling cement and would be fully commissioned in mid-year.

Finally, a bulk import terminal on Pulau Damar Laut in the Jurong Port area in Singapore, by associate company Pan Malaysia Cement Works (S) Pte. Ltd., would be operational by year's end.

Star, 18.2.1997

MMC to take part in oil exploration in Sulu sea

Malaysia Mining Corp. is joining a foreign and local consortium to explore and drill oil off the coast of Sulu, 1,000 km south of Manila, an official source disclosed today.

A Department of Energy official, who asked not to be named, said Malaysian Mining Corp. was one of two foreign companies tapped by consortium leader American exploration firm Atlantic Richfield Corp.

The other is Germany's Prussag which, the source said, is a highly diversified conglomerate with an annual turnover of over US\$30 billion (RM75 billion).

Malaysian Mining Corp. is the second Malaysian company to engage in oil exploration

in the Philippines. The first was Petronas which has linked up with the state-owned Philippines National Oil Company.

The Sulu project is estimated to initially cost the group US\$16 million, 85 per cent of which will be shouldered by Arco, Malaysian Mining Corp. and Prussag and 15 per cent by their Filipino partners.

The official said the newly formed group, which has yet to submit its drilling programme to the DOE, has a good chance to strike oil in the Sulu sea in southern Philippines.

"It is near Malaysia's proven vast oil fields," he said, adding Sulu has long been tagged by the DOE as potentially oil-rich based on its survey.

NST, 20.2.1997

Highway go-ahead

Datuk Seri Dr. Mahathir Mohamad said the proposed highway linking the peninsula's three highland resorts will be built with minimal environmental damage.

The Prime Minister said the Government would go ahead with the project and hoped that those who often harped on environmental issues, including certain non-government organisation (NGOs), have a more balanced perception of such development.

"We have to allow the highlands to be developed if we want to give the common folk the opportunity to enjoy the cool climate and beautiful view," he said when launching the Genting Highlands Resorts 3.4-km cable car system called *Genting Skyway*, reputedly the region's longest and fastest monocable-car system.

The cable car system links Gohtong Jaya to Highlands Hotel, the resort's newest hotel located 2,000 m above sea level. The ride takes about 15 minutes.

Dr. Mahathir said without development, the highlands would not be accessible to the common folk who could not afford to travel abroad to places where such climate and scenery were available.

He said this was what motivated the Government to continue with its policy to develop the highlands.

The proposed highway would link Genting

Highlands, Cameron Highlands and Fraser's Hill.

He said the Government would not cut the mountains indiscriminately but map out routes carefully to minimise cutting.

"A little bit of the highlands would have to be sacrificed but it would be minimal."

Dr. Mahathir said the sacrifice was necessary. "We want to open up the highlands and make it accessible."

"What is the point of having such beautiful and cool highlands if we cannot enjoy them?"

"It will be like telling a child how nice and tasty an ice-cream is but not allowing him to taste it," he said.

"Some people who are against developing the highlands tell us that it is good to have money but we should not spend it."

"We look at it differently we should spend our money, to buy food and other things, as well as enjoy it."

"What is important is we must spend wisely," he said.

Dr. Mahathir said he hoped that those who always harped on environmental issues would have a more balanced perception.

"We do not chop down hills in order to develop. We are not fanatical about development," he said.

Star, 22.2.1997

Terengganu plans to mine silica

The state government plans to venture into silica sand mining and processing in a joint venture with a Japanese company this year.

Menteri Besar Tan Sri Wan Mokhtar Ahmad said yesterday a processing plant, estimated to cost between RM18 million and RM20 million, would be set up soon.

"We have identified three sites in Dungun which have large deposits of silica," he told reporters after receiving Japanese Ambassador Issei Nomura, who was on a two-day official visit to Terengganu, at his residence here.

Wan Mokhtar said the Lands and Mines Department had identified vast deposits of silica totalling about 20 million tonnes along the

state's coastal areas.

There is high demand for silica, which is used to make glass, microchips and construction material.

Wan Mokhtar said the project could help to save billions of ringgit in foreign exchange for Malaysia, which now imports silica.

This is the second silica sand mining project in Terengganu after a Sirim subsidiary company which has been licensed to mine it at Rantau Abang.

The Menteri Besar said the joint-venture project was part of the state's move to attract more investment from Japan.

Star, 24.2.1997

Hill highway EIA report 'ready in a year'

The environmental impact assessment (EIA) report on the proposed highway linking the peninsula's three highland resorts — Genting Highlands, Cameron Highlands and Fraser's Hill — is expected to be ready in a year.

Works Minister Datuk Seri S. Samy Vellu said the RM3.5 million EIA study would start this month.

"The preliminary report of the EIA, however, has been completed," he said after receiving the key to the ministry's new building at the Works Complex yesterday.

On Wednesday, Prime Minister Datuk Seri Dr. Mahathir Mohamad said the Government

wanted work on the proposed highway speeded up as any delay would lead to an increase in cost.

On the ministry's new RM87 million building, Samy Vellu said it was the first government building built according to the build-operate-transfer system.

Under the system, a private firm, Nilai Cipta Sdn. Bhd. would build, maintain and eventually sell the Works Complex to the ministry at the end of the 13.5-year concession period.

During the period, the ministry would pay a monthly instalment of RM1.2 million and maintenance to Nilai Cipta.

Star, 28.2.1997

Moggie: Pergau dam to be ready on time

The Pergau hydroelectric dam project will be completed on time, said Energy, Telecommunications and Post Minister Datuk Leo Moggie.

He said the project's schedule would not be delayed despite financial claims the contractor has brought up.

The design and construction of the dam was awarded to Kerjaya Balfour Beatty Cementation Sdn. Bhd., a Malaysian-British joint venture, in 1991. The dam is expected to be completed this

year.

Responding to reports that the cost to build the dam would exceed RM2 billion, Moggie said the contractor and Tenaga Nasional Bhd. had managed to keep the cost below that figure.

The project, which had been dogged by controversy, is estimated to cost about RM1.9 billion upon completion.

It was normal for a contractor to impose fresh claims during construction, Moggie told reporters yesterday after witnessing the signing

of a power purchase agreement between Powertron Sdn. Bhd. and Sabah Electricity Board.

Powertron is the largest independent power producer in Sabah. It will build a plant with a 132MW capacity which will supply about 40 per

cent of the power needs of the state. The RM345 million project is expected to begin commercial operations by April next year.

Moggie said the people of Sabah could expect an improvement in power supply once the Powertron plant goes onstream.

Star, 28.2.1997

Move to preserve limestone hills hailed

People here have welcomed the state government's move to stop quarrying activities near the Minex pool.

They described it as a vital step to preserving the natural beauty of the limestone hills there, despite much of the area already damaged by various human activities.

The hills here are home to various unique plant species and are proof of the archaeological heritage of the valley.

Pre-historic paintings, fossilised bones, hidden valleys, cave fruit bats and the shy and elusive serow are all part of the heritage of these hills.

However, the surrounding hills are directly threatened by limestone and granite quarries supplying material to the booming construction industry here.

One unique place under threat is the hidden kilometre-long Paradise Valley which is completely surrounded by limestone hills, hiding it from the residential areas of Gunung Rapat and Simpang Pulai.

The access to the valley is through a small gap in the hills.

Another unique spot near the hill is the Minex pools, along Jalan Gopeng, where iron ore

mines were once run by the Minex Cooperation.

The iron mines have since been filled by water which has created the crystal clear lakes that reflects the surrounding hills nearby.

The only access to one of these pools is through a 100-metre tunnel which was created for the mining activities.

Other pools, separated by the hills, are not easily accessible except one that can be reached by squeezing through a small cave.

This particular pool has been affected by blasting activities and the water is littered with fallen rocks.

There were plans to develop Paradise Valley into an exclusive recreational park but abandoned because of the quarry activities on the other side of the surrounding hills.

A marble quarry and a limestone quarry are blasting off the eastern and southern slopes of the hills.

Menteri Besar Tan Sri Ramli Ngah Talib said yesterday the quarries near the pool will be told to stop operations to prevent further damage to the area.

The Gua Panjang believed 3,000 years old and Gopeng hill with big cat fossils need preservation.

Sun, 28.2.1997

GEOENV '97
International Symposium on
Geology and Environment
 September 1-5, 1997
 Istanbul

GEOENV '97

50th Anniversary of the Geological Congress of Turkey
3rd Circular

SYMPOSIUM HIGHLIGHTS

Place, Date, and Language

Istanbul Technical University-Maçka Facilities
 September 1-5 '97, Istanbul-TURKEY
 Language of the Symposium is English.

Technical program

28 Scientific sessions in 5 themes
 6 Short courses
 3 Keynote lectures
 2 Panels
 1 Round table discussion
 2 Post symposium excursions

Themes

- I. Environmental geology, geophysics, and geochemistry
- II. Environmental science and technology
- III. Environmental pollution
- IV. Environmental health, management, policy, and law
- V. Surface and near-surface science and technologies

Short courses

- I. Acid mine drainage
- II. Landslide related environmental problems
- III. Electron microscopy techniques in environmental science and technology
- IV. New strategies and tactics in image analysis
- V. A guide to cost-effective environmental applications of electrical and electromagnetic methods
- VI. Mining, geosciences, and environmental

engineering on the internet

Publication

Selected papers are planned to be published in a journal covered by SCI.

Social program

Ice-breaker party, opening ceremony, reception, highlights of Istanbul, Turkisi night, farewell party, and additional activities.

Registration

\$250 until June 15, 1997
 \$350 after June 15, 1997

Deadlines

Abstract: May 31, 1997
 Full manuscript: September 1, 1997

Web site

<http://www.info-mine.com/events/access/970901geo.html>

Correspondence

GEOENV '97

I. Yilmazer, Symposium Secretary
 Bayindir Sokak 7/1, Yenisehir 06410,
 Ankara, TURKEY

Phone: 90-312-435-0717

Fax: 90-312-434-2388

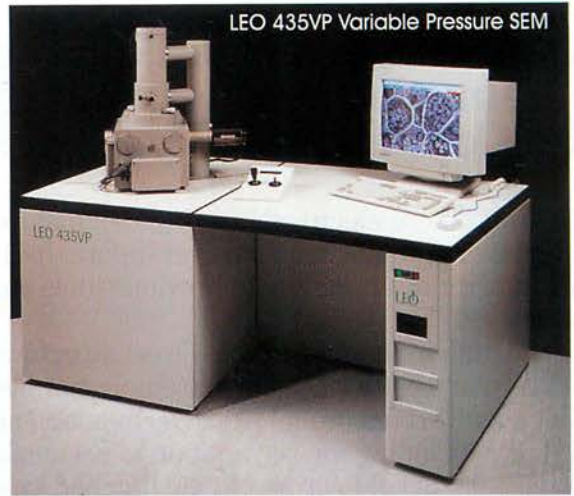
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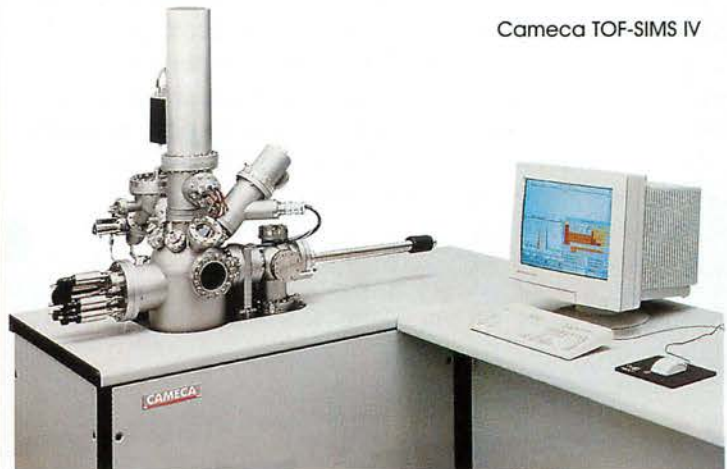
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● Transmission Electron Microscopy (TEM)

● X-Ray Microanalysis System (EDX, WDX)

● Scanning Probe Microscopy (STM, AFM)

● Real Time Micro-Focus X-Ray Imaging

● Secondary Ion Mass Spectrometry (SIMS)

● Electron Probe Microanalysis (EPMA)

● Vacuum Technology (Pumps, Leak Detectors, Components)

● Thin Film and CD Measurement

● Image Processing and Analysis



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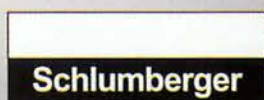
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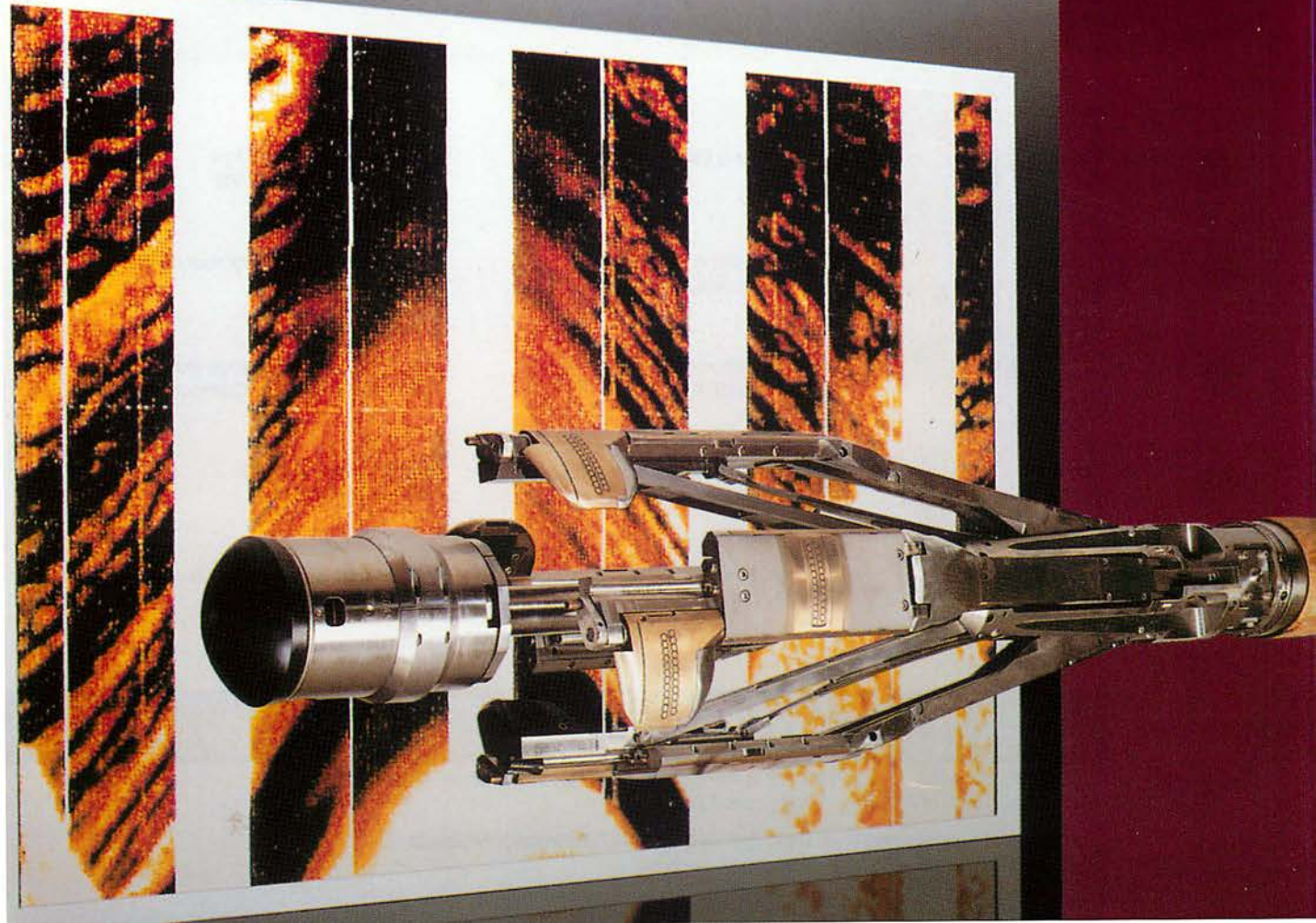
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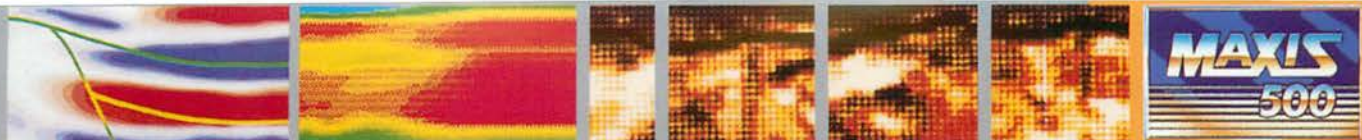
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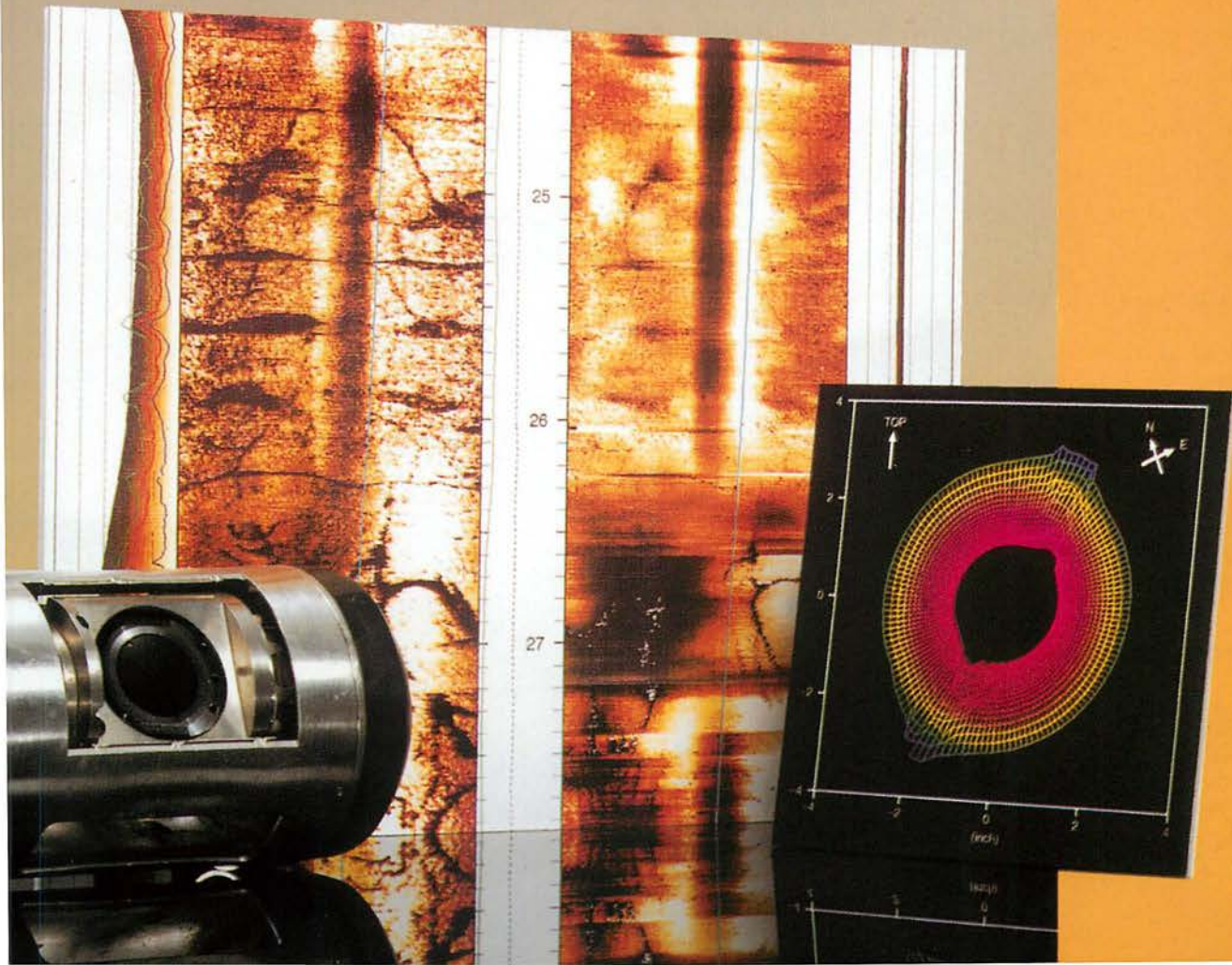
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Jalan Sultan Ismail, 50250 Kuala Lumpur, Malaysia.
Tel: (03) 2485533, 2485621, 2485947. Fax: (03)2421291. Telex: SCHLUM 31336 MA.

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GEOSEA '98

ANNOUNCEMENT

Ninth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia

Kuala Lumpur, Malaysia • 17–19 August 1998

The Geological Society of Malaysia is organising the GEOSEA '98 in Kuala Lumpur from 17 to 19 August 1998. The GEOSEA Congress is held triennially in Southeast Asia and it offers an excellent opportunity to exchange scientific and technical information and advancement in geology, mineral and energy resources among geoscientists from within and outside the region. The GEOSEA Congress is a premier geoscientific event in the region and has been well attended by the geoscientific community world-wide.

The technical program of GEOSEA '98 consists of oral and poster presentations on geology and related aspects of the GEOSEA core region – Brunei, Cambodia, Indonesia, Hong Kong, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand and Vietnam. A scientific and technical exhibition will run concurrently with GEOSEA '98, displaying the latest state-of-the-art products and systems.

Other related activities include pre- and post-conference workshops, short courses and geological fieldtrips. Social events and tours for delegates are also available.

Make a note in your diary and join us in Kuala Lumpur for GEOSEA '98.

For further information, please 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) 756 3900
Email: geologi@po.jaring.my



GEOLOGICAL
SOCIETY OF
MALAYSIA

Look out for the First Circular
due to be out in January 1997

Vienna '97

AAPG INTERNATIONAL CONFERENCE & EXHIBITION

September 7–10, 1997

Austria Center Vienna

The American Association of Petroleum Geologists

an international geological organization

Host: The Austrian Geological Society

CONFERENCE SCHEDULE

All events will be held at the Austria Center Vienna unless otherwise noted.

Wednesday, September 3

6:00am Field Trip #1 departs: Cross Section through the Oil and ...

Thursday, September 4

8:00am Field Trip #2 departs: Vienna Basin Frame and neogene Fill ...

Saturday, September 6

8:00am–5:00pm Registration open
 8:00am–8:00pm Field Trip #3: Triassic Carbonate Platform, Rax Plateau
 8:00am–9:00pm Field Trip #4: Alpine Tectonics, Sedimentology, ...
 9:00am–5:00pm Short Course #1: Exploration Risk Analysis for Managers
 9:00am–5:00pm Short Course #2: Characterization of Heterogeneous ...
 7:00pm–11:00pm International Pavilion Dinner at "Rennverein" (by invitation only)

Sunday, September 7

8:00am–8:00pm Registration open
 9:00am–5:00pm Short Course #1, continued
 9:00am–5:00pm Short Course #2, continued
 1:00pm–5:00pm Speakers' Service Center open
 3:30pm–5:00pm Opening session
 5:00pm–8:00pm Opening Reception held throughout Exhibition

Monday, September 8

8:00am–6:00pm Registration open
 8:00am–9:00am Judges' Breakfast
 8:00am–9:00am Speakers' Breakfast
 8:00am–9:00am Poster Presenters' Breakfast
 8:45am–6:00pm Speakers' Service Center open

8:55am–12:00noon Technical Program and Oral sessions
 9:00am–6:00pm Judges' Room open
 9:30am–6:30pm Exhibition and Poster Sessions
 12:15pm–1:30pm Special Session
 1:55pm–5:00pm Technical Program and Oral Sessions
 5:00pm–6:30pm Exhibition Reception
 6:00pm–8:00pm Student Reception at Hotel Inter-Continent (by invitation only)
 7:00pm–10:00pm Optional "Heurigen" evening

Tuesday, September 9

8:00am–6:00pm Registration open
 8:00am–9:00am Speakers' Breakfast
 8:00am–9:00am Poster Presenters' Breakfast
 8:45am–6:00pm Speakers' Service Center open
 8:55am–12:00noon Technical Program and Oral sessions
 9:00am–6:00pm Judges' Room open
 9:30am–6:00pm Exhibition and Poster Sessions
 12:15pm–1:30pm Special Session
 1:55pm–5:00pm Technical Program and Oral Sessions
 7:00pm–8:30pm Lord Mayor's Reception at "Rathaus"

Wednesday, September 10

8:00am–12:00noon Registration open
 8:00am–9:00am Speakers' Breakfast
 8:00am–9:00am Poster Presenters' Breakfast
 8:45am–6:00pm Speakers' Service Center open
 8:55am–12:00noon Technical Program and Oral sessions
 9:00am–6:00pm Judges' Room open
 9:30am–6:00pm Exhibits and Poster Sessions
 12:15pm–1:30pm Special Session
 2:00pm–4:40pm Oral Sessions
 4:30pm–6:00pm Closing Reception held throughout Exhibition
 7:25pm Field Trip #5 departs: Diagnostic Features of Marine ...

Thursday, September 11

- 7:30am Field Trip #7 departs: Hydrocarbon Potential of the ...
- 8:00am Field Trip #8 departs: Potential Source Rocks and ...
- 8:30am Field Trip #6 departs: Triassic Carbonate Platforms ...
- 12:00noon Field Trip #9 departs: Compressional (Overthrust ...)

- TBA Field Trip #10 departs: East Carpathian Bend Area ...
- 8:00am-5:00pm Short Course #3: Siliciclastic Sequence Stratigraphy ...
- 9:00am-4:00pm Short Course #4: Continental Wrench-Tectonics and ...

Friday, September 12

- 8:00am-5:00pm Short Course #3, continued
- 9:00am-4:00pm Short Course #4, continued

TECHNICAL PROGRAM SUMMARY

Monday, September 8**Morning Oral**

- Doing Business in the CIS
- Clastic Depositional Systems
- Carpathian Thrustbelt and Its Foreland — New Concepts of Hydrocarbon Exploration I
- GEO 96/Selected Papers from the 2nd Middle East Geoscience Conference

Poster

- Revitalizing Old Fields
- Unconventional Oil and Gas
- Hydrocarbon Potential of the Central Eastern European Countries I
- Integrated Reservoir Studies
- Reservoir Simulation
- Hydrocarbon Potential of the Caspian and the Black Sea Regions I
- Gas and Gas Storage I
- Gas and Gas Storage
- Petroleum Geology of Pakistan

Afternoon Oral

- Petroleum Geology of Russia I
- High-Resolution Stratigraphy — Sequence Stratigraphy
- Exploration Implications of Regional Variations in Source Rock Organic Facies
- Petroleum Geology of the Middle East

Tuesday, September 9**Morning Oral**

- Doing Business in Azerbaijan and Iraq
- Hydrocarbon Potential of the Central Eastern European Countries II
- Reservoir Compartmentalization: The Best of the 1996 AAPG/EAGE International Research Symposium
- Carbonate Reservoir Systems

Poster

- Carpathian Thrustbelt and its Foreland — New Concepts

- of Hydrocarbon Exploration II
- Petroleum Geology of Austria
- Miocene Dynamics of the Alpine-Carpathian-Pannonian System
- Tectonic Modelling
- Petroleum Geology of the Eastern Mediterranean and North Africa
- Environmental Solutions in the Oil Business
- Applications of High-Resolution Stratigraphy in Reservoir Simulation
- Comparing Foldbelts

Afternoon Oral

- Hydrocarbon Potential of the Caspian and the Black Sea Regions II
- Central Asia/China: Tectonic Controls on Hydrocarbon System
- Results of Selected European Hydrocarbon Projects
- Data Acquisition and Processing in Complex Area

Wednesday, September 10**Morning Oral**

- Doing Business in Africa
- Exploration Experience in NW Europe
- Assessing and Coping with Exploration Risk
- Abnormal Pressure — A Tool in the Search for Hydrocarbons

Poster

- Interpreting Complex Structures
- Petroleum Geology of India
- Siliciclastic Sequence Stratigraphy
- Geological Interpretation of Borehole Imagery: LWD, Geosteering
- Horizontal Wells — Integrated Cast Studies
- Remote Sensing — An Exploratory Tool
- Petroleum Geology of Russia II
- 3-D Geological Models for Reservoir development

Afternoon Oral

- Petroleum Geology of the West African Margins
- Fractured Reservoirs
- Estimating Reserves
- Data Base Management

REGISTRATION INFORMATION

**Preregistration Deadline:
July 25, 1997!**
Fastest Way to Register:

By Fax: (800) 281-2283 (U.S. and Canada only)
(918) 560-2684

CREDIT CARD USE ONLY. Fax the registration form found in the back of this announcement directly to the AAPG convention department. Our fax line is open 24 hours. DO NOT SEND ANOTHER COPY BY MAIL. Registration will NOT be processed without credit card information!

Other Ways to Register:
By Mail:

Mail the registration form found in the back of this announcement — with payment — to either of the following addresses:

AAPG International Conference
P.O. Box 979
Tulsa, OK 74101-0979 USA

or

AAPG International Conference
1444 S. Boulder
Tulsa, OK 74119-3604 USA

By Phone: (918) 560-2617

AAPG MEMBERS USING CREDIT CARDS ONLY. Have your member number and complete information handy. DO NOT SEND ANOTHER COPY BY MAIL.

Changes, Cancellations, and Refund Procedures

If there are any changes in your registration or reservations, contact the AAPG convention department either by fax or mail. **Changes and cancellations must be made in writing. No changes or cancellations will be accepted by telephone.** All cancellations for registrations or events must be received **in writing at AAPG by July 25, 1997.**

All total cancellations will be assessed a \$25.00 cancellation fee. Refunds will be made on registration fees, events, short course, and field trips only until **July 25, 1997. After July 25,** no refunds will be issued.

Registration Fees

	Advance	On Site
AAPG Member	US\$390 + 20% VAT	US\$440 + 20% VAT
Non-Member	US\$440 + 20% VAT	US\$490 + 20% VAT
Student	US\$40 + 20% VAT	US\$40 + 20% VAT
Spouse/Guest	US\$100 + 20% VAT	US\$100 + 20% VAT
One-Day	N/A	US\$160 + 20% VAT

TEA 97
International Conference
 &
Sino-American Symposium
 on
Tectonics of East Asia

To be held in
Chungli, Taiwan
3-5 November 1997

Convened by
National Taiwan University
National Central University
University of Connecticut

FIRST ANNOUNCEMENT
 &
CALL FOR PAPERS

East Asia is an area rich in active tectonic environments. From the collisional orogen of the Himalayas and the Baikal rift basin to the islands arcs and marginal seas of the western Pacific, East Asia provides a suite of unique natural laboratories for understanding lithospheric deformation and mantle dynamics at all scales. East Asia is also home to nearly a third of the world's population and these communities are threatened annually by the most severe earthquakes, volcanic eruptions and tropical storms on Earth. An international conference on the Tectonics of East Asia is therefore both relevant and timely, and it will provide the global scientific community with the opportunity to define well-focused research objectives for the 21st century.

MAIN THEMES

In view of the scientific achievements in the past decades and the potential for future research, the main themes of the conference will be:

1. *Lithospheric Structures and Mantle Dynamics,*
2. *Collision Tectonics and Mountain Building Processes,*
3. *Island Arcs and Marginal Seas,*

4. *Natural Hazards and Resources, Global Change, and Related Topics.*

Presentations related to the above themes of East Asia and its neighboring areas are all welcome. The titles of conference sessions will be determined according to the papers submitted.

ABOUT THE CONFERENCE

The conference will be held at National Central University in Chungli on November 3-5, 1997. The conference language will be English. The registration fee, which includes the cost of the abstract volume, coffee, and social activities, will be about US\$100.

Three field excursions are planned for the conference. The cost is around US\$80 per day, which covers transportation, lodging, and food.

The topics of the excursions are:

- I. *Anatomy of the Taiwan Mountain Belt (7 days)*
- II. *Island Arc System and Volcanism of East Taiwan (6 days)*
- III. *Active Tectonics and Geophysical Research of Taiwan (4 days)*

To assure attendance to the conference and receipt of the 2nd circular, interested persons are advised to return the attached preliminary registration form by March 10, 1997. Details about the conference venue, hotel bookings, pre- and post-conference excursions, etc. will be in the 2nd circular.

IMPORTANT DEADLINES

Return of Preliminary Registration Form	March 10, 97
Dispatch of 2nd Circular	April 1, 97
Submission of Abstracts	July 1, 97
Final Registration	September 1, 97

CONTACT PERSONS

Dr. Ching-Hua Lo

Department of Geology, National Taiwan University
 245 Choushan Road, Taipei 106
 Taiwan, ROC

Fax: 886-2-3636095

e-mail: lo@sun03.gl.ntu.edu.tw

www: <http://sun03.gl.ntu.edu.tw/tea.html>

Dr. Jean Crespi

Department of Geology and Geophysics
 University of Connecticut
 Storrs, CT 06269-2045, U.S.A.

Tel: 860-486-0601

Fax: 860-486-1838

e-mail: crespi@geol.uconn.edu

**First Announcement and
Call for Papers**

**THE 19th NEW ZEALAND GEOTHERMAL
WORKSHOP**

12-14 November 1997

**Organised by the Geothermal Institute and the New Zealand Geothermal Association
in conjunction with the Centre for Continuing Education, The University of Auckland**

CALL FOR PAPERS

The Geothermal Institute and the New Zealand Geothermal Association will host the 19th NZ Geothermal Workshop at the University of Auckland on 12, 13, 14 November 1997. The meeting will be a forum to exchange information on all aspects of the exploration, development and use of geothermal resources worldwide. Intending authors should submit a title to the Convenors by 15 June 1997. All accepted papers will be published in the Proceedings of the Workshop which are widely distributed.

The workshop is open to papers on all aspects of geothermal technology including:-

Exploration: Geophysics, Geology, Geochemistry, Site Investigation, Epithermal Mineralisation.

Field Development: Drilling, Reservoir Engineering, Reinjection, Mineral Deposition.

Utilisation: Electric, Non-electric, Optimisation, Environmental Consequences, Preventive Maintenance.

Application: Materials, Standards, Environmental, Economic, Legal.

Case Studies: Geothermal Field or Plant; for example, Make-up Drilling and Reinjection Strategies.

DEADLINES

1. Submission of title: 15 June
2. Notification of acceptance: 15 July
3. Final paper: 30 August
4. Workshop: 12-14 November (inclusive)

**GEOTHERMAL WORKSHOP
INFORMATION ON
THE WORLD WIDE WEB**

The convenors encourage intending authors to submit their titles electronically via the Geothermal Workshop Web Pages.

Up to date Workshop information can be accessed from the Geothermal Institute Home Page.

<http://www.auckland.ac.nz/gei/>

Titles received will be added to the web pages on a regular basis.

THE CONVENORS

c/o Geothermal Institute,
The University of Auckland,
Private Bag 92019,
Auckland,
New Zealand.

Fax: 64-9-373 7436

E-mail: geo.wshop@auckland.ac.nz

**ADMINISTRATIVE
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The University of Auckland,
Private Bag 92019, Auckland,
New Zealand.

Ph: 64-9-373 7599 Ext: 7050

Fax: 64-9-373 7419

E-mail: professional.courses@auckland.ac.nz

**30TH YEAR ANNIVERSARY SYMPOSIUM OF
THE SOUTHEAST ASIAN GEOTECHNICAL SOCIETY**

**Deep Foundations, Excavations, Ground
Improvement & Tunnelling**

**Bangkok, Thailand
November 17-21, 1997**

Sponsored by:
**Southeast Asian Geotechnical Society
Asian Institute of Technology**

Introduction

The year 1997 coincides with the thirtieth year anniversary of our Southeast Asian Geotechnical Society. During the last thirty years, remarkable progress have been made in Southeast Asia in Geotechnical Engineering Education, Research and Practice. The 13th Conference of our Society will be held in the latter part of 1998 in Taipei. Meanwhile, the 30th Anniversary event this year will mainly concentrate on three to four areas in which Geotechnical Engineering Practice is very vibrant in the member countries of our Society. These topics are Deep Foundations, Deep Excavations for Underground Utilities, Ground Improvements, and Tunnelling for Mass Rapid Transit Projects. Support is sought from the members of our Society, General Committee Members, and Presidents (past and present) to make this event successful and comparable with the 10th and 20th year anniversaries held in Bangkok in 1997 and 1987, respectively.

An International Symposium and Lecture Series is planned for the 30th Anniversary from 17-21 November 1997. Centered around each topic are comprehensive lectures that would be given by an internationally well-known figure. This would be followed by a presentation of invited papers from the experts of our member countries on each topic and a Panel Discussion on the contributed papers. Members of our Society and other interested persons are cordially invited to participate in this important event and to make technical contributions in any of the areas mentioned above. Papers can also be submitted on other related areas of interest in Geotechnical Engineering Practice, e.g., slope stability, landslides and earthquakes.

Symposium Theme

The theme of the Symposium is Geotechnical Engineering Practice in Deep Foundations, Deep Excavations, Ground Improvements and Tunnelling. This theme is in line with the current intensive activities of Geotechnics in Southeast Asia and elsewhere. Papers on other topics of Geotechnical Engineering Practice are also welcomed.

Date and Venue

The conference will be held at the AIT Center Auditorium from 17-21 November 1997.

Participants

The conference is arranged for the benefit of engineers, geologists, and other scientists of the Southeast Asian region and elsewhere. All interested persons are cordially invited to participate.

Official Language

The official language of the Conference is English.

Special Lectures and Panel Discussions

In addition to Special Lectures on each of the topics identified in the Symposium theme, Panel Discussions will be conducted on each topic with contributed papers and country representations.

Preliminary Registration

In order to facilitate the planning of the Symposium, kindly complete and return the Registration Form as soon as possible.

Call For Papers

Papers related to the Symposium theme of Geotechnical Engineering Practice are invited. A soft bound volume of all the papers presented would be available at the time of the symposium for all participants. Subsequently, these papers will then be re-edited in the form of a book.

Submission of Summaries and Papers

Summaries of papers, not exceeding 300 words in length, should be submitted to the Hon. Secretary General not later than 1 June 1997. Author will be notified of the acceptance of their papers by 1 July 1997. The completed manuscript has to be forwarded by 15 September 1997. The length of each paper should generally not exceed 16 pages of A4 size with single spaced typing. In accepting a paper for publication at the Symposium, account may be taken of the author's ability to attend. The author(s) are requested to adhere to the given deadlines since time is limited for the successful organization of this event.

Registration Fees

The registration fee for the Symposium Participant is US\$450 and this covers:

1. Participation in all Symposium themes
2. Printed volume of the Proceedings
3. Coffee and Lunch
4. A welcome reception and a farewell dinner

Registration fee for the accompanying person is US\$300.

Correspondence

All correspondence relating to the Symposium should be addressed to:

Prof. A.S. Balasubramaniam
The Hon. Secretary General
Southeast Asian Geotechnical Society
c/o Asian Institute of Technology
P.O. Box 4, Klong Luang, Pathumthani 12120
THAILAND
Tel: (66-2) 524 5519, (66-2) 524 5537
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The Hon. Assistant Secretary
GEOLOGICAL SOCIETY OF MALAYSIA
c/o Dept. of Geology, University of Malaya
50603 Kuala Lumpur, MALAYSIA

KALENDAR (CALENDAR)

1997

March 2-4

RESERVOIR CHARACTERIZATION (International Conference), Houston, by U.S. Dept. of Energy and others. (Susan Hayden, BDM-Oklahoma, Inc., P.O. Box 2565, Bartlesville, Okla. 74005. Phone: 918/337-4460, telefax: 918/337-4339; e-mail: shayden@bpo.gov)

March 2-7

HIGH-LEVEL WASTES, LOW-LEVEL WASTES, MIXED WASTES, AND ENVIRONMENTAL RESTORATION — WORKING TOWARD A CLEANER ENVIRONMENT (Symposia), Tucson, Ariz. (WMSymposia, Inc., 245 S. Plumer, #19, Tucson, Ariz. 85719. Telefax: 520/792-3993; WWW: <http://wmsym.org/>)

March 5-6

TRANSPRESSIONAL AND TRANSTENSIONAL TECTONICS, London, UK. (Bob Holdsworth, Department of Geological Sciences, University of Durham, Durham DH1 3LE, UK. Telefax: 44/01191 374 2510; e-mail: R.E.Holdsworth@Durham.ac.uk)

March 5-10

GLACIAL-INTERGLACIAL SEALEVEL CHANGES IN FOUR DIMENSIONS: EVIDENCE OF SEALEVEL AND OF LINKED ENVIRONMENTAL CHANGES AT THE LAND-OCEAN INTERFACE., Blarney, Cork, Ireland. (Dr. Josip Hendekovic, European Science Foundation, 1 quai Lezay-Mamésia 67080 Strasbourg Cedex, France. Phone: +33 3 88 767135; telefax: +33 3 88 366987; e-mail: euresco@esf.org; WWW: <http://www.esf.org/euresco>)

March 9-14

GEOFLUIDS II '97: FLUID EVOLUTION, MIGRATION AND INTERACTION IN SEDIMENTARY BASINS AND OROGENIC BELTS (International Conference), Belfast, Northern Ireland. (J. Parnell or P. Carey, Department of Geology, School of Geosciences,

The Queen's University of Belfast, Belfast BT7 1NN, Northern Ireland, UK. Telefax: 44 1232 321280; e-mail: geofluids@qub.ac.uk)

March 10-13

WETLANDS '97: THE FUTURE OF WETLAND ASSESSMENT — APPLYING SCIENCE THROUGH THE HYDROGEOMORPHIC ASSESSMENT APPROACH AND OTHER APPROACHES (Conference), Annapolis, Md., Association of State Wetland Managers and others. (ASWM, P.O. Box 269, Berne, N.Y. 12023-9746. Phone: 518/872-1804; telefax: 518/872-2171; e-mail: aswmi@aol.com)

March 17-19

FORMATION AND METAMORPHISM OF MASSIVE SULPHIDES (Frank M. Vokes Symposium), Trondheim, Norway. (Tore Prestvik, Department of Geology and Mineral Resources Engineering, Norwegian University of Science and Technology, N-7034 Trondheim, Norway. Phone: 47 73594806; telefax: 47 73594814; e-mail: torepr@geologi.unit.no)

March 17-19

REMOTE SENSING FOR MARINE AND COASTAL ENVIRONMENTS — TECHNOLOGY AND APPLICATIONS (4th International Conference), Orlando, Florida. (Wendy Raeder, ERIM Conferences, Box 134001, Ann Arbor, MI 48113-4001, USA. Phone: 313 994 1200; telefax: 313 994 5123; e-mail: raeder@erim.org; WWW: <http://www.erim.org/CONF/>)

March 17-21

28TH ANNUAL LUNAR AND PLANETARY SCIENCE CONFERENCE. Houston, Texas, USA. (LeBecca Simmons, Conference Administrator, LPI Publications and Program Services Department, 3600 Bay Area Boulevard, Houston, Texas. Phone: (713) 486 2158; e-mail: simmons@lpj.jsc.nasa.gov)

March 19-21

OFFSHORE MEDITERRANIAN (Conference and Exhibition), Ravenna, Italy. (OMC Srl, Via Trieste 230, 48100 Ravenna, Italy)

March 23-26

APPLICATION OF GEOPHYSICS TO ENVIRONMENTAL AND ENGINEERING PROBLEMS (10th Annual Symposium), Reno, Nevada, USA. (J. Louie, c/o J. Tanarik, Desert Research Institute, P.O. Box 60220, Reno, Nevada 89506, USA)

March 23-27

EUROPEAN UNION OF GEOSCIENCES (9th biennial convention), Strasbourg, France. (EUG 9 Office, EOPG, Rue René Descartes 5, F-67084 Strasbourg, France)

April 1-4

THE LATE QUATERNARY IN THE EASTERN MEDITERRANEAN (International Symposium), Ankara, Turkey. (Neil Roberts, Department of Geography, Loughborough University, Loughborough LE11 3TU, UK. Telefax: 44 1509 223 930; e-mail: c.n.roberts@lboro.ac.uk)

April 6-9

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (Annual Meeting), Dallas, Texas, USA. (AAPG Conventions Department, P.O. Box 979, 1444 S. Boulder Ave., Tulsa, OK 74101-0979, USA. Phone: 918 560 2679; telefax: 918 560 2684)

April 6-9

SINKHOLES AND ENGINEERING/ ENVIRONMENTAL IMPACTS OF KARST (Conference), Springfield, Mo. (Dr. Barry F. Beck, P.E. LaMoreaux and Associates, Inc., P.O. Box 4578, Oak Ridge, Tenn: 37831-4578. Phone: 423/483-7483)

April 6-11

OCEAN POLLUTION (International Symposium), Ft. Pierce, Fla. (S. Costilow, Conference Coordinator, J. Seward Johnson Marine Education and Conference Center, Harbor Branch Oceanographic Institution, 5600 US 1 No., Ft. Pierce, Fla. 34946. Telefax: 407/465-5743; e-mail: costilow@hboi.edu)

April 7-11

ANALYTICAL BASED MODELLING OF GROUNDWATER FLOW, Nunspeet, The Netherlands. (Conference Secretariat, Analytical based modeling of groundwater flow, Buerweg 51, 1861 CH Bergen, The Netherlands. Phone: +31 (0) 72 58 990 62; telefax: +31 (0) 72

58 990 40)

April 8-10

PRINCIPAL GENETIC PROBLEMS RELATED TO MINERAL DEPOSITS OF MAGMATIC AFFILIATION, Moscow, Russia. (N.S. Bortnikov, Secretary of the Symposium, Igem RAS, Staromonetny per., 35, Moscow 109017, Russia. Phone: 7 095 230 8259; telefax: 795 230 2719; e-mail: symposium@igem.mak.su)

April 13-16

UPPER MANTLE HETEROGENEITIES FROM ACTIVE AND PASSIVE SEISMOLOGY (NATO Advanced research workshop), Moscow, Russia. (Professor K. Fuchs, Geophysical Institute, Herztstr. 16, D-78167, Karlsruhe, Germany)

May 14-16

GEOTECHNICAL ENGINEERING IN ASIA: 2000 AND BEYOND (Third Asian Young Geotechnical Engineers Conference), Singapore. (Dr. T.S. Tan, Department of Civil Engineering, National University of Singapore, 10 Kent Ridge Crescent, Singapore 119260. Phone: (65) 772-2160; telefax: (65) 779-1635; e-mail: cvetants@nus.sg)

April 14-16

PROMIT 97: SOLUTIONS FOR NATURAL AND MAN-MADE DISASTERS (International Exposition and Congress), Miami Beach, Fla. (Rick Lelchuk, c/o The Meeting Source, Inc., 5240 N.W. 163rd St., Miami, Fla. 33014-6226. Phone: 800/339-6338; telefax: 305/624-0441; e-mail: 74117.54@compuserve.com)

April 14-18

PLUMES, PLATES AND MINERALISATION (International Symposium), Pretoria, South Africa. (Professor S.A. de Waal, Department of Geology, University of Pretoria, Pretoria 0002, South Africa. Phone: 27 12 420 2454; telefax: 27 12 433430; e-mail: ppm97@scientia.up.ac.za)

April 14-18

GEODYSSSEA (GEODYNAMICS OF S. AND S.E. ASIA) (International Symposium), Penang, Malaysia. (Dr. Peter Wilson, GeoForschungszentrum Potsdam, Telegrafenberg A17, D-14473 Potsdam, Germany. Telefax: (49)-331-288 1111; e-mail: wilson@gfz-potsdam.de)

April 17-19

EARTH'S UPPER MANTLE STRUCTURE BASED ON INTEGRATED GEOLOGICAL AND GEOPHYSICAL STUDIES (EROPROBE Conference), Moscow, Russia. (Professor K. Fuchs, Geophysical Institute, Herztstr. 16, D-78167, Karlsruhe, Germany)

April 23 - May 3

INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES (5th Scientific Assembly), Rabat, Morocco. (G.D. Young, IAHS, Department of Geography, Wilfrid Laerier University, Waterloo, Ont N2L 3C5, Canada. Phone: 1 519 884 1970; telefax: 1 519 846 0968; e-mail: 44iahs@mach1.wlu.ca)

April 24-29

PALEOCENE/EOCENE BOUNDARY EVENTS IN TIME AND SPACE (Geological Society of America Penrose Conference), Albuquerque, NM. (Spencer Lucas, New Mexico Museum of Natural History, 1801 Mountain Road NW, Albuquerque, NM 87104. E-mail: lucas@darwin.nmmnh-abg.mus.nm.us)

April 28 - May 1

IN-SITU AND ON-SITE BIOREMEDIATION (International Symposium), New Orleans, La., by Battelle. (The Conference Group, 1989 W. Fifth Ave., Suite 5, Columbus, Ohio 43212-1912. Phone: 800/783-6338; telefax: 614/488-5747; e-mail: 102632.3100@compuserve.com)

May 9-11

SECOND BRITISH COLUMBIA PALEONTOLOGICAL SYMPOSIUM. Vancouver, British Columbia, Canada. (Vancouver Paleontological Society, Centre Point Post Office, P.O. Box 19653, Vancouver, BC V5T 4E7)

May 11-14

NEVES CORVO FIELD CONFERENCE (Meeting of SEG), Lisbon, Portugal. (F.J.A.S. Barriga, GEOFCUL, Edificio C2, Piso 5, Campo Grande 17000 Lisbon, Portugal. Phone: 351 1 750 0066; telefax: 351 1 759 9380; e-mail: Fernando.Barriga@fc.ul.pt; www: http://NevesCorvo.geo.fc.ul.pt)

May 19-21

OTTAWA '97 (Geological Association of Canada, 50th Anniversary Celebrations), Ottawa, Canada. (Conference Secretariat, Ottawa '97, Geological Survey of Canada, 601 Booth St.,

Ottawa, Ontario, Canada K1A 0E8. Phone: 613 947 7649; telefax: 613 947 7650; e-mail: ottawa97@emr.ca; www: http://www.emr.ca/~ottawa97/ftp:nrcan.gc.ca, directory gsc/ottawa97)

May 21-23

PETROLEUM SYSTEMS OF S.E. ASIA & AUSTRALASIA (International Symposium), Jakarta, Indonesia. (Jim Howes, ARCO Indonesia. Phone: 62-21-521-8108; telefax: 62-21-521-9063; e-mail: jhowes@is.arco.com)

May 25-30

GEOCHEMICAL EXPLORATION (18th International Symposium of AEG), Jerusalem, Israel. (IGES Secretariat, P.O. Box 50006, Tel Aviv, 61500 Israel. Telefax: 972 3 5140000; e-mail: iges@mail.igs.gov.il)

May 25-28

GLOBAL WARMING (International Conference and Exposition), New York, N.Y., by Global Warming International Center. (Singyan Shen, Chair, International Program Committee, c/o GWIC, 22W381 75th St., Naperville, Ill. 60565-9245. Phone: 630/910-1551; telefax: 630/950-1561)

May 26-30

EUROPEAN ASSOCIATION OF GEOSCIENTISTS AND ENGINEERS (EAGE) (59th Conference), Geneva, Switzerland. (EAGE, E.H. Bornkamp, P.O. Box 298, NL 3700 AG Zeist, Netherlands. Phone: 31/3069 62 655; telefax: 31/306962 640)

June 1-6

SEDIMENTATION, SEDIMENTARY EVENTS AND HYDROCARBON SYSTEMS (Annual joint CSPG-SEPM Convention), Calgary, Canada. (CSPG Office, 505 206 7th Avenue SW, Calgary, Alberta, Canada T2P 0W7)

June 2-6

BASEMENT TECTONICS (International Conference), Blacksburg, Va. (A.K. Sinha, Dept. of Geological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Va. 24061-0420. Phone: 540/231-5580; telefax: 540/231-3386; e-mail: searches@vtvmti.cc.vt.edu)

June 15-18

SOUTH AMERICAN SYMPOSIUM ON ISOTOPE GEOLOGY, São Paulo, Brazil. (Professor Miguel A.S. Basei, P.O. Box 11348, São Paulo, Brazil. Phone: (55-11) 818 3994;

telefax: (55-11) 8183993; e-mail: baseimas@usp.br)

June 15-21

CLAY CONFERENCE, Ottawa, Canada. (J.B. Percival, Geological Survey of Canada, 601 Booth St., Ottawa, Ontario, K1A 0E8. Phone: 613/992-4496; telefax: 613/943-1286; e-mail: percival@gsc.emr.ca)

June 17-22

THE HISTORY AND DYNAMICS OF GLOBAL PLATE MOTIONS (Conference), Marshall, Calif. (AGU Meetings Dept., 2000 Florida Ave., Washington, D.C. 20009. Phone: 202/462-6900)

June 18-19

LATE QUATERNARY COASTAL TECTONICS, London UK. (Claudio Vita-Finzi, Geological Sciences, University College, Gower St., London WC1E 6BT. Phone: 44 171 3877050 ext. 2383; telefax: 44 171 3887614; e-mail: ucfbcvf@ucl.ac.uk)

June 22-25

ROCK SUPPORT — APPLIED SOLUTIONS FOR UNDERGROUND STRUCTURES (International Symposium), Lillehammer, Norway. (Mrs. Siri Engen, Norwegian Society of Chartered Engineers, P.O. Box 2312, Solli, N-0201 Oslo, Norway. Fax: +47 22 94 75 02)

June 23-27

ENGINEERING GEOLOGY AND THE ENVIRONMENT (International Symposium of IAEG), Athens, Greece. (Symposium Secretariat, P.O. Box 19140, GR-117 10 Athens, Greece. Telefax: 301 381 3900; 301 924 2570)

July 7-10

REMOTE SENSING TECHNOLOGY, MEASUREMENTS AND ANALYSIS (3rd International Conference), Copenhagen, Denmark. (Robert Rogers, ERIM Conferences, Box 134001, Ann Arbor, MI 48113-4001, USA. Phone: 313 994 1200; telefax: 313 994 5123; e-mail: raeder@erim.org; WWW: <http://www.erim.org/CONF/>)

July 9-12

MINING PHILIPPINES: PHILIPPINES MINERALS EXPLORATION, MINING EQUIPMENT, AND TECHNOLOGY (Exhibition and Conference), Manila, Philippines. (Stephen Luff. Telefax: 44 171 413 8222)

July 12-14

LANDSLIDE HAZARD ASSESSMENT (International Symposium), Xian, China by Japan Ministry of Education, Science, Culture and Sports and others. (K. Sassa, Disaster Prevention Research Institute, Kyoto University, Uji, Kyoto 611, Japan. Phone: 81/774 0789; telefax: 81/77 432 5597)

July 12-17

VERTEBRATE MORPHOLOGY (5th International Congress), Bristol, UK. (J.M.V. Raynor, School of Biological Sciences, University of Bristol, BS8 1UG, UK. Phone: 44 117 928 111; telefax: 44 117 025 7374; e-mail: icvm97@bristol.ac.uk)

July 14-17

GEOMECHANICS AND GROUND CONTROL IN MINING AND UNDERGROUND CONSTRUCTION (International Conference), Wollongong, NSW, Australia. (Naj Aziz, Dept. of Civil and Mining Engineering, University of Wollongong, Wollongong, NSW, Australia 2522. Telefax: 61 42 213 238; e-mail: n.aziz@uow.edu.au)

July 18-20

WATER POLLUTION MODELING, MEASURING AND PREDICTION (4th International Conference). (Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK. Phone: 44 1703 292853; e-mail: WIT@wessex.witcmi.ac.uk; WWW: <http://www.witcmi.ac.uk>)

July 20-27

DEVONIAN CYCLICITY AND SEQUENCE STRATIGRAPHY (Subcommission on Devonian Stratigraphy Symposium and field trips), Rochester, New York, USA. (William Kirchgasser, Department of Geology, SUNY Potsdam, Potsdam, NY 13676-2294, USA. Phone: 315 267 2295; telefax: 315 267 3170; e-mail: kirchgwt@potdam.edu)

July 27-31

OSTROCODA (13th International Symposium), Greenwich, UK. (ISO '97), School of Earth Sciences, University of Greenwich, Medway Towns Campus, Chatham Maritime, Kent ME4 4AW, UK. E-mail: iso97@greenwich.ac.uk)

July 28 - August 1

LEARNING ABOUT THE EARTH AS A SYSTEM (Second International Conference on Geoscience Education), University of Hawai'i,

Hilo. (Dr. M. Frank Watt Ireton, GeoSciEd II Local Arrangements Coordinator, American Geophysical Union, 2000 Florida Avenue, NW, Washington, DC 20009. E-mail: fireton@kosmos.agu.org)

July 30 – August 9

CELEBRATION OF THE BICENTENARY OF CHARLES LYELL AND JAMES HUTTON, London and Edinburgh, UK. (P. Jackson, BGS, Keyworth, Nottingham NG12 5GG. Phone: 0115 936 3100; telefax: 0115 936 3200)

August

GRANITES AND ASSOCIATED MINERALIZATIONS (2nd International Symposium), Salvador, Brazil. (SGM-2nd ISGAM, General Secretariat, Av. 3, 390, Plataforma IV, CAB 41746-900, Salvador, Bahia, Brazil. Telefax: 5571 231 5655)

August 4–8

SEG/EAGE ISTANBUL '97 INTERNATIONAL GEOPHYSICAL CONFERENCE AND EXPOSITION, Istanbul, Turkey. (SEG, PO Box 702740, Tulsa, Oklahoma 74170, USA)

August 11–13

RESEARCH AND EXPLORATION — WHERE DO THEY MEET? (4th Biennial Meeting of the Society Applied to Mineral Deposits). (Congress Office/SGA Meeting 1997, University of Turku, Lemminkaisenkatu 18-18B, FIN-20520 Turku, Finland. Phone: + 358-21-333 6342; telefax: +358-21-333 6410; e-mail: cescon@utu.fi)

August 17–21

PALEOFORAMS '97, Bellingham, Washington, USA. (Charles A. Ross, Department of Geology, Western Washington University, Bellingham, WA 98225-9080, USA. Phone: 360 650 3634; telefax: 360 650 3148; e-mail: rossjrp@henson.cc.wvu.edu)

August 18–29

INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR (29th General Assembly), Thessaloniki, Greece. (29th IASPEI general assembly geophysical laboratory. University, GR-54006. Thessaloniki, Greece. Phone: 30/31 998 528; e-mail: iaspei@olymp.ccf.auth.gr)

August 19–20

MINERAL EQUILIBRIA AND DATA BASES (International Meeting), Helsinki, Finland. (Pentti Hölttä, Geological Survey of Finland, SF-02150 Espoo, Finland. Phone: 358 0 469 32312; telefax: 358 0 462205)

August 28 – September 3

GEOMORPHOLOGY (4th International Conference of International Association of Geomorphologists), Bologna, Italy. (Planning Congressi, srl Via Crociali 2, I-40138 Bologna, Italy)

September 1–5

GEOLOGY AND ENVIRONMENT (50th Geological Congress of Turkey), Istanbul, Turkey. (Secretary GEOENV '97, PK 464, Kizilay, 06424 Ankara, Turkey. Phone: 90 312 4343691; telefax: 90 312 4342388; e-mail: jdogan@et.cc.hun.edu.tr)

September 1–5

IEC '97: FIFTH INTERNATIONAL ECLOGITE CONFERENCE, Ascona, Switzerland. (Professor V. Trommsdorff and Dr. R. Schmid, Mineralogy IEC 97, ETH centre, 8092 Zurich, Switzerland. Phone: XX41 1 632 3791; telefax: XX41 1 6321088; e-mail: rolf@erdw.ethz.ch; information and preliminary registration up to 31 October 1996 via <http://www/erdw.ethz.ch/~rolf/>)

September 2–4

PALAEONTOLOGY AND STRATIGRAPHY OF SOUTH AMERICA (2nd European Meeting), in conjunction with the 18th IAS Regional Meeting on Sedimentology), Heidelberg, Germany. (Peter Bengtson, Geologisch-Palaontologisches Institut, Im Neuenheimer Feld 234, D-69120 Heidelberg, Germany. Phone: 49 6221 548293; telefax: 49 6221 548640; e-mail: Peter.Bengtson@urz.uni-heidelberg.de; WWW: <http://ix.urz.uni-heidelberg.de/~dc8/geo/1st-sam.html>)

September 2–4

SOUTH ATLANTIC MESOZOIC CORRELATIONS (Regional Meeting of IGCP Project 381), Heidelberg, Germany. (Peter Bengtson, Geologisch-Palaontologisches Institut, Im Neuenheimer Feld 234, D-69120 Heidelberg, Germany. Phone: 49 6221 548293; telefax: 49 6221 548640; e-mail:

Peter.Bengtson@urz.uni-heidelberg.de; WWW:
http://ix.urz.uni-heidelberg.de/~dc8/geo/1st-381.html)

September 2-6

GEOLOGY AND ENVIRONMENT (Int'l. Symposium), Istanbul, Turkey, by the Chamber of Geological Engineers. (I. Yilmazer, GEOENV '97, P.K. 464 Kizilay, 06424 Ankara, Turkey. Phone: 9-0-312-4343601; telefax: 9-0-312-4342388; e-mail: jdogan@et.cc.hun.edu.tr)

September 7-10

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (International Conference and Exhibition), Vienna, Austria. (AAPG Convention Department, Box 979, Tulsa, OK 74101, USA. Phone: 1/918 560 26 79; telefax: 1/918 560 26 84)

September 9-12

OFFSHORE EUROPE '97 (Oil and Gas Exhibition and Conference), Aberdeen, Scotland, UK. (Offshore Europe Partnership, Ocean House, 50 Kingston Road, New Malden, Surrey KT3 3LZ, UK)

September 10-15

FAULTS AND SUBSURFACE FLUID FLOW: FUNDAMENTALS AND APPLICATIONS TO HYDROGEOLOGY AND PETROLEUM GEOLOGY (Geological Society of America Penrose Conference), Albuquerque and Taos, New Mexico. (William C. Haneberg, New Mexico Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology, 2808 Central Avenue SE Albuquerque, NM 87106. E-mail: haneberg@nmt.edu)

September 11-14

ALEWECA — ALPINE EVOLUTION OF THE WESTERN CARPATHIANS AND RELATED AREAS (International Conference held on the occasion of the 100th anniversary of the birth of Professor D. Andrusov), Bratislava, Slovakia. (Dr. Józef Hok, Slovak Geological Society, Mlynská Dol, 1, SK-81704, Bratislava, Slovak Republic. Phone: +42-7-3705445; telefax: +42-7-371940; e-mail: hoc@guds.sanet.sk)

September 14-18

EXPLORATION '97 (4th Decennial International Conference), Toronto, Canada. (I. Mac Leod, Geosoft Inc., Suite 500, 204 Richmond Street W, Toronto, Ontario ON M5H 2G4, Canada)

September 15-25

SOUTHERN NEW ENGLAND OROGEN, AUSTRALIA (SCCS Field and General Meeting 1997), Armidale, Australia. (Dr. Ian Metcalf, Department of Geology and Geophysics, University of New England, Armidale, NSW 2351, Australia. Phone: 61 67 73 2860; telefax: 61 67 73 3300; e-mail: imetcalf@metz.une.edu.au)

September 16-19

PLACERS AND WEATHERED-ROCK MINERAL DEPOSITS (11th International Symposium), Moscow-Dubna, Russia. (N. Patyk Kara, Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry of RAS, Staromonetny per., 35, Moscow, 109017, Russia. Phone: 007 095 2308427; telefax: 007 095 230 2179; e-mail: pkara@igem.msk.su)

September 21-27

GROUNDWATER IN THE URBAN ENVIRONMENT (27th IAH Congress) (Professor J.D. Mather, Geology Dept., Royal Holloway and Bedford New College, Egham, Surrey TW20 0EX, UK. Telefax: 784 471780)

September 23-28

TECTONICS OF CONTINENTAL INTERIORS (Geological Society of America Penrose Conference), Brian Head Resort near Cedar City, Utah. (Michael Hamburger, Dept. of Geological Sciences, Indiana University, Bloomington, IN 47405, USA. E-mail: hamburg@ucs.indiana.edu)

September 30 - October 3

CONCEPTS AND MODELS FOR SUSTAINABLE WATER RESOURCES MANAGEMENT (FRIEND '97 Conference on Regional Hydrology), Postojna, Slovenia. (Dr. M. Brilly, FGG Hydraulics Division, Hajdrihova 28, 6100 Ljubljana, Slovenia. Phone: (386) 61 1254 333; telefax: (385) 61 219 987; e-mail: mitja.brilly@uni-lj.si)

September 30-October 5

MAIN CHANGES IN THE MARINE AND TERRESTRIAL ATLANTIC REALM DURING THE NEOGENE (2nd Regional Congress), Salamanca, Spain. (Departamento de Geología (Palaeontología, Facultad de Ciencias, Universidad de Salamanca, 37008 Salamanca, Spain. Phone: 34 23 294497; telefax: 34 23 394514; e-mail: Civis@gugu.usal.es/Angel@gugu.usal.es)

October 5-10

ENVIRONMENTAL GEOCHEMISTRY (4th International Symposium), Vail, Colorado, USA. (R.C. Severson or L.P. Gough, US Geological Survey, DFC, Box 25046, MS 973, Denver Colorado 80225, USA. Telefax: (1) 303 236 3200)

October 6-10

MATHEMATICAL METHODS IN GEOLOGY (Part of the Mining Příbram Symposium), Prague, Czech Republic. (V. Nemeč, Krybnícum 17, 100 00 Praha 10-Strasnice, Czech Republic. Phone: 422 7811801; telefax: 42306 23169)

October 12-16

TECHNOLOGY AND GLOBALISATION: LEADING THE PETROLEUM INDUSTRY INTO THE 21ST CENTURY (15th World Petroleum Congress), Beijing, China. (Organising Committee, c/o China National Petroleum Corporation, P.O. Box 766, Liu PU Kang, Beijing 100724, China)

October 20-22

IMPROVED OIL RECOVERY (9th European Symposium), The Hague, The Netherlands. (IOR '97, EAGE, P.O. BOX 298, 3700 AG Zeist, The Netherlands)

October 20-23

GEOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING, Denver, Colorado, USA. (GSA Meetings Department, P.O. Box 9140, Boulder, CO 80301, USA. Phone: 800 472 1988)

October 26-29

PETROLEUM GEOLOGY OF NORTH-WEST EUROPE (5th Conference and Exhibition), London, UK. (CASIL, 4 Cavendish Square, London, W1M 0BX, UK. Phone: 44/171 499 0900; telefax: 44/171 629 3233)

November 17-19

APPLIED GEOLOGIC REMOTE SENSING (12th International Conference and Workshop), Denver, Colorado, USA. (Robert Rogers, ERIM, Box 134001, Ann Arbor, MI 48113 4001 USA. Phone: (1) 313 994 1200; telefax: (1) 313 994 5123; e-mail: raeder@erim.org)

November 30 - December 3

PERMIAN OF EASTERN TETHYS: BIOSTRATIGRAPHY, PALAEOGEOGRAPHY & RESOURCES (International Conference), Melbourne, Australia. (The Secretariat,

Permian of Eastern Tethys Conference, School of Aquatic Science & Natural Resources Management, Deakin University, Rusden Campus, 662 Blackburn Road, Clayton, Victoria 3168, Australia. Phone: 61-3-9244 7429; telefax: 62-3-9244 7480; e-mail: asnrm@deakin.edu.au)

1998

CANADIAN INSTITUTE OF MINING, METALLURGY AND PETROLEUM (100th annual general meeting), Quebec, Canada. (John Gaydos, Meetings Manager, Canadian Institute of Mining and Metallurgy, 1 Place Alexis Nihon, 1210-3400 de Maisonneuve Boulevard West, Montreal, Quebec H3Z 3B8, Canada. Phone: (514) 939-2710; telefax: (514) 939-2714)

10TH IAGOD SYMPOSIUM, Australia. (Professor I.R. Plimer University of Melbourne, Parkville, VIC 3052, Australia. Phone: 613 3446520; telefax: 613 3447761)

January 28-30

EXPLORATION METHODS '98: PATHWAYS TO DISCOVERY (International Meeting following annual Cordilleran Roundup), Vancouver, Canada. (BC and Yukon Chamber of Mines, Attn. Technical Chair, 840 West Hastings St., Vancouver, British Columbia, Canada V6C 1C8. Telefax: 604 681 2363)

April 13-17

15TH INTERNATIONAL SEDIMENTOLOGICAL CONGRESS, Alicante, Spain. (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. Phone: 34 65903552; telefax: 34 65903552; e-mail: ctierra@vm.cpd.ua.es)

April 13-17

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

April 19-23

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

April 20-22

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

April 20-23

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

June 8-12

EUROPEAN ASSOCIATION OF GEOSCIENTISTS AND ENGINEERS (EAGE) (60th Conference), Leipzig, Germany. (EAGE, E.H. Bornkamp, P.O. Box 298, NI 3700, AG Zeist, The Netherlands. Phone: 31/3069 62 655; telefax: 31/3069 62 640)29)

June 28 - July 5

GONDWANA 10, Cape Town, South Africa. (Organising Committee Gondwana 10, Department of Geological Sciences, University of Cape Town, Rondebosch, South Africa. Phone: 27 21650 3171; telefax: 27 21650 3167)

June 29 - July 2

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

June 29 - July 18

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

August

10TH IAGOD SYMPOSIUM, Broken Hill, Australia. (Professor I.R. Plimer, University of Melbourne, Parkville, VIC 3052, Australia. Phone: 613 3446520; telefax: 613 3447761)

August 9-15

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

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MODERN EXPLORATION AND IMPROVED OIL AND GAS RECOVERY METHODS (2nd International Conference), Kraków, Poland. (DEXTER Congress and Symposium Bureau, Wroclawska 37A, 30-011 Kraków, Poland. Phone: 48 12 340 808; telefax: 48 12 336313; e-mail: kongresy@dexter.krakow.pl)

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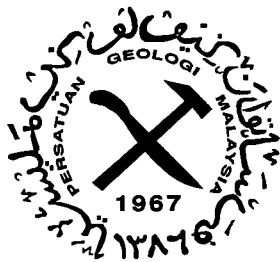
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