

## PERSATUAN GEOLOGI MALAYSIA

**WARTA GEOLOGI****NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA**

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DIKELUARKAN DWIBULANAN  
ISSUED BIMONTHLY

PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)

Majlis (Council) 1989/90

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## OCCURRENCE OF KAOLINITE BOULDERS IN KANGKAR, JOHOR\*

Aw Peck Chin and K.N. Murthy,  
Geological Survey of Malaysia.

### Abstract

*An unusual compact kaolinite occurring as boulders is studied by chemical, DTA, optical and X-ray methods. It is variegated in colour, with specific gravity of 2.56 and Moh's hardness of 2.5. DTA and X-ray pattern give prominent exothermic peak and strong interplanar spacings, respectively, which are diagnostic for kaolinite. Chemical analyses show the average alumina content is 40.3 percent.*

*Thin section shows evidence of flow texture and relict feldspar phenocrysts. The brown streaks are formed by the limonitization of trains of minute pyrite. The writers believe the original rock is probably a volcanic flow which underwent pervasive kaolinization soon after its formation.*

*The kaolinite boulders are of commercial interest as they can be used as carving stone for handicraft and other artistic objects.*

### Introduction

The second writer first came to know of the occurrence in 1971 while examining road cuttings in the area. He identified it as 'pyrophyllite', on account of its greasy lustre and hardness. When he informed the first writer of its existence in 1983, a re-collection was made and two samples were sent for identification by X-ray diffraction method. The results of both the samples show the mineral to be kaolinite instead.

Kaolinite is a common clay mineral, usually occurring in earthy aggregates. Its occurrence in this case as compact fine-grained masses (in rock-form) is unusual, and therefore of geological interest. It may also be of commercial interest as a stone for carving because of its low hardness.

This paper is based on studies by chemical, DTA, optical and X-ray methods. Its economic importance and the probable origin of the kaolinite boulders are discussed.

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\* Permission to publish this paper is given by the Director General, Geological Survey of Malaysia.

### Location and access

The kaolinite boulders are found in at least three localities. The first two localities are along road cuttings near Kangkar, about 7 km north of Parit Sulong (Figure 1). The third locality is in a rubber estate about 2 km to the east of the second locality. All the localities are accessible by road.

### Geological setting

The kaolinite boulders are found overlying the Gemas formation and the Paloh formation (Figure 1). The Gemas formation is made up of clastic sedimentary and volcanic rocks of Middle to Late Triassic age whilst the Paloh formation consists of continental clastic rocks of presumably Late Jurassic to Early Cretaceous age (Hamidi, manuscript). No *in-situ* outcrops of the kaolinite rock has been found to date.

### Occurrence

The kaolinite occurs in sub-rounded to rounded cobbles and boulders, ranging in size from 15 cm to about a metre in diameter. It varies in colour from light grey, grey to pink and reddish brown.

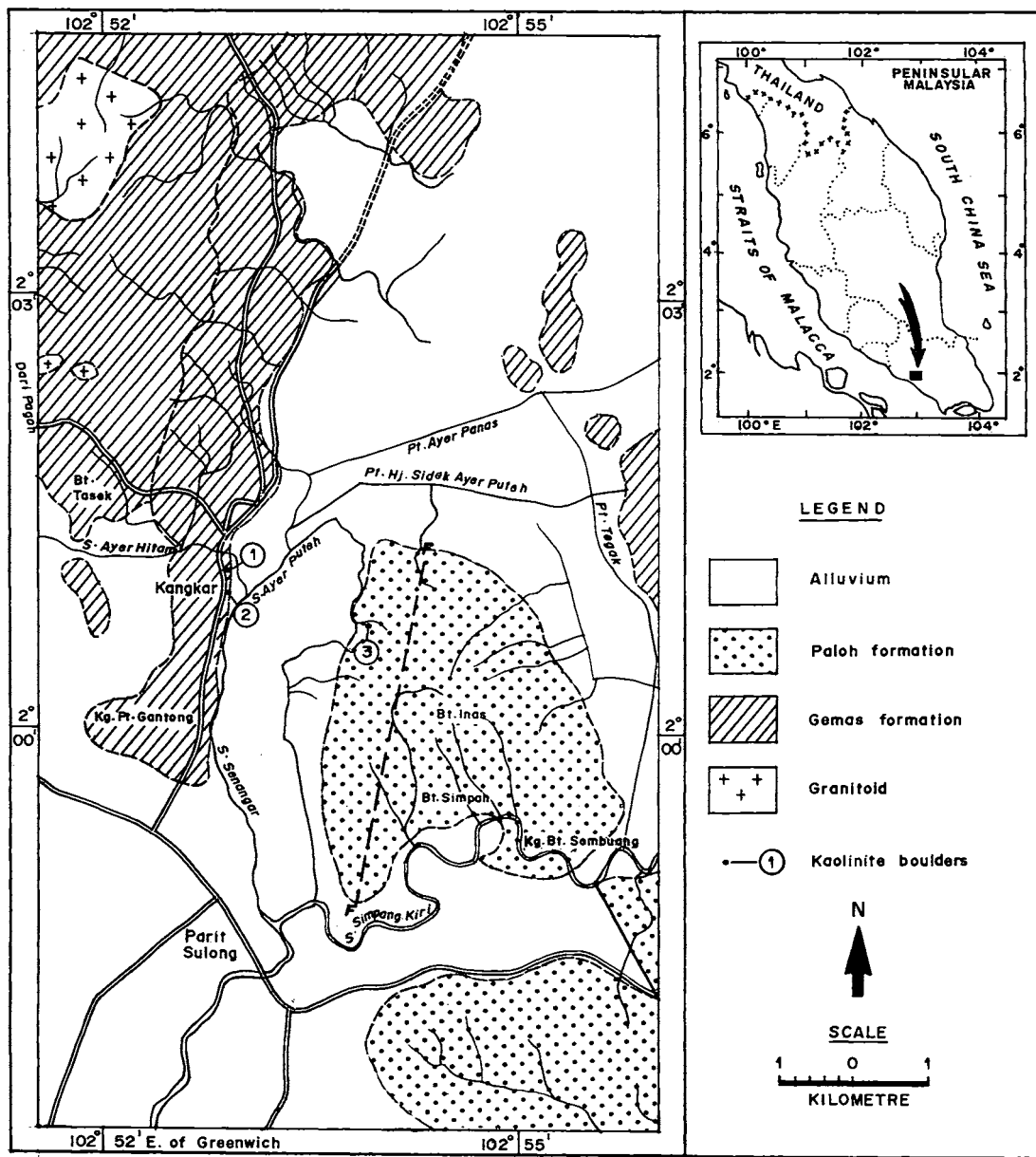
### Description of kaolinite

In hand specimen the rock is made up of reddish brown patches traversed by sub-parallel grey streaks. It has a specific gravity of 2.56 and a hardness (Mohs) of  $2\frac{1}{2}$  (Kannika, personal comm.), which compare favourably with 2.6 and 2, respectively, given for kaolinite in Berry and Mason (1961). It can be scratched by a knife, but not with the finger.

In thin section, under low magnification it consists of dark brown streaks and light grey patches (Plate 1). Under crossed nicols, the weak birefringent fine mosaiclike masses show that the rock is made up mainly of kaolinite (Plate 2). However, under higher magnification, there are minute pyrite crystals which are distributed in the general direction of the streaks (Plate 3). Plate 4 shows a pyrite under high magnification to be surrounded by a cloud of brown limonite. Closer examination of the brown streaks shows they are caused by limonitization of trains of minute pyrite.

The X-ray pattern of two kaolinite samples as shown in Plate 5 was obtained by the powder method using the  $\text{CuK}\alpha$  radiation. Although J1 shows the presence of small amount of pyrite, both samples (J1 & J2) exhibit the two interplanar spacings of 7.1 and 3.5 Å which are diagnostic for kaolinite (Leong Kok Hoong, per. comm.).

Differential thermal analysis (DTA) of the kaolinite was determined at a heating rate of 20°C per minute using  $\text{Al}_2\text{O}_3$  as the reference material. The DTA curve shows one prominent exothermic peak at 1010°C which is diagnostic for kaolinite (Fan Choon Meng, per. comm.). It also shows 2 minor endothermic peaks at 580°C and 600°C (Figure 2).



After, Hamadi Che Harun.

KBM(Rm)D-121-89

FIGURE 1: OCCURRENCE OF KAOLINITE BOULDERS IN RELATION TO THE GEOLOGY IN KANGKAR, JOHOR.

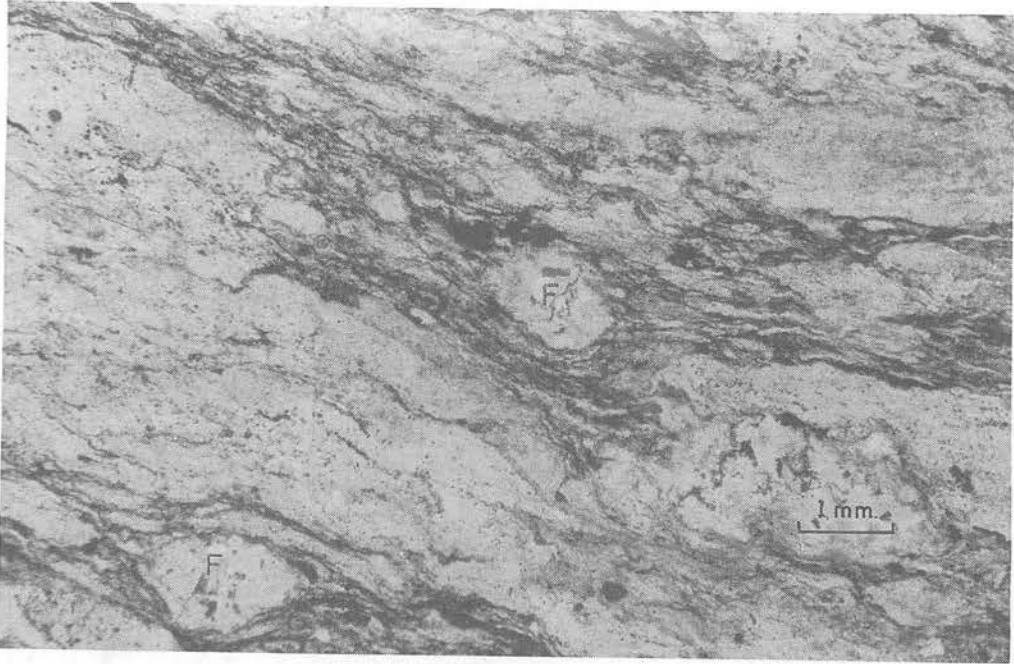


Plate 1. Brown streaks (flow texture?) and grey patches of  
?relict feldspar phenocrysts (F).  
Polarized light.

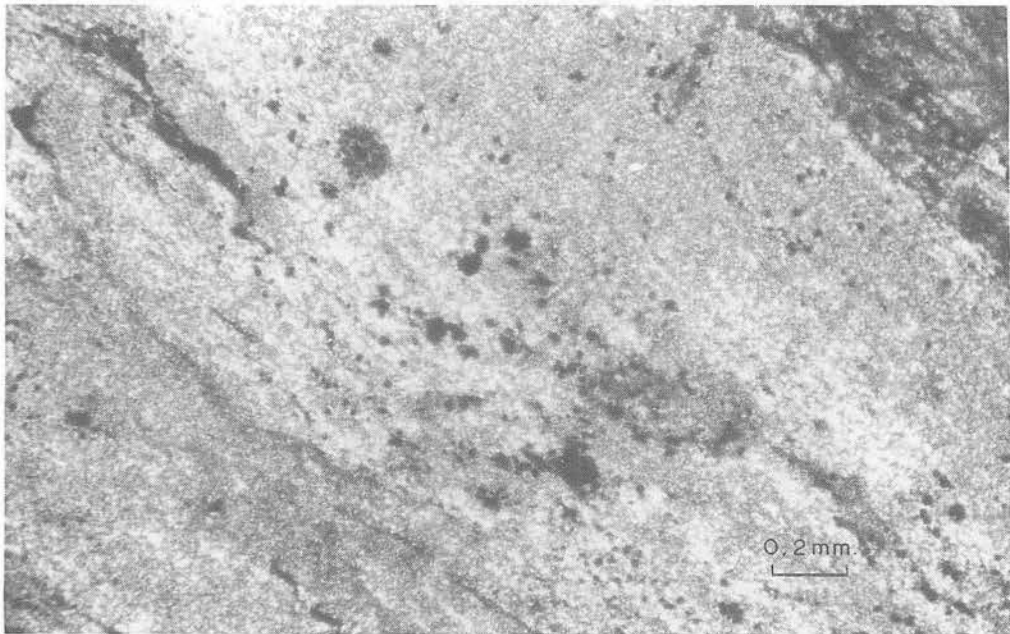


Plate 2. Kaolinite as weak birefringent mosaiclike masses.  
Crossed nicols.

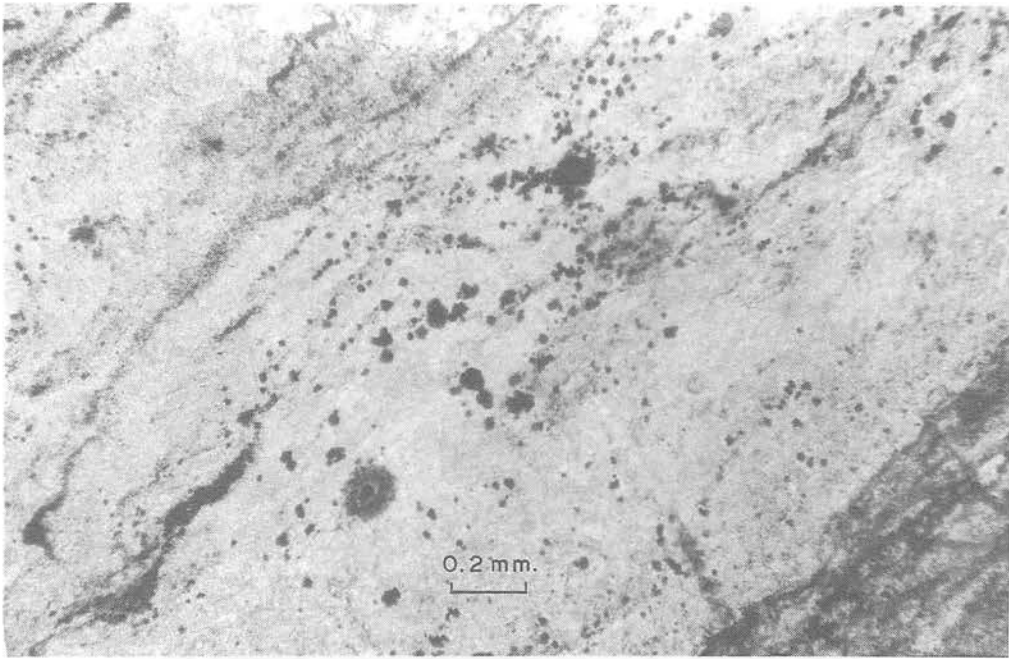


Plate 3. Trains (black specks) of pyrite sub-parallel to brown streaks. Polarized light.

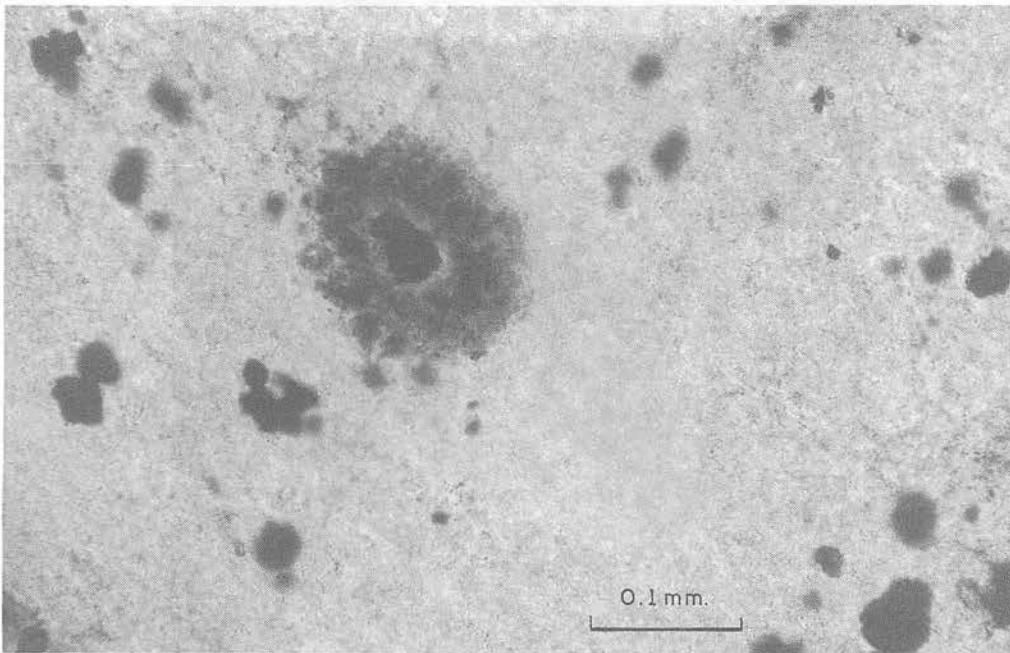


Plate 4. A crystal of pyrite surrounded by a cloud of limonite in a kaolinite matrix. Polarized light.

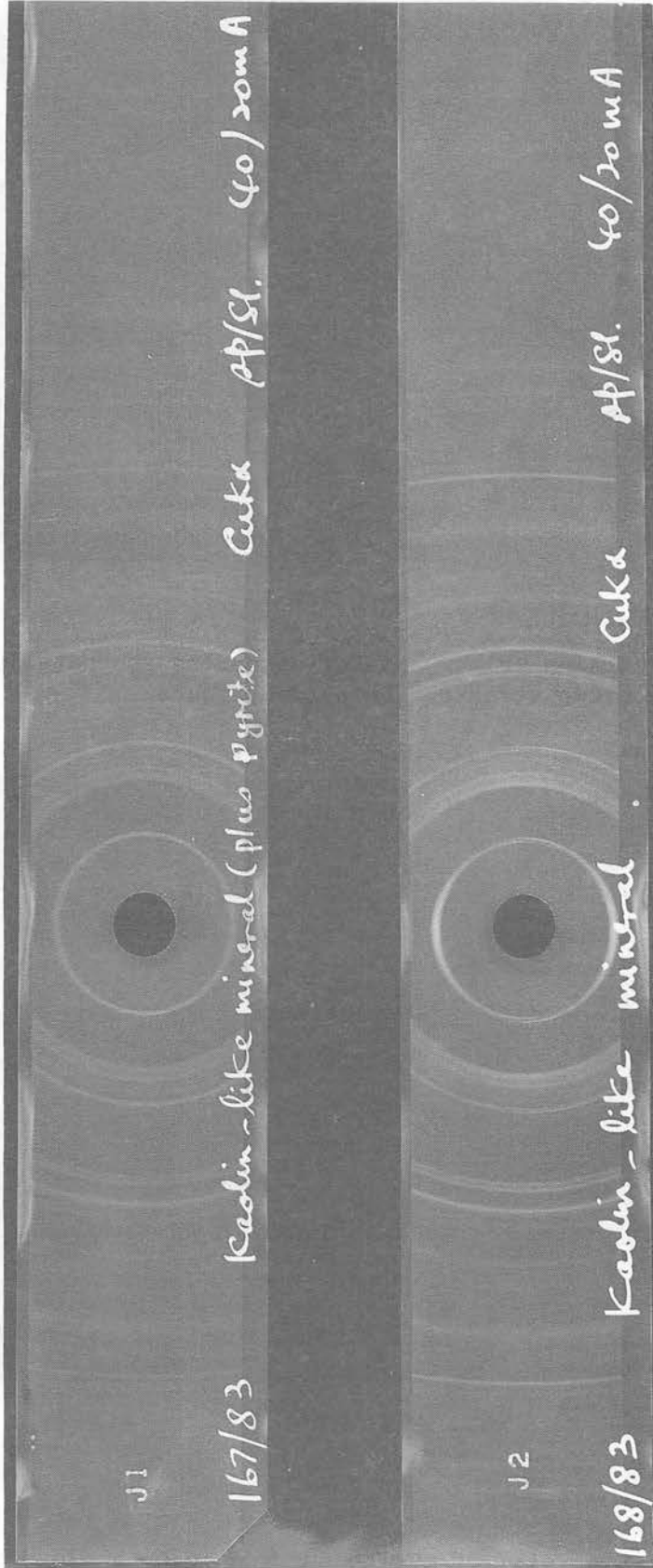


Plate 5. X-ray pattern of kaolinite samples.



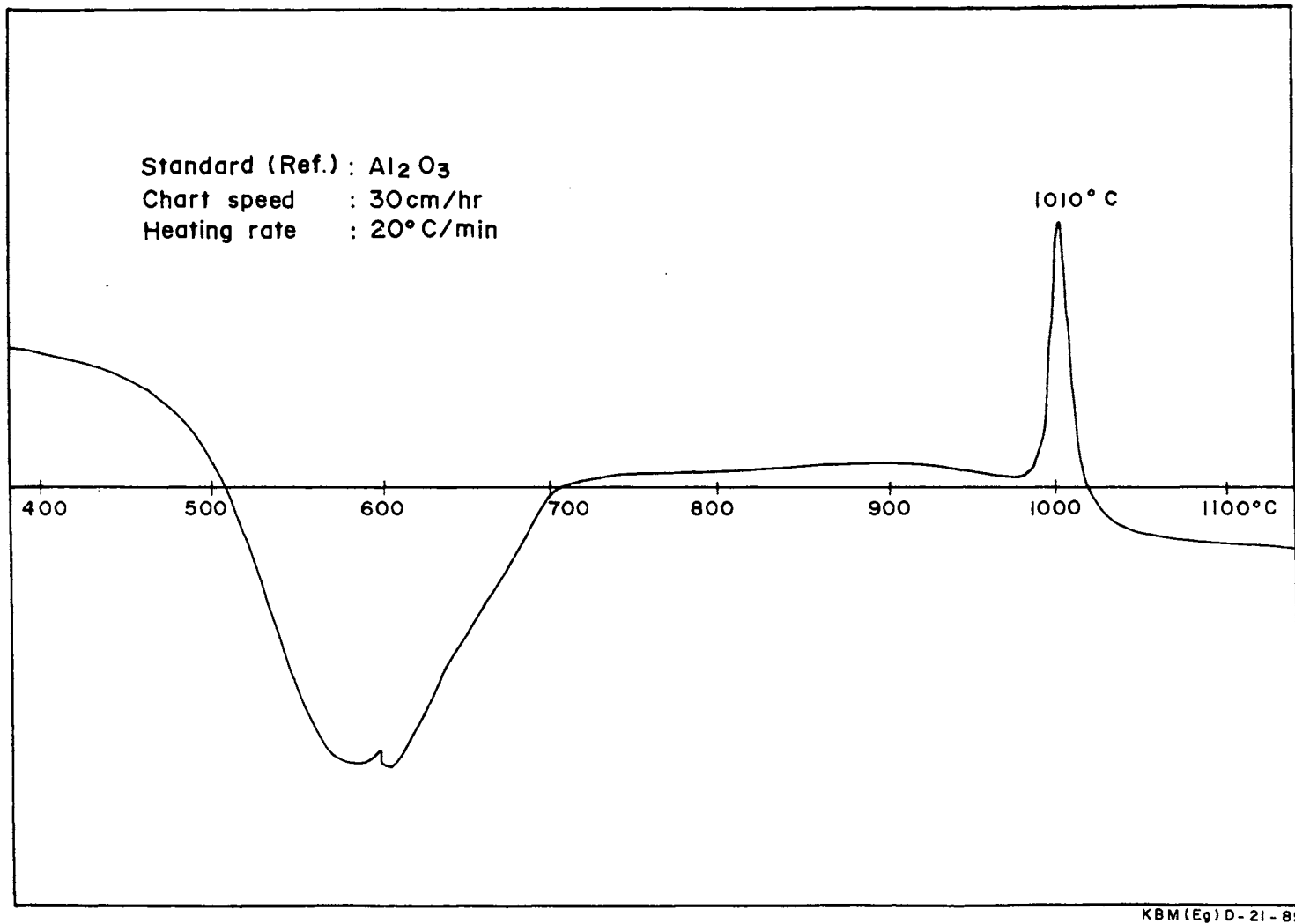


Figure 2. D.T.A. curve of kaolinite rock.

Table 1. Chemical analyses of kaolinite from Kangkar, Johor.

	J1	J2
SiO <sub>2</sub> %	39.7	43.6
Al <sub>2</sub> O <sub>3</sub>	39.1	41.5
Fe <sub>2</sub> O <sub>3</sub>	3.43	0.14
TiO <sub>2</sub>	1.53	0.04
MgO	t	t
CaO	0.06	0.12
Na <sub>2</sub> O	0.03	0.05
P <sub>2</sub> O <sub>5</sub>	0.36	0.15
L.O.I.	15.9	14.4
	100.11	100.0

t means less than 0.01%

Analyst: Lee Kim Hock

Two samples of the kaolinite were analysed chemically and the results are shown in Table 1.

Some of the chemical analyses of kaolinite found in the literature (Deer *et al.*, 1963), show SiO<sub>2</sub> ranges from 45.48 to 46.07, Al<sub>2</sub>O<sub>3</sub> 38.07 to 39.82, and combined water 13.90 to 14.37. Therefore, the kaolinite under discussion is lower in silica and slightly higher in alumina, whilst the loss on ignition (L.O.I.) is higher than the combined water. The higher iron content in J1 may be partly due to the pyrite and limonite present in it.

### Discussion

The kaolinite under discussion which occurs in compact form, is of both geological and economic interest. Geologically, it is interesting to know its formation in its compact form.

Kaolinite is normally formed by the breakdown of other aluminosilicates, especially the feldspars, either by weathering or by hydrothermal activity. In this manner, the kaolinite usually occurs as earthy aggregates.

The streaky nature of the kaolinite under thin section probably is a manifestation of original flow texture accentuated by the decomposition of trains of minute pyrite into limonite. The light grey patches may represent relict of feldspar phenocrysts. The writers believe that the original rock is probably a rhyolite which underwent pervasive kaolinization soon after its formation. This mode of formation may help to retain its compactness.

Owing to its low hardness and its ability to be polished, the kaolinite under discussion may be used as a carving stone for handicraft and other artistic objects. Recently, a member of the public submitted a stamp (for signature) made of stone for identification. It is called the 'chicken blood stone' on account of its red colour and is reportedly originated from China. It was confirmed by X-ray diffraction method to be kaolinite (Leong Kok Hoong, per. comm.).

The three localities where the kaolinite boulders are found should be assessed for their quantity. Further investigation should be made in the vicinity for more occurrences of such boulders. The source rock is likely to be the volcanic rocks of the Gemas formation. The volcanic rocks should be examined to establish whether kaolinite rock can be found *in-situ*.

The kaolinite boulders should be collected and stockpiled for use in carving and stamp making. There may be a demand for them in the local or export market.

### Conclusions

The variegated boulders found near Kangkar, Johor, have been identified by X-ray method to be kaolinite and further studied by chemical, DTA and optical methods. The kaolinite occurring in the compact form is of geological and commercial interest. Evidence from thin section indicates that the original rock is probably a volcanic flow (?rhyolite) which has undergone pervasive kaolinization soon after its formation.

With the low hardness, the kaolinite boulders can be carved and polished. These boulders should be collected and stockpiled for carving and stamp-making.

### Acknowledgements

The writers express their grateful thanks to the following colleagues: Mr. Foo Khong Yee for reading the original draft, Mr. Lee Kim Hock for the chemical analyses, Ms Fan Choon Meng for the DTA, Mr. Leong Kok Hoong for the X-ray powder photograph and the photomicrographs, and Ms Kannika for the specific gravity and hardness determination. Puan Harliza and Puan Sabariah drafted the text-figures and Ms Mary Chan word-processed the paper.

References

Berry, L.G. & Mason, B., 1961. *Mineralogy*. W.H. Freeman & Co. San Francisco, Charles E. Tuttle Co., Tokyo.

Deer, W.A., Howie, R.A., Zussman, J., 1963. *Rock-Forming Minerals, Volume 3. Sheet Silicates*. Longmans.

Hamadi, C.H., (In manuscript). *Geology and mineral resources of the Muar-Batu Pahat area, Johor*. Geological Survey of Malaysia.

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*Manuscript received 20 November 1989.*

PERTEMUAN PERSATUAN  
(MEETINGS OF THE SOCIETY)

CERAMAH TEKNIK (TECHNICAL TALKS)

Neville R. Hill: Non-metallic rock and mineral mining and its role in industrial, economic and social development

Laporan (Report)

Neville R. Hill, Consultant Geologist on Industrial Minerals, gave the above talk on the 9 March 1990 at the Geology Department, University of Malaya. It proved to be a very interesting and informative talk to the 20 odd members who were present.

Abstrak (Abstract)

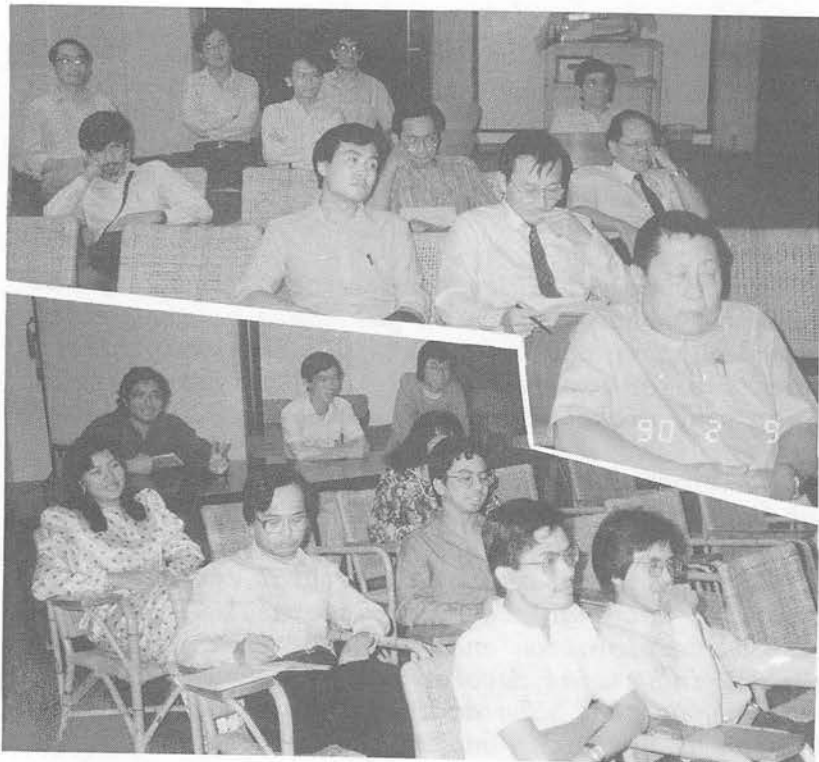
*The present problems in the non-metallics sub-sector of industry and mining in many developing countries have arisen largely because the principal activity in the mining sector of their economies is still the exploration for and production of commodities for export, usually oil, precious metals such as gold and diamonds, or tin, nickel, phosphate, etc.*

*Governments are highly attracted by the concept of being able to export materials whose high value on the international markets brings an immediate direct cash return to them in hard currency. This is despite the fact that the substantial effort, in terms of parastatal and institutional inputs, and expenditure of national and multi-lateral (UN, World Bank, etc) public funds, for the exploration and mining of these materials results in very little internal industrial development or consumption to benefit the bulk of the ordinary people. The added value is obtained elsewhere by dealers in cities such as Amsterdam and Zurich. There, highly skilled technicians turn the gold, diamonds, etc. into very expensive items which are then worn - or hoarded - by the richest minority of the world's population. In the case of gold, for instance, only a small proportion of the original exported product is put to any real use.*

*It is long overdue now that the policy makers in the governments of the poorer countries of the world, and of the international organizations whom they turn to for technical co-operation and funding, should re-examine what are the essentials for improving people's degree of self-sufficiency and overall living standard. To some extent this is beginning to happen.*

*The priority requirements to benefit the majority of the people are now realised to be the local production and supply of bricks and tiles, lime and stone, sanitaryware and refractories, minerals for filling and extending paper, paints, plastic and rubber, cups and saucers, bottles and glasses. These and many other items are those which are basic to a country's industrial growth, to increased local employment and improvement in know-how and skills and to a better life for its people generally.*

*The talk will show how industrial mineral production is an indicator or industrial maturity. It will consider the problem of who is responsible nationally, in a sector which is highly diversified and involves many organizations, for ensuring the proper development of the non-metallics. What steps can be taken to develop the sector? These and other factors will be discussed and examples of possible solutions presented.*



NEVILLE R. HILL

John Suter: Late Quaternary shelf margin deltas, Northwest Gulf of Mexico

Laporan (Report)

A technical presentation by Dr. John Suter jointly organized with Esso Malaysia was held on the 2nd of April 1990. The talk was given in the Esso's Building, Bangunan Antarabangsa, Kuala Lumpur. It was attended by a crowd of about 25, mainly those from the petroleum industry.

The talk focused on the results obtained from a study of about more than 35,000 km of single-channel, high-resolution, seismic profiles traversing the continental slope of the Northwest Gulf of Mexico. A total of five late Wisconsinan shelf margin deltas, including that of the Mississippi deltas were recognized by their geomorphic patterns, high-angle clinoform seismic reflections and association with buried river systems. Isopach maps show that the deltas range in size up to 5,000 square km and reach thicknesses of over 180 m. The deposits are elongate, parallel with depositional strike, indicating subsidence of the shelf margin as a whole.

These Late Quaternary shelf-margin deltas provide models for analogous deposits in the ancient records. They are primary indicators of the position of ancient shelf margins, and are important for predicting sand occurrences in that environment as well as further downslope. Finally, the short time taken for sequence generation raises some fundamental questions about sequence time scales, correlation, and driving mechanism.

The talk by Dr. Suter generated lengthy discussions afterwards and if not for the fast-approaching breaking of fast time for the Muslim audience, it could have extended for a while!

Noor Azim

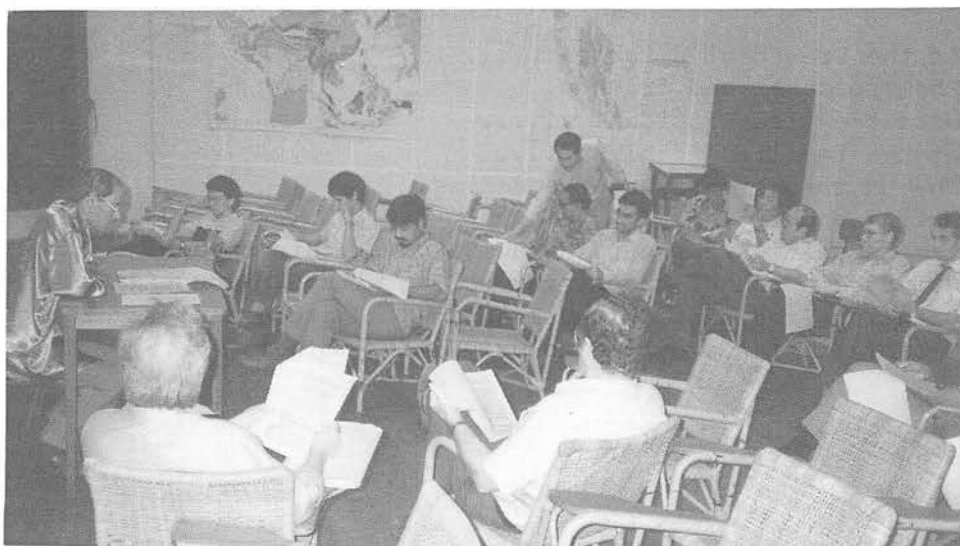
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## THE 24TH ANNUAL GENERAL MEETING

The Society's AGM for 1990 was held at 5.30 p.m. on Saturday 21 April 1990 at the Geology Department, University of Malaya, Kuala Lumpur.

The AGM was chaired by Dr. Hamzah Mohamad, who will be completing his tenure as President for 2 years.

All reports by the various office-bearers went on smoothly. A suggestion by M.K. Choo that was adopted by the meeting was that minutes of the AGM and relevant reports will be sent to members who request for them on receiving notice of the AGM.



## JAMUAN MAKAN MALAM TAHUNAN (ANNUAL DINNER 1990)

This year's Annual Dinner was again held at Rumah Universiti, University of Malaya, directly after the Society's Annual General Meeting, on the 21 April, 1990.

The 35 participants were treated to a buffet style dinner partly subsidised by the Society.

The Society's new President, Ahmad Said, in his speech took the opportunity to thank all those who have actively contributed to the Society's activities the past year. The last item of the evening was the presentation of the 1990 Young Geoscientist Award to Sriyanee de Silva. As she was still at Oxford University pursuing her Ph.D., her proud mother was present to receive the award on her behalf.

G.H. Teh

\*\*\*\*\*

### Jamuan Makan Malam Tahunan 1990 (Annual Dinner) - Caption of photos

#### No.

1. At the President's table .....
2. The Treasurer and friends.
3. With the vice-President .....
4. At the families' table .....
5. The UM tutors enjoying themselves.
6. Murthy and friends.
7. The incoming President, Ahmad Said with his speech.
8. Sriyanee's mother and sister posing with GSM Council Members.
9. Outgoing President, Dr. Hamzah Mohamad presenting the Young Geoscientist Award 1990 to Sriyanee's mother.

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# GSM ANNUAL DINNER 1990



**PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)**

Minit Mesyuarat Agung Tahunan ke-23 yang telah diadakan di Jabatan Geologi, Universiti Malaya, Jalan Pantai Baru, Kuala Lumpur pada jam 5.30 petang, Sabtu 22hb. April 1989.

Mesyuarat Agung ini telah dijemput oleh Presiden Persatuan Geologi Malaysia, Dr Hamzah Mohamad.

**Ahli Yang Hadir**

Hamzah Mohamad (Pengerusi)

Teh Guan Hoe

K.R. Chakraborty

Shu Yeoh Khoon

H.D. Tjia

Che Aziz Ali

Kamal Roslan Mohamed

Tan Boon Kong

Abd Rahim Hj Samsudin

Ian Metcalfe

Lee Chai Peng

Low Keng Lok

Sandrasagaram

Ahmad Tajuddin

Chin Lik Suan

Ramly Khairuddin

Choo Mun Keong

Fateh Chand

Ahmad Said

Abdul Aziz Hussin

J.K. Raj

Uzaymee M.Y.

Idris Mohamad

P. Eswaran

Cheah Eng Hoe

Abdul Rahim Abu Bakar

Noor Azim Ibrahim

R.B. Tate

Ibrahim Komoo (Pencatat)

**1/ Pengesahan Minit Mesyuarat Agung Tahunan Ke-22**

Minit Mesyuarat Agung Tahunan ke-22 telah diluluskan tanpa sebarang pindaan. Kelulusan Minit dicadangkan oleh En Fateh Chand dan disokong oleh En Ramly Khairuddin.

**2/ Perkara-perkara Berbangkit**

Presiden Persatuan Geologi Malaysia, Dr Hamzah Mohamad telah memaklumkan perkembangan berikut:

a/ Pendaftaran Institut Geologi Malaysia telah diluluskan oleh Pendaftar Pertubuhan pada 11hb. Mac 1989. Beliau menambah, Jawatankuasa Pro-tem akan mengadakan perbincangan lanjut ke arah menyediakan kertas Parlimen untuk mewujudkan 'Akta Geologis'.

b/ Kaedah menambah ahli baru telah dilakukan dengan tiga cara seperti berikut: i) meluaskan maklumat dalam Warta Geologi, ii) menyebarkan borang ahli semasa penganjuran persidangan, iii) meminta jasa baik Ketua Pengarah GSM menggalakkan kakitangannya menjadi ahli PGM.

c/ Mengenai cadangan mewujudkan jawatan Pembantu Editor, Presiden memaklumkan Majlis belum merasakan jawatan Pembantu Editor perlu diwujudkan

memandangkan Editor yang ada telah memberikan jaminan di atas kemampuannya menguruskan semua penerbitan Persatuan.

d/ Mengenai cadangan membezakan yuran tahunan antara ahli tempatan dan luar negeri, Presiden melaporkan Majlis mendapati tindakan ini masih belum diperlukan lagi memandangkan keadaan kewangan Persatuan yang masih kukuh.

### 3/ Laporan Presiden

Dr Hamzah Mohamad membentangkan laporan Sidang 1988/1989. Di antara perkara utama yang dibangkitkan oleh beliau meliputi:

a/ Persatuan berjaya meneruskan dua kegiatan terbesarnya, iaitu menganjurkan 'Seminar Geologi Petroleum Ke-12' dan 'Persidangan Tahunan Geologi Ke-4'. Keduanya telah mencapai kejayaan. Selain itu, Persatuan masih dapat meneruskan siri Ceramah Teknik, iaitu sepanjang Sidang kali ini, lapan kertas telah dibentangkan oleh ahli geologi dalam dan luar negeri.

b/ Kelima-lima Kumpulan Kerja yang ditubuhkan oleh Persatuan sejak dua tahun yang lepas, telahpun memulakan aktiviti, iaitu merangkumi menganjurkan Kerjalapangan, Bengkel dan Persidangan.

c/ Dalam hal penerbitan, usaha yang bersungguh-sungguh telah dan sedang dilakukan oleh Persatuan, terutamanya untuk menghapuskan 'backlog' penerbitan.

d/ Memandangkan 'Persidangan Tahunan Geologi' akan menganjurkan persidangan ke-limanya, yang juga menandakan bertambahnya kematangan kita, adalah wajar sekali persidangan kali ini mewajibkan penyerahan kertas penuh sebelum persidangan dimulakan, dan dikeluarkan dalam bentuk prosiding.

Sebagai penutup, Presiden merakamkan ucapan terima kasih kepada semua pihak yang terlibat menjayakan kegiatan Persatuan pada Sidang kali ini.

Laporan Presiden telah diterima melalui cadangan oleh En Tan Boon Kong dan sokongan oleh Dr Ahmad Tajuddin.

### 4/ Laporan Setiausaha Kehormat

Dr Ibrahim Komoo membentangkan laporannya untuk dibahaskan oleh ahli yang hadir. Dalam laporannya beliau menggariskan semua aktiviti utama Persatuan sambil menjelaskan kedudukan keahlian dan stok penerbitan Persatuan.

Dr Abdul Rahim Samsudin memberikan pandangan mengenai tempat aktiviti dilakukan. Menurut beliau, kebanyakan aktiviti telah dijalankan di Universiti Malaya, oleh itu pada masa akan datang ada baiknya tempat aktiviti disebar di tempat lain umpamanya di Universiti Kebangsaan Malaysia. Pandangan ini akan diberikan perhatian.

Laporan Setiausaha Kehormat telah diterima melalui cadangan Dr Ian Metcalfe dan sokongan oleh En Abdul Aziz Hussin.

### 5/ Laporan Editor Kehormat

Dr G.H. Teh telah menyampaikan laporannya. Beliau menjelaskan Persatuan telah dapat menerbitkan Buletin No 22 dan semua Warta Geologi tahun 1987. Buletin No 20 dan semua Warta Geologi tahun 1988 akan dapat dikeluarkan sedikit masa lagi. Beliau seterusnya menyampaikan ucapan terima kasih kepada penyumbang kertas, penilai dan pembaca 'proof'.

Dalam sesi soal-jawab, En Choo Mun Keong bertanya bagaimana Warta Geologi dapat di 'up-to-date'. Editor menjawab, pada bulan hadapan semua Warta tahun 1988 dan dua Warta tahun 1989 akan dapat diterbitkan.

En Choo Mun Keong membangkitkan semula kes Pembantu Editor yang beliau syorkan pada tahun lepas. Beliau mencadangkan Majlis harus memikirkan soal memperkembangkan 'organisasi penerbitan' meliputi meningkatkan lagi pelbagai jenis

penerbitan Persatuan. Oleh itu Majlis perlu melantik Penolong Editor untuk melicinkan lagi urusan penerbitan Persatuan.

En R.B. Tate bertanya apakah jenis program mikrokomputer yang digunakan untuk penerbitan Persatuan. Editor menjawab, semua program boleh digunakan.

En Fateh Chand bertanya siapa yang melakukan 'desk-top-publishing'. Editor menjawab, kerja ini dilakukan oleh pencetak. Beliau seterusnya mengesyorkan supaya pencetak menggunakan 'laser reader' yang boleh digunakan untuk mempercepatkan urusan pencetakan.

Laporan Editor Kehormat telah diterima menerusi cadangan oleh En Noor Azim dan sokongan oleh Dr Ian Metcalfe.

#### **6/ Laporan Bendahari Kehormat & Auditor Kehormat**

Dr Ahmad Tajuddin telah membentangkan kedua-dua laporan ini. Beliau menjelaskan pendapatan melebihi penggunaan sebanyak \$59,089.94 (tidak termasuk tanggungan yang belum dibayar) dan simpanan tetap berjumlah \$327,368.29 menunjukkan kedudukan kewangan Persatuan yang kukuh. Pendapatan Persatuan terutamanya datang daripada yuran ahli, faedah simpanan tetap dan derma semasa Seminar Geologi Petroleum. Bagi pihak Persatuan, beliau menyampaikan ucapan terima kasih kepada semua penderma dan ahli yang menyokong kegiatan Persatuan, dan penghargaan khas kepada En Peter Chew selaku Auditor Kehormat.

Semasa soal-jawab, En Choo Mun Keong bertanya mengenai tempoh masa dan faedah simpanan tetap. Bendahari menjelaskan simpanan tetap Persatuan mempunyai tempoh masa yang pelbagai, tetapi maksimum 15 bulan; sementara kadar faedahnya sekitar 5.5%.

Kedua-dua laporan ini telah diterima melalui cadangan oleh En Chin Lik Suan dan sokongan oleh En Ahmad Said.

#### **7/ Perlantikan Auditor Kehormat**

Dr Ahmad Tajuddin memaklumkan kepada ahli bahawa En Peter Chew bersetuju untuk menyambung perkhidmatannya sebagai Auditor Kehormat. Dr Ahmad seterusnya mencadangkan supaya beliau dilantik semula, cadangan ini disokong oleh Dr G.H. Teh. Ahli mesyuarat menerima cadangan ini.

#### **8/ Cadangan Membeli Bangunan PGM**

Dr Hamzah Mohamad selaku Pengerusi Jawatankuasa Bangunan PGM telah membentangkan kertaskerja untuk dibahas oleh ahli mesyuarat. Beliau memberikan penjelasan mengenai kedudukan perlembagaan dan akta pertubuhan yang berkaitan dengan pembelian bangunan. Seterusnya beliau membentangkan fakta yang terkumpul untuk membolehkan ahli membuat keputusan.

Dalam sesi soal-jawab, En Choo Mun Keong mengesyorkan supaya PGM membeli rumah kedai. Dr Ian Metcalfe pula mengingatkan supaya memastikan terdapat ruang untuk aktiviti PGM, sementara En R.B. Tate pula menambah perlunya ruang tempat letak kereta dan kemudahan asas. En Noor Azim memberikan pandangan PGM harus mempunyai sebab-sebab utama dan kukuh mengapa perlu membeli bangunan. En Fateh Chand mencadangkan supaya Majlis membeli bangunan yang harganya tidak melebihi \$300,000.00.

Cadangan membeli bangunan telah diterima oleh ahli mesyuarat dan meminta ahli Majlis pada sidang akan datang menguruskannya.

#### **9/ Gran Penyelidikan Geologi**

Presiden mengemukakan draf cadangan mengwujudkan gran penyelidikan siswazah geologi. Draf cadangan ini telah dibincangkan oleh ahli mesyuarat dan diterima sebulat suara. Majlis akan datang diminta menghalusi dan melaksanakan skem ini.

#### **10/ Hal-hal Lain**

a/ En Fateh Chand selaku Pengerusi Jawatankuasa Pro-tem Institut Geologi Malaysia (IGM) memaklumkan akan mengedarkan borang keahlian sedikit masa lagi. Semua ahli PGM dijemput memohon menjadi ahli IGM.

b/ En Choo Mun Keong selaku Pengerusi Jawatankuasa Kecil Teknik Polisi Mineral Negara merayu ahli-ahli memberikan sumbangan fikiran ke arah penggubalan polisi ini. Semua pendapat boleh dihantar kepadanya melalui PGM.

c/ Dr Hamzah Mohamad selaku Presiden sidang yang lepas merakamkan ucapan berbilang terima kasih kepada semua ahli Majlisnya kerana telah memberikan kerjasama yang baik. Ucapan terima kasih khusus kepada En Hila Ludin Abu Hazim dan En Chin Lik Suan yang tidak akan lagi bersama ahli Majlis yang lain pada sidang akan datang.

#### 11/ Pengumuman Ahli Majlis 1989/1990

Presiden mengumumkan anggota Majlis 1989/1990 adalah seperti berikut:

Presiden	: Hamzah Mohamad (UKM)
Naib Presiden	: Ahmad Said (PETRONAS)
Setiausaha	: Ibrahim Komoo (UKM)
Penolong Setiausaha	: Jimmy Khoo (GSM)
Bendahari	: Ahmad Tajuddin Ibrahim (UM)
Editor	: Teh Guan Hoe (UM)
Ahli Majlis (2-tahun)	: Noor Azim Ibrahim (PETRONAS) Nik Ramli Nik Hassan S. Paramanathan (UPM) Albert Loh (MMC)
Ahli Majlis (1-tahun)	: Idris Mohamad (UM) Fateh Chand (GSM) Tan Boon Kong (UKM) Khee Kok Kean (ESSO)
Presiden Terdahulu	: John K. Raj (UM)

12/ Mesyuarat Agung Ke-23 ini ditangguhkan jam 6.45 petang.

## LAPORAN PRESIDEN SIDANG 1989/90

Sepanjang Sidang 1989/90 Persatuan bergerak cergas menyediakan kemudahan kepada ahli dari segi penerbitan, persidangan, seminar teknik, kursus/bengkel, dan lawatan geologi. Kewangan Persatuan juga terus-menerus kukuh. Persatuan semakin popular.

Seminar Geologi Petroleum Ke-13 yang diadakan di Kuala Lumpur pada 4-5 Disember, 1989 telah dihadiri sekitar 400 peserta, yang teramai setakat ini. Persatuan merakamkan ucapan terima kasih kepada Sdr. Hila Ludin Abu Hazim selaku Pengerusi JK Penganjur seminar tahunan ini. Walau bagaimanapun, kerana kesuntukan masa Persidangan Tahunan Kali Ke-5 hanya dapat diadakan pada 7-8 Mei 1990 ini, di Ipoh, Perak. Setakat ini lebih 30 kertas untuk pembentangan diterima.

Persatuan juga berjaya mengadakan dua kursus/bengkel iaitu Workshop on Geoscientific Writing and Editing (Mei, 1989; Kuala Lumpur - Ipoh - Kuching), dan Short Course on Modern and Ancient Deep-sea Fan Sedimentation (6-9 Dis., 1989, selepas Seminar Geologi Petroleum Ke-13). Kedua-dua kegiatan di atas mendapat sambutan yang amat menggalakkan. Lawatan dua hari ke Lombong Emas Raub - Lipis (11-12 Dis., 1989) telah juga dapat diadakan.

Siri ceramah teknik berjalan seperti biasa. Sebelas tajuk telah dibahaskan, oleh 10 penceramah, 7 daripadanya dari luar negara. Ini termasuklah ceramah presiden pada 23 Februari, 1990.

Dari segi penerbitan, Majlis telah melantik tiga ahli bagi membantu Editor mempercepatkan penerbitan Warta dan Buletin. Kesan tindakan ini amat menggalakkan. Di sidang ini empat jilid Buletin dapat diterbitkan dan penerbitan buletin "kembali normal". Bagi Warta pula keterbelakangan (backlog) telah dapat dikurangkan kepada 2 isu (4 bulan) sahaja, berbanding 8 isu (16 bulan) di Mesyuarat yang lalu.

Satu lagi perkembangan menggalakkan ialah deraf Geologist Act telah disiapkan oleh JK Penaja Institut Geologi Malaysia dan sedang disemak. IGM juga sedang mendaftar ahli bagi membolehkan Mesyuarat Agung Pertama diadakan secepat mungkin.

Di sebalik kejayaan, Persatuan belum berjaya menyelesaikan projek membeli bangunan. Dengan rasa kesal projek ini terpaksa diserahkan kepada Majlis sidang akan datang untuk tindakan.

Sebagai penutup, dengan tulus ikhlas saya ingin mengucapkan jutaan terima kasih kepada semua pihak, baik individu atau kumpulan, yang telah memberikan sumbangan tenaga dan/atau material bagi menjayakan kegiatan-kegiatan di sidang ini. Saya yakin lebih ramai ahli akan tampil secara aktif supaya kegiatan dapat diteruskan dan objektif Persatuan dicapai.

**LAPORAN SETIAUSAHA KEHORMAT**  
(April 1989 - Mac 1990)

1. Mailis

Ahli Majlis Persatuan Geologi Malaysia (PGM) bagi tempoh laporan ini disediakan adalah seperti berikut:

Presiden	:	Hamzah Mohamad (UKM)
Naib Presiden	:	Ahmad Said (Petronas)
Setiausaha Kehormat	:	Ibrahim Komoo (UKM)
Pen. Setiausaha Kehormat	:	Jimmy Khoo (GSM)
Bendahari Kehormat	:	Ahmad Tajuddin Ibrahim (UM) (sehingga Sept. 1989) Lee Chai Peng (UM) (mulai Okt. 1989)
Editor Kehormat	:	Teh Guan Hoe (UM)
Ahli Majlis (2 tahun)	:	Noor Azim Ibrahim (Petronas) Nik Ramli Nik Hassan (Forad) S. Paramanathan (UPM) Albert Loh (MMC)
(1 tahun)	:	Idris Mohamad (UM) Fateh Chand (GSM) Tan Book Kong (UKM) Khee Kok Kean (EPMI) (sehingga Apr. 1989) Chin Lik Suan (Contractor) (mulai Mei 1989)
Presiden terdahulu	:	John Kuna Raj (UM)

2. Mesyuarat Majlis

Majlis PGM 1989/1990 telah mengadakan mesyuarat bulanannya sebanyak sembilan kali. Mesyuarat Majlis lazimnya diadakan pada hari Jumaat pertama setiap bulan. Majlis telah menubuhkan beberapa jawatankuasa atau kumpulan kecil bertujuan untuk melicinkan dan mempercepatkan pentadbiran PGM. Beberapa orang ahli turut dilantik untuk mewakili PGM dalam pelbagai jawatankuasa di peringkat kebangsaan. Kepada mereka yang terlibat PGM ingin mengucapkan berbilang terima kasih.

3. Keahlian

Jumlah ahli PGM sehingga 31hb Disember 1989 adalah 476. Ahli dari dalam negeri berjumlah 332 sementara ahli luar negeri berjumlah 144. Butir-butir keahlian disenaraikan dalam Jadual 1.

# GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

**BULLETIN OF THE GEOLOGICAL SOCIETY OF MALAYSIA**  
**WARTA GEOLOGI - NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA**

## ADVERTISING SPACE ORDER FORM

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	Format: 20 cm X 28 cm		Format: 18 cm X 25 cm	
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## Schlumberger's Unique New Dipole Shear Sonic Imager Provides Hard Data, Even in Soft Formations.

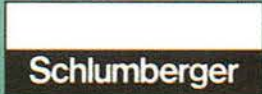
The DSI\* tool does what no previous sonic tool has been able to do—it measures both compressional waves and shear waves effectively in *all* formations, including soft rock.

Now, for the first time, you can have continuous, reliable presentations of  $V_p/V_s$  and Poisson's Ratio, any time you need them. These full wave directional stress measurements are important aids in shear seismic interpretation, and in determining porosity. They also provide valuable data on rock lithology, fluid content, and mechanical properties, such as formation stiffness and compressibility. Data you can use to maximize well production, by designing appropriate hydraulic fracturing programs or, in soft formations, by controlling production to avoid sanding.

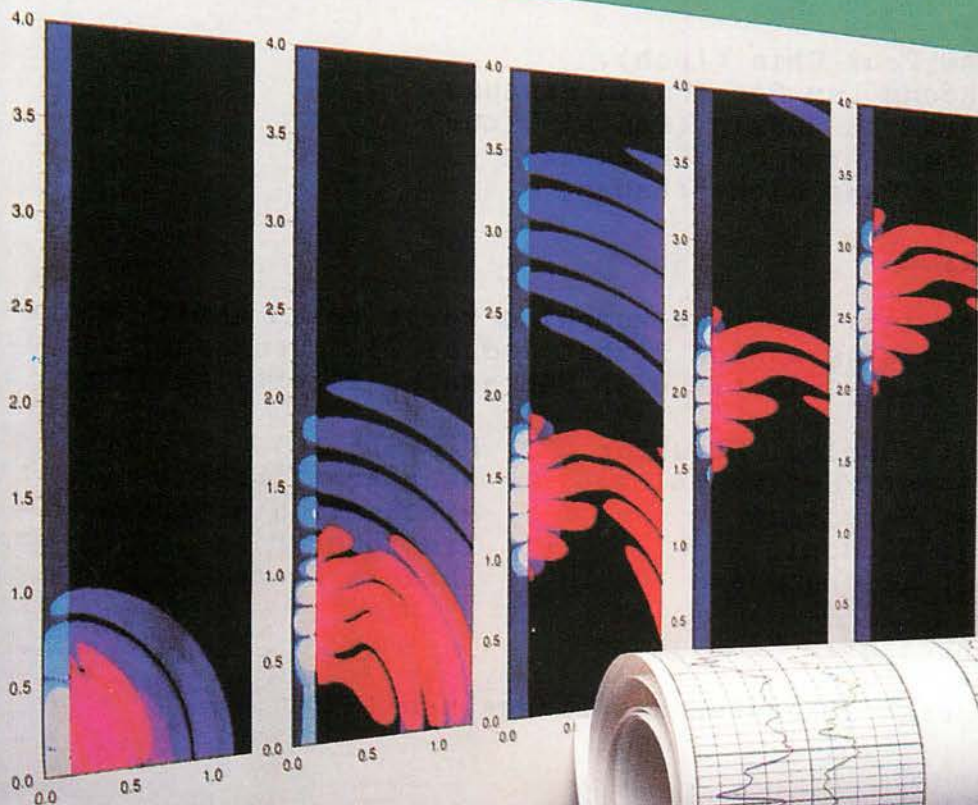
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Talk to your Schlumberger representative about getting hard data in all types of formations, including soft rock, with the unique DSI Dipole Shear Sonic Imager. This technological breakthrough brings full wave measurement and interpretation to every oil and gas producing area in the world.

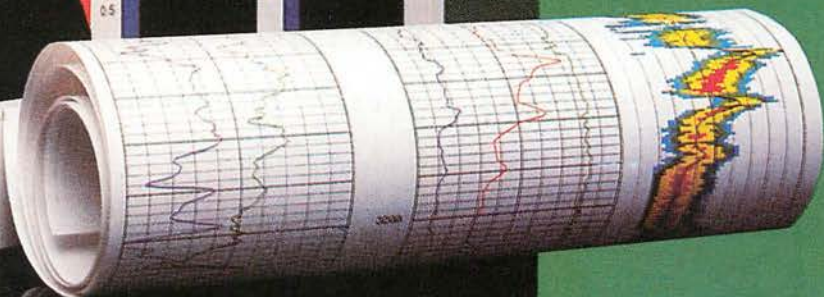
\*Mark of Schlumberger—a MAXIS 500 tool



Value is the difference.



Signal Evolution Plot



#### 4. Aktiviti Persatuan

PGM dapat meneruskan aktiviti tahunan seperti sidang yang lepas. Seminar Geologi Petroleum telah diadakan pada 4-5 Disember 1989 di Hotel Shangrila dan mendapat sambutan luar dugaan. Lebih 400 peserta menghadiri seminar ini. Persidangan Tahunan Ke-5 akan diadakan pada 7-8 Mei 1990 di Ipoh. Sambutan pembentangan kertas sehingga kini amat menggalakkan. Ceramah teknik masih diteruskan. Beberapa kumpulan kerja turut menjayakan aktiviti PGM dengan menganjurkan seminar dan kerja lapangan. Ringkasan aktiviti PGM untuk tempoh April 1988 hingga Mac 1990 disenaraikan dalam Jadual 2.

#### 5. Penerbitan

Masalah penerbitan yang terkebelakang sejak dua tahun yang lepas telah dapat diatasi. Sehingga Mac 90, Warta Geologi, Jilid 15, No. 2 untuk Mac-Apr 1989 telah diterbitkan. Editor sedang berusaha untuk menerbitkan semua Warta Geologi tahun 1989. Penerbitan Buletin sangat menggalakkan. Dalam sidang kali ini sahaja sebanyak empat keluaran telah dapat diterbitkan iaitu Buletin no. 20, 23, 24 dan 25. Bagaimanapun, jualan penerbitan masih lembah dan ahli dirayu untuk membeli penerbitan Persatuan. Stok pada 31hb Disember 1989 dan jualan tahunan 1989 ditunjukkan dalam Jadual 3.

#### 6. Wakil Kawasan

Majlis masih mengekalkan wakil kawasan yang telah dilantik sejak sidang 1987/1988. Mereka yang mewakili PGM kawasan adalah seperti berikut:

- a) Aw Peck Chin (Ipoh)
- b) Leong Lap Sau (Pulau Pinang)
- c) Zakaria Hussin (Pantai Timur)
- d) Chen Shick Pei (Sarawak)
- e) Lim Peng Siong (Sabah)

#### 7. Kumpulan Kerja

Pada sidang ini, beberapa kumpulan kerja telah aktif menjalankan kegiatan masing-masing (lihat Jadual 2). Pengerusi kumpulan kerja yang telah dilantik oleh PGM adalah seperti berikut:

- a) Tektonik/Geologi Struktur : H.D. Tjia
- b) Stratigrafi/Sedimentologi : Noor Azim Ibrahim
- c) Geologi Petroleum : Nik Ramli Nik Hassan
- d) Geologi Ekonomi : Tan Teong Hing
- e) Geologi Kejuruteraan : Ibrahim Komoo

#### 8. Anugerah Geosaintis Muda

Tiada anugerah dikemukakan sehingga Mac 1990.

## 9. Institut Geologi Malaysia

Sejak ditubuhkan pada bulan Mac 1989, Jawatankuasa Protem Institut Geologi Malaysia (IGM) telah mengadakan beberapa kali mesyuarat untuk merancang perjalanan IGM. Sehingga kini, usaha untuk mengumpul ahli sedang dilakukan dan satu jawatankuasa kerja untuk meneliti deraf Akta Geologis Iktisas telah dilantik.

## 10. Kesimpulan

PGM setahun lagi telah dapat menjalankan aktiviti seperti yang telah dirancang dengan jayanya, walaupun beberapa rancangan masih belum dapat diselesaikan. Majlis ingin mengambil kesempatan untuk merakamkan ucapan terima kasih kepada organisasi/pertubuhan dan orang perseorangan yang telah memberikan kerjasama, moral dan kewangan, untuk menjayakan aktiviti Persatuan pada sidang 1989/1990 ini.

Dr. Ibrahim Komoo  
Setiausaha Kehormat

1hb Mac 1990

Table 1: Membership of the Society

COUNTRY	FULL	ASSOCIATE	STUDENT	INSTITUTIONAL	HONORARY	LIFE
Africa				1		
Australia	19			4		1
Brunei						1
Canada	6		1			
Europe	16		3	5	1	2
Hong Kong	3					
Indonesia	7			1	1	1
Japan	7			2	1	
Kuwait				1		
New Zealand	2					
Singapore	19	1		3		
Taiwan	1					
Thailand	4			1		1
United States of America	23			4		1
Malaysia	254	9	45	7	4	13
<b>TOTAL</b>	<b>361</b>	<b>10</b>	<b>49</b>	<b>29</b>	<b>7</b>	<b>20</b>

Jadual 2: Aktiviti PGM (April 1989 - Mac 1990)

Bil.	Tarikh	Aktiviti/Penceramah/Pertubuhan/Tempat
1.	Mei 18-20 (I) Mei 22-24 (K)	Bengkel mengenai Geoscientific Writing and Editing /Dr. P.G. Cooray/ PGM dan AGID/Ipoh, Kuching dan Kuala Lumpur
2.	Mei 20	Ceramah Teknik: Metamorphism, structure and stratigraphy of the Precambrian of Sri Lanka/Dr. P.G. Cooray//PGM/Ipoh
3.	Mei 29	Ceramah Teknik: The geoscientific contribution to third world development/Dr. P.G. Cooray/PGM/Kuala Lumpur
4.	Jun 9	Pertemuan: National Mineral Policy/Kumpulan Kerja Teknik NMP/ Kuala Lumpur
5.	Jun 26-29	Persidangan: Intern. Conf. Engineering Geology in Tropical Terrains/ PGM/UKM/IEM/IAEG/Bangi
6.	Jul 6	Ceramah Teknik: Perkembangan tektonik zon tengah/Dr. Kamal Roslan/ PGM/Bangi
7.	Aug 19	Ceramah Teknik: Sequence stratigraphy tectonic versus eustasy/ Dr. Peter Vail/Rice University/Kuala Lumpur
8.	Aug 19	Perbincangan Lapangan: Gaya struktur batuan Trias di zon Tengah/ Kumpulan Kerja Tektonik & Struktur/N. Sembilan
9.	Sep 19	Ceramah Teknik: Quantitative thermal history determination using Apatite Fission Tract Analysis/Dr. K. A. Hegarty/Geotract International/Kuala Lumpur
10.	Nov 11-12	Lawatan Kajian: Gold mines in Pahang/Kumpulan Kerja Geologi Ekonomi/ Pahang
11.	Nov 27	Ceramah Teknik: Rock slope study and stabilization in Pittsburg; a case history/Dr. R.C. Speck/University of Alaska/Kuala Lumpur
12.	Dis 4-6	Petroleum Geology Seminar '89/PGM/Kuala Lumpur
13.	Dis 6-9	Kursus Singkat: Modern and ancient deepsea fan sedimentation/Dr. C.H. Nelson & Dr. t.H. Nilsen//Kumpulan Kerja Geologi Petroleum/ Kuala Lumpur
14.	Dis 6	Ceramah Teknik: Assessment of geological resources and management of the coastal zone/Dr. J. Harding/PGM dan IPT, UM/Kuala Lumpur
15.	Feb 6 1990	Ceramah Teknik: Diagenesis of the Old Red Sandstone - an example from the Orcadian Basin/Sriyane De Silva//Oxford University/Kuala Lumpur
16.	Feb 23	Ceramah Presiden: Rare earth elements distribution in some insitu Malaysian granitic soils/Dr. Hamzah Mohamad/Kuala Lumpur
17.	Mar 9	Ceramah Teknik: Non-metallic rock and mineral mining and its role in industrial, economic and social development/Neville R. Hill/ Kuala Lumpur
18.	Apr 2	Ceramah Teknik: Sequence stratigraphy of Quaternary sediments of Northwestern Gulf of Mexico, USA/John R. Suter/Kuala Lumpur

Table 3: Stock of Publications

---

Bulletin No.	Sales 1989	Stock remaining
1	18	116
2	16	430
3	16	471
4	16	436
5	16	178
6	18	797
7	18	672
8	16	177
9	13	116
10	12	90
11	13	370
12	11	214
13	10	130
14	11	212
15	10	160
16	13	158
17	14	208
18	13	144
19 & 20	9	514
21	19	381
22	88	365
23	546*	454
24	546*	454
25	546*	454
Field Guide 1	16	146
Abstracts (Bulletin 6)	1	33
Stratigraphic Correlation	18	619

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\* inclusive of free copies distributed to Members

HONORARY EDITOR'S REPORT 1989/90

The long-awaited *GEOSEA V Proceedings* was available in May 1989. Containing 41 papers it recorded a voluminous 881 pages.

The Society's Bulletin series, now totally using the desktop publishing technique, has been subjected to some cosmetic changes to improve, update and standardize the overall format.

*Bulletin 23* (August 1989) totalling 215 pages, contains 11 papers, 6 papers being from the Annual Geological Conference 1986.

*Bulletin 24* (October 1989) totalling 199 pages, contains 13 papers, 6 papers being from the Annual Geological Conference 1987 and 5 from the Annual Geological Conference 1988.

*Bulletin 25* (December 1989), the Special Issue on Petroleum Geology IV, was brought out in time for the Petroleum Geology Seminar 1989.

The Society's newsletter, *WARTA GEOLOGI*, has been brought up-to-date.

The contributions by the authors of papers, reviewers, the members of the Editorial Subcommittee, the Editorial Advisory Board and the donors to the Society's Publications Fund are greatly appreciated.

G.H. Teh

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HONORARY TREASURES'S REPORT

1989/90

The Society's financial situation is still healthy despite a slight drop in fixed deposits from \$327,368.29 to \$310,501.27. This is because we withdrew some of it to pay for the printing of Bulletin 20 and expenses for the Petroleum Geology Seminar '89 and Short Course on Modern & Ancient Deep Sea-fan Sedimentation.

Last year's Petroleum Geology Seminar had the biggest turnout to date but the actual expenses for lunch and cocktail are not confirmed yet.

Printing cost increased substantially because of Bulletin 20 and 22.

On behalf of the Society, I would like to thank all donors and members who have supported the Society's activities for the year.

The Society also wishes to express its profound gratitude to the Honorary Auditor, Mr. Peter Chew for his help in auditing the accounts of the Society and to Dr. Ahmad Tajuddin who served as Honorary Treasurer to September last year.

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**REPORT OF THE AUDITORS TO THE MEMBERS  
OF THE GEOLOGICAL SOCIETY OF MALAYSIA**

To

The Members of the  
Geological Society of Malaysia

We have obtained all the information and explanations necessary for the purpose of this audit and in our opinion, the accounts for the year ended 31st December 1989 give a true and fair view of the state of the Society's financial affairs.



PETER CHEW & CO.  
CERTIFIED PUBLIC ACCOUNTANTS  
AUDITORS

Kuala Lumpur  
17 February 1990

PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)

INCOME AND EXPENDITURE ACCOUNT FOR  
THE YEAR ENDED 31 DECEMBER 1989

INCOME	1988	1989
-----	-----	-----
Entrance fee	\$762.52	\$ 1,400.00
Subscriptions	\$18,431.32	19,914.99
Fixed deposits interest	\$12,152.80	12,216.50
Sales of publications	\$14,567.38	13,792.46
Seminar: Petroleum Geology 1988	\$46,276.52	56,927.32
Xerox	\$1,266.86	441.90
AAPG Course	\$7,596.33	
	-----	-----
	\$101,053.73	\$104,693.17
LESS EXPENDITURE		
-----		
Bank charges	\$417.30	\$ 679.09
Depreciation on office equipment	\$3,355.00	3,355.00
Honorarium	\$4,220.00	4,432.00
Postage	\$2,106.62	3,613.88
Printing & Stationary:		
Miscellaneous	\$207.95	\$ 2,011.70
Newsletters	\$5,696.30	3,600.00
Bulletin 20	\$19,895.00	44,050.00
Bulletin 22	-\$1000.00	22,250.00
Refreshments	\$383.80	539.99
Subscription to professional bodies	\$169.21	72.73
Sundry expenses	\$1,514.40	4,047.34
Annual General Meeting	-	12.00
Telephone expenses	\$423.15	543.57
Speakers' account	\$1,357.85	747.01
Annual Dinner	\$315.00	495.00
Annual Conference 1989	\$2,678.16	3,961.05
National Mining Policy	-	1,549.04
Workshop	\$105.00	1,099.43
Study Groups	\$119.05	983.15
	-----	-----
	\$41,963.79	\$98,041.98
EXCESS OF INCOME OVER EXPENDITURE	\$59,089.94	\$ 6,651.19
	=====	=====

PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)

BALANCE SHEET AS AT 31 DECEMBER 1989

FIXED ASSETS	1988	1989
-----	-----	-----
Office equipment	\$33,559.87	\$ 33,559.87
Less: Accumulated depreciation	\$25,049.00	\$ 28,404.00
	-----	-----
	\$ 8,510.87	\$ 5,155.87
CURRENT ASSETS		
-----		
Fixed Deposits	\$327,368.29	\$310,501.27
Cash at bank	82,155.84	50,593.66
Petty cash	249.88	220.22
Expenses prepaid:		
Telephone deposit	300.00	300.00
Seminar: Petr. Geol. 89		3,896.58
Institute Geology Malaysia		262.70
Short Course		17,294.05
Annual Conference	699.00	
	-----	-----
	\$410,773.01	\$383,068.48
	-----	-----
	\$419,283.88	\$388,224.35
	=====	=====
Represented by:		
CAPITAL FUND		
-----		
Balance as at 1.1.89	\$312,988.67	\$372,078.61
Add: excess of income over expenditure	\$59,089.94	6,651.19
	-----	-----
	\$372,078.61	\$378,729.80
Student Loan Fund	7,904.91	6,404.91
Annual Conference 1990	36,231.72	21.00
Young Geoscientist Award	3,068.64	\$3,068.64
	-----	-----
	\$419,283.88	\$388,224.35
	=====	=====

# BERITA - BERITA PERSATUAN (NEWS OF THE SOCIETY)

## KEAHLIAN (MEMBERSHIP)

The following applications for membership were approved:

### Full Members

1. Mohd Badzran Md Taib, Bhg. Perlombongan, Ting. 13, Menara PERMINT, Jln. Sultan Ismail, 20200 K.T.
2. M. Selvarajah, Nilai Agencies, Ting. 15, Wisma SPK, 22, Jalan Sultan Ismail, 50250 Kuala Lumpur.
3. Foong Yin Kwan, Hollingsworth Dames & Moore, 135 Wickham Tce, Brisbane, Qld. 4004, Australia.
4. Yunus Abd. Razak, Geological Survey of Malaysia, P.O. Box 1015, 30820 Ipoh, Perak.
5. Mohammad Rostan Zakaria, PKINK, P.O. Box 142, 15710 K. Bharu, Kelantan.
6. David O. Mason, CRA Expl., Private Bag 509, Box Hill, Vic. 3128, Australia.

### Student Members

1. Liaw Vui Kong, Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
2. Abg. Kiprawi Abg. Abdillah, Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
3. Mohd. Salim Abd. Wahid, Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
4. G. Mahendran, Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.
5. Ting Ching Soon, Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur.

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## PERTUKARAN ALAMAT (CHANGE OF ADDRESS)

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

1. Ibrahim bin Samsudin, Malaysia Mining Corp. Bhd., 24 Jalan Sultan Mahmud, 20400 Kuala Terengganu.
2. Gan Ah Sai, Unit 2, 284/286, Grand Promenade, Dianella 6062, Western Australia.
3. N. Mogana Sundaram, 186, Jalan 7, Taman Tan Yew Lai, 58200 Kuala Lumpur.
4. Noor Bakri bin Endut, Pusat Remote Sensing Negara, No. 13, Jalan Tun Ismail, 50480 Kuala Lumpur.
5. P.K. Kopper, 526 East 9th, Davis, CA 95616, USA.
6. Keith Grant, c/o Petromer Trend Corporation, Wisma Atria 16-06, 435 Orchard Road, Singapore 0923.
7. N.S. Haile, c/o PRI, Petronas, Lot 1026, PKNS Industrial Estate, 54200 Ulu Kelang, Selangor.

8. Wong See Ching, c/o XTS/13, Topographical Department, Sarawak Shell Berhad, Locked Bag No. 1, 98009 Miri, Sarawak.
9. Tom Turner, 6500 Mineral Drive, Box C-8000, Coeur d'Alene, Idaho 83814-1931.
10. Ismail Che Mat Zin, XGR 3, Block G10/19, Sarawak Shell Berhad, Locked Bag No. 1, 98009 Miri, Sarawak.
11. Denis N.K. Tan, c/o Shell International Petroleum MIJ.B.V. (EPX/13), P.O. Box 162, 2501 An The Hague, Netherlands.
12. H.D. Tjia, Pusat Pengajian Sains Fizik, Universiti Sains Malaysia, 11800 Pinang.
13. S. Senathi Rajah, 54 Jalan Chantek, Canning Garden, 31400 Ipoh, Perak.

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## PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. Seatrad Bull. Vol. X, no. 4, 1989.
2. Memoirs of the Ehime Univ., vol. XI, no. 2, 1989.
3. Oklahoma Geological Survey, Notes, vol. 49, no. 4-6, 1989.
4. Commonwealth Science Council, no. 6, 1989, no. 1, 1990.
5. Geophysical Research Bull. v. 27, no. 3 & 4, 1989.
6. AGID News, no. 60, 1969.
7. Earthquakes and volcanoes, vol. 21, no. 2, 1989.
8. IMM Transactions, Sect. A, Sept-Dec, 1989.
9. IMM Bull. 992, 1990.
10. AGID News, no. 59, 1989.
11. U.S. Geological Survey Circular 1989: 1037, 1038.
12. U.S. Geological Survey Bull. 1989: 1590-G, 1702-H, 1759-B, 1893, 1759-A, 1843, 1876, 1857-C, 1867, 1863, 1737-B, 1702-E, 1702-G, 1794, 1740-F, 1905, 1701-D, 1896, 1892, 1879, 1701, 1706-F.
13. Annales Academiae Scientiarum Fennicae, no. 152, 1989.
14. Berita Geologi (Indonesia), v. 21, nos. 15-20, 1989.
15. Explanatory text of the geologic map of Taiwan, Sheet 7: Chungli & Sheet 2: Tayuan, 1990.
16. Memoires pour servir a l'Explication des Cartes Geologiques et Minieres de la Belgique, Mem. 26 & 27, 1989.
17. U.S. Geological Survey Prof. Paper 1989: 560-A, 1498, 1403-G, 1370-F, 1485, 1497-A, 1499, 1352.
18. Seatrad Centre, Report of investigation, no. 75 & 76, 1989.
19. AAPG Explorer, March & April 1990.
20. Indian Geoscience Abstracts, 1983 (1989) & 1984 (1988).
21. Geological Survey of India News, vol. 20, nos. 1-4, 1989.
22. Bull. Centres Rech. Explor - Prod. Elf Aquitaine, vol. 13, no. 2, 1989.
23. Annual Report, Institute of Geoscience, The University of Tsukuba, no. 15, 1989.
24. Oklahoma Geological Survey, Bull. 144, 1989.

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# BERITA - BERITA LAIN (OTHER NEWS)

## THE PETROLEUM POTENTIAL OF MONGOLIA

The first Joint Venture Agreement between a United States company and an organization of The Mongolian People's Republic was signed on December 2, 1989.

The Ministry for Energy, Mining and Geology of The Mongolian People's Republic of Ulaanbaatar, Mongolia and Exploration Associates International of Texas, Inc. of Houston, Texas are pleased to announce that they have entered into a Joint Venture Agreement. The first part of the agreement is to prepare a report on "The Petroleum Potential of Mongolia". The compilation of data, the evaluation and assessment of the petroleum resources of Mongolia will incorporate all of the existing unpublished geological and geophysical data, including the results of the 1989-90 seismic program. The report and supporting data packages will be assembled and completed by November, 1990.

For questions or additional information, please contact Mr. Bill Penttila or Ms. Mary Michael Page at Exploration Associates International of Texas, Inc. - (713) 931-0604, First City Bank Bldg., 400 North Belt East, Suite 425, Houston, Texas 77060.

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## TUNNELLING '91

### Introduction

The Institution of Mining and Metallurgy, with the cooperation of the British Tunnelling Society, the International Tunnelling Association (Association Internationale des Travaux en Souterrain) and the Transport and Road Research Laboratory, Department of Transport, will hold the sixth international symposium, 'Tunnelling '91', at the Novotel Hotel, London, England, from 14 to 18 April, 1991. The conference will be held in conjunction with the 1991 ITA General Assembly and the associated ITA Executive Council and Working Groups.

General details of the technical programme are given here. Registration forms and full information on 'Tunnelling '91' and its associated events will be sent, in November-December, 1990, to those who complete and return the Reply Form.

The International Tunnelling Association will hold its Seventeenth Annual General Assembly on the occasion of 'Tunnelling '91'. The Association, which was formed in 1974 to further tunnelling and underground works worldwide, has an increasing membership (currently 37 member nations). The Association's Annual General Assembly is held in conjunction with an international tunnelling conference organized by a member nation. The

Association seeks to establish internationally accepted tunnelling standards through the activities of its Working Groups. Representatives of all nations may support these Working Groups, the work of which is carried out by correspondence and meetings during the General Assembly.

The Seventeenth Annual General Assembly will coincide with the final stages of the tunnelling works for the Channel Tunnel. The British Tunnelling Society welcomes the Association for the meeting on this historic occasion. The majority of the member nations will be represented at the General Assembly and the meetings of the Working Groups and a wide international representation is expected at the symposium.

Listed below are a selection of the papers that are expected to be presented at the technical sessions. Colin J. Kirkland, Technical Director, Eurotunnel, will deliver the twenty-fifty Sir Julius Wernher Memorial Lecture of the Institution of Mining and Metallurgy on 15 April, 1991.

'Development of and prospects for mining and excavating equipment used in underground metallic mines in China'

Chang De He, Changsha Institute of Mining Research, People's Republic of China.

'Suitable slurry pressure in slurry-type shield tunnel'

A. Mori, Waseda University, Japan, M. Tamura, Building Research Institute, Japan, and K. Kurihara, Nishimatu Construction Co. Ltd., Japan.

'Soilcrete jet grouting in tunnel construction in cohesive soils, Burnham, United Kingdom'

R.M. Crockford, Yorkon Construction, United Kingdom, A.L. Bell, GKN Colcrete, Ltd., United Kingdom, and G.D. Manley, C.H. Dobbie and Partners, United Kingdom.

'Use of submersible remotely operated, vehicles for the inspection and repair of water-filled tunnels'

R.E. Heffron, Subsea Engineering International, Ltd., U.S.A.

'Comparison of international legislation concerned with tunnelling in compressed air'

J.M. Anderson and D.R. Lamont, Health and Safety Executive, United Kingdom.

'Long-term settlements over tunnels: a ten-year study at Grimsby, United Kingdom'

M.P. O'Reilly, R.J. Mair and G. Alderman, Transport and Road Research Laboratory, United Kingdom.

'Excavation and supporting large cavern in Himalayan geology by use of NATM'

A. Hari Prasad, Himachal Pradesh State Electricity Board, India.

'Geotechnical investigation and assessment of Standedge tunnel on the Huddersfield Narrow Canal, United Kingdom'

P.A. Braithwaite and C.F. Sakalas, Ove Arup & Partners, United Kingdom.

'Adaptability of CSIR rock mass rating for Taiwan south link railway tunnels'

Min Jen Lee and Wen Li Wang, United Geotech, Inc., Taiwan.

'Study of benefits and costs of cut and cover tunnel construction'

A.R. Umney and D. Miller, G. Maunsell & Partners, United Kingdom, and D.R. Carder, Transport and Road Research Laboratory, United Kingdom.

'New information on the health effects of work in compressed air'

R. McCaig, Health & Safety Executive, United Kingdom.

'Ground response to construction of a sewer tunnel in very soft ground'

E.K. de Moor, Sir Alexander Gibb and Partners, Ltd., United Kingdom, and R.N. Taylor, City University, London, United Kingdom.

'Prediction and control of groundwater, vibration and noise for construction of the Hong Kong Bank seawater tunnel'

V.M. Troughton, L.V. Murray and S.A. Murray. Ove Arup & Partners, United Kingdom.

'Safety and risk in tunnelling'

O. Bevan and D. Parkes, Bush & Rennie. United Kingdom.

'Design and construction of the Route 5 tunnels, Hong Kong'

K.W. Torpey, Mott MacDonald Group, Ltd., United Kingdom.

'Lining design for the Great Belt eastern railway tunnel'

K.Bennick, Cowiconsult A.A., Denmark, and D.J. Curtis, Mott MacDonald Group, United Kingdom.

'New rail Alpine transit base tunnel through the Gotthard-Lotschberg, Switzerland'

M. Smith, Swiss Branch, Institution of Civil Engineers, United Kingdom.

Two tours will be organized - the first to include the English and French ends of the Channel Tunnel and the second to London and Southeast England to sites of specific tunnelling interest. Those wishing to participate in the tours, full details of which will be given in the Final Circular/Registration Form.

All enquiries in connection with Tunnelling '91 should be addressed to:

The Conference Office,  
The Institution of Mining and Metallurgy,  
44 Portland Place,  
London W1B 4BR,  
England.

Telephone: 071 580 3802

Telex: 261410 IMM G

Fax: 071 436 5388

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## XXIII INTERNATIONAL CONGRESS - AQUIFER OVEREXPLOITATION

International Association of Hydrogeologists  
- Spanish Chapter -  
15-19 April 1991  
Puerto de la Cruz, Tenerife (Canary Islands, Spain)

### Presentation

Intensive exploitation of aquifers often occurs, particularly in arid and semi-arid areas, where it constitutes one of the main factors in the economic development of these areas. The mismanagement of the water resources has, however, led to important changes in the natural state of aquifers. Some of the most obvious, because they are the most immediately apparent, are ground water table drawdown, the drying up of natural outfalls and changes in water quality. This Congress has been organised in an attempt to define and analyze the positive and negative effects of over-exploitation as well as examine the situation as it exists today.

Given the importance of the problem, at the June 1988 meeting in Orléans, the International Association of Hydrogeologists decided to support the proposal put forward by de Spanish Chapter to organise the XXIII International Congress in Spain.

### Date and venue

The Congress will be held on 15-19 April, 1991, in Puerto de la Cruz, Tenerife (Canary Islands, Spain).

### Scientific program

The topics to be covered are:

- I. Characterisation of aquifer over-exploitation. Hydrogeological and hydrochemical aspects.
- II. Environmental effects related to ver-exploitation.
- III. Protective and corrective measures in cases of over-exploitation.
- IV. Legal and socio economic problems related to aquifer over-exploitation.
- V. Over-exploited aquifers in water resources management.

### Language

Official language will be Spanish and English. Simultaneous translation will be provided.

### Call for papers

Participants wishing to contribute papers or posters are requested to submit an abstract of 300 words. The abstract must be written in Spanish or English and must include the title and the name(s) and address of the author(s). The Scientific Committee will inform authors of the

accepted abstracts and will provide instructions for the preparation of the extended abstract.

At the opening of the Congress, all participants will receive a copy of the extended abstracts and papers presented by guest speakers.

Secretary and information

All correspondence should be sent to:

Dr. Fermin Villarroya,  
Departamento de Geodinámica,  
Facultad de Ciencias Geológicas,  
Universidad Complutense,  
28040 Madrid (Spain).

Tel: (34-1) 449-73-91  
Telex: 41798 UCGEO  
Telefax: (34-1) 243-91-62

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## 2ND INTERNATIONAL CONFERENCE - TIN

Sheraton Rio Hotel, Rio de Janeiro, Brazil.  
April 21st-23rd, 1991.

### Another tin crisis?

Since June 1989 when Metal Bulletin held its first, highly successful, tin conference in Penang, Malaysia, the tin market has been transformed.

At the time tin prices had reached nearly \$US10,000 per tonne. The Association of Tin Producing Countries (ATPC) quota scheme appeared to be having some benefit, and the future looked bright for the industry. Predictions of prices for the end of 1989 stood in excess of \$US14,000 per tonne.

Just 18 months later however, the tin markets is a very different place. Prices have fallen back to around \$US6,000 per tonne (lower, in real terms, than they were after the collapse of the market in 1985). Mines and smelters are once again struggling to survive despite the enormous cost-cutting measures which have already taken place.

While there have been a few bright spots in the market - not least the out of court settlement between ITC member governments and their creditors - there has been much to dampen 1989's optimism.

A combination of circumstances has led to the dramatic fall in prices. On the supply side, producers encouraged by the high prices of the late 80's increased their tin stocks. Also, the U.S. Defense Logistics Agency started to release tin once again in mid-1990 at a rate of 7,000 tpy.

When these changes are looked at in the context of declining demand in the tinplate industry and the absence of Soviet buying, it is not surprising that the tin price has been forced lower.

These lower prices have led to the closure of mines in a number of countries and a question mark now hangs over the future of quite a few more.

The tin market is still in a state of flux. The only clear factor, amongst all this confusion, is that the key to the market's future development (and the whole essence of its stability) lies in the hands of the Brazilian producers. This is why we have chosen to hold our Second International Tin Conference in Rio de Janeiro.

No-one involved in tin today - producers, traders, consumers or analysts - can afford to ignore events in Brazil. Our Rio conference will focus upon various aspects of the country's tin industry; the garimpos, government financial and export policies, mining prospects and the economics of Brazilian tin production.

Although the market is clearly disappointed that Brazil has not yet formally joined the ATPC, it seems that the natural laws of economics are nevertheless taking over in the country. Production in 1990 may well be several thousand tonnes lower than 1989's estimate of 51,000 tonnes.

How much more can be expected in 1991 (and thereafter)? Will production costs in Brazil be forced into line with those elsewhere?

There are many issues that need to be addressed in the tin market today. We are lining up key international and Brazilian speakers in an attempt to answer some of your questions. And what better place to do so than in Rio, where tin industry representatives from all over the world will have the chance of meeting directly with their Brazilian counterparts.

These speakers have already been confirmed to speak at Metal Bulletin's 2nd International Tin Conference:

- Ralph Kestenbaum - the chairman of Gerald Metals SA will be speaking on "Tin and the LME".
- Roberto Giannetti da Fonseca - the president of Silex Trading SA, Brazil and the president of the Brazilian Trade Association (AVECE) will speak on "Brazil's position in the world tin market and its future prospects".
- Elmer Prata Salomao - the general director of the National Mining Department (DNPM) Brazil will speak on an aspect of the Brazilian tin mining industry.
- José Alves da Silva - the president of the Rondônia Garimpeiros Union and vice president of the Association of Amazonian Garimpeiros (Usagal) will speak on "Bom Futuro - its history and repercussions on the tin market".
- Both José Altino Machado - the president of the board of Usagal and Antonia da Justa Feijão - a technical consultant with Usagal will speak on "The politics of the garimpo".

- Gonzalo Martinez Alvarez - the president of ENAF will speak on "The Bolivian tin industry (with special emphasis on ENAF tin smelter rehabilitation since 1987)".
- Harsanto - the marketing director of PT Timah Jakarta.

For further information:

Sue Schofield,  
Metal Bulletin Conferences  
(London)

Tel: (081) 330 4311

Fax: (081) 337 8943

Tlx: 21383 Metbul G

or

Metal Bulletin Conferences  
(New York)

Tel: (212) 213 6202 or

TOLL FREE 1-800 METAL 25

Fax: (212) 213 6273

Tlx: 4974006

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## KURSUS-KURSUS LATIHAN & BENGKEL-BENGKEL (TRAINING COURSES & WORKSHOPS)

### 1990

March 1990 - November 1990

PHOTOINTERPRETATION APPLIED TO GEOLOGY AND GEOTECHNICS (Bogota, Colombia). Annual post-graduate diploma courses organized by the Government of Colombia, Centro Interamericano de Fotointerpretacion, International Institute for Aerial Survey and Earth Sciences and Unesco. Language: Spanish. For Information: Academic Secretariat of the CIAF, Apartado Aereo 53754, Bogota 2, Colombia.

April 1990 - July 1990

RURAL GROUNDWATER DEVELOPMENT (Loughborough, U.K.). A 10-week diploma course organized annually by WEDC. For Information: WEDC, University of Technology, Loughborough, Leics. LE11 3TU, U.K.

April 1990 - July 1990 \*

ENVIRONMENTAL EVALUATION MANAGEMENT AND CONTROL (Liverpool, U.K.). Annual 12-week training course for administrators, consultants and professionals. For Information: Dr. H.W. Pearson, Environmental Management Course, Department of Botany, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, U.K.

May 1990

HYDROLOGY OF FRACTURED ROCKS (Montpellier, France). Annual three-week post-graduate course sponsored by Unesco. For Information: Professeur C. Drogue, Laboratoire d'Hydrogeologie, Universite des Sciences et Techniques du Languedoc, Place Eugene Bataillon, 34060 Montpellier, France.

June 1990

SEDIMENT TECHNOLOGY (Ankara, Turkey). An annual four-week Unesco-sponsored post-graduate course. For Information: Dr. Ergun Demiroz, DSI Teknik Arastirma ve Kalite Kontrol, Dairesi Başkanlığı, 06100 Ankara, Turkey.

June 1990 - August 1990

TECHNIQUES OF HYDROLOGIC INVESTIGATIONS (Washington, D.C. and Denver, Colorado, U.S.A.). Annual training course for international participants. For Information: Office of International Hydrology, Water Resources Division, U.S. Geological Survey, 470 National Center, Reston, VA 22092, U.S.A.

July 1990 - August 1990

CRYSTALLOGRAPHY, MINERALOGY, METALLOGENY (Madrid, Spain). Annual course organized by the Department of Geology and Geochemistry of the Universidad Autonoma de Madrid and sponsored by Unesco. Language: Spanish. For Information: Departamento de Geologia y Geoquimica, Facultad de Ciencias, Universidad Autonoma de Madrid, Canto Blanco, Madrid 34, Spain.

October 1990 - September 1992

GEOLOGICAL EXPLORATION METHODS (Nottingham, U.K.). Two-year MSc course starting every other year with emphasis on applied methodology, data acquisition and interpretations). For Information: Dr. M.A. Lovell, Department of Geology, University of Nottingham NG7 2RD, U.K.

September 13-16, 1990

1990 WORKSHOP ON COASTAL ZONE MANAGEMENT (Coastal processes and public risk; sea-level rise; engineering and management aspects; field visits) at the Iwasaki Resort, Yappoon, Queensland, Australia. For Information: Dr. Aro Arakel, CSEG, Dept. of Applied Geology, Queensland University of Technology, Box 2434, Brisbane, Queensland 4001, Australia.

December 1990 - January 1991

METHODS AND TECHNIQUES IN EXPLORATION GEOPHYSICS (Hyderabad, India). Diploma course organized every second year by the National Geophysical Research Institute of the Council of Scientific and Industrial Research, Hyderabad, India, and sponsored by Unesco. Language: English. For Information: The Director, International Training Course on Methods and Techniques in Geophysical Exploration, National Geophysical Research Institute, Hyderabad, 500 007 (A.P.) India.

### 1991

February 1991 - March 1991

STRUCTURAL GEOLOGY (Dehra Dun, India). A six weeks training course organized every second year by the Wadia Institute of Himalayan Geology, sponsored by the Government of India and Unesco. Language: English. For Information: The Organizer of the Regional Training Course in Structural Geology, Wadia Institute of Himalayan Geology, 33 General Mahadev Singh Road, Dehra Dun 24 8001, India.

May 1991 - November 1991

GENERAL HYDROLOGY with emphasis on groundwater (Buenos Aires, Argentina). A six-month post-graduate diploma course organized every other year and sponsored by Unesco. Language: Spanish. For Information: Comité Nacional para el Programa Hidrologico Internacional de la Republica Argentina, Av. 9 de Julio 1925-15<sup>o</sup> piso, 1332 Buenos Aires, Argentina.

August 1991 - June 1993

SOIL SCIENCE AND WATER MANAGEMENT (Wageningen, The Netherlands). A 2-year MSc. course organized by Agricultural University Wageningen. Course starts every other year. Language: English. For Information: The Director of Studies of the MSc. Course in Soil Science and Water Management, P.O. Box 37, 6700 AA Wageningen, The Netherlands.

August 1991 - October 1991

GEOCHEMICAL PROSPECTING METHODS (Prague, Czechoslovakia). Certificate course organized every second year by the Geological Survey of Czechoslovakia and sponsored by Unesco, IAGC and Czechoslovakia. Language: English. For Information: GEOCHIM Unesco CSSR, Geological Survey of Prague, Malostranské nám. 19, 11821 Prague 1, Czechoslovakia.

## KALENDAR (CALENDAR)

### 1990

July 9-13, 1990

GROUNDWATER IN LARGE SEDIMENTARY BASINS (International Conference), Perth, Western Australia. (Groundwater Conference, University of Western Australia, Nedlands, Western Australia 6009).

July 29 - August 3, 1990

CIRCUM-PACIFIC ENERGY AND MINERALS RESOURCES (Conference), Honolulu, Hawaii. (Mary Steward, Circum-Pacific Council on Energy and Mineral Resources, 5100 Westheimer Road, Houston TX 77056, USA).

August 1990

IGES (13th International Geochemical Exploration Symposium), Rio de Janeiro, Brazil. Sponsored by AEG. (Sherman Marsh, USGS, Federal Center MS 973, Denver, CO 80309-0250, USA).

August 6-10, 1990

INTERNATIONAL ASSOCIATION OF ENGINEERING GEOLOGY (IAEG/AIGI) (6th International Congress), Amsterdam. (QLT/CONGREX, Keisersgracht 782, 1017 EC Amsterdam, The Netherlands).

August 12-18, 1990

INTERNATIONAL ASSOCIATION ON THE GENESIS OF ORE DEPOSITS (8th Symposium), Ottawa, Canada. (Dr. R.W. Boyle, 601 Booth Street, Ottawa, Canada K1A 0E8)

August 20-24, 1990

GEOTHERMAL ENERGY (International Symposium), 14th Annual Meeting of the Geothermal Resources Council, Kailua-Kona, Hawaii (GRC Hawaii, P.O. Box 1350, Davis CA 95617-1350, USA).

August 25-31, 1990

GEOCHEMICAL PROSPECTING (International Symposium), Prague, Czechoslovakia, including the 5th IAGC Symposium on Methods of Geochemical Prospecting and the 14th AEG International Geochemical Exploration Symposium. (Dr. Frantisek Mrna, Geological Survey/UUG, Symposium on Geochemical Prospecting, Malostranske nam 19, 118 21 Prague 1, Czechoslovakia).

August 26 - September 1, 1990

SEDIMENTOLOGY (13th International Congress), Nottingham, UK. (Dr. I.N. McCave, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, UK).

August 26 - September 8, 1990

LATIN AMERICAN CONODONT SYMPOSIUM, La Paz, Bolivia and San Juan, Argentina. (M. Municken, Academia Nacional de Ciencias, Casilla Correo 36, 5000 Cordoba, Argentina).

August 27 - September 1, 1990

WATER RESOURCES IN MOUNTAINOUS REGIONS (IAH and IAHS International Symposium) and IAH (22nd Congress), Lausanne, Switzerland. (Dr. A. Parriaux, Laboratory of Geology EPFL (GEOLEP), CH-1015 Lausanne, Switzerland).

August 28-31, 1990

ADVANCES IN GEOLOGICAL ENGINEERING (International Symposium), Beijing, Peoples' Republic of China (Secretariat: Dr. Yang Zhifa, Institute of Geology, Academia Sinica, P.O. Box 634, Beijing, PRC).

September 10-13, 1990

AFRICAN GEOLOGY (15th Colloquium), organised at the Universite de Nancy with the support of CIFEG and CNRS. (Prof. G. Rocci, Laboratoire de Petrologie, Universite de Nancy 1, BP 239, 54506 Vandoeuvre-les-Nancy, Cedex, France).

September 17-21, 1990

THIRD INTERNATIONAL ARCHAEOLOGICAL SYMPOSIUM, organised by the University of Western Australia. (Dr. Susan Ho, Third International Archaeological Symposium, P.O. Box 435, Nedlands 6009, Western Australia).

September 20-24, 1990

ANDEAN MAGMATISM AND ITS TECTONIC SETTING (International Meeting of IGCP Project 249 with XI Argentinian Geological Congress), San Juan, Argentina. (Dr. C.W. Repela, Centro de Investigaciones Geologicas, Calle 1 No. 644, 1900 La Plata, Argentina).

September 24-28, 1990

PAST AND PRESENT CLIMATE DYNAMICS: RECONSTRUCTION OF RATES OF CHANGE (International Conference), Canton of Ticino, Switzerland. Sponsored by the Swiss Academy of Sciences (K. Kelts, ProClim 90, Postfach 7613, CH3001 Bern, Switzerland).

October 7-13, 1990

COAL DEVELOPMENT IN ASIA/PACIFIC (International Symposium), Hanoi, Viet-Nam. Sponsored by United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP). (Dr. Do Huu Hao, General Department of Mines and Geology, 6 Pham Ngu Lao, Hanoi, Viet-Nam).

October 20-25, 1990

GEODYNAMICS OF THE ARABIAN PLATE (International Conference), Kuwait. (Dr. Waris E.K. Warsi, Department of Geology, University of Kuwait, P.O. Box 5969, Safat 13060, Kuwait).

October 20-25, 1990

HYDROLOGICAL BASIS FOR WATER RESOURCES MANAGEMENT (International Symposium), Beijing, People's Republic of China. (Dr. Chen Jiaqi, P.O. Box 366, IWHR, Beijing, PRC).

October 28 - November 1, 1990

MONOCYCLIC VS. POLYCYCLIC EVOLUTION IN BRAZILIAN/PAN AFRICAN FOLD BELTS (Symposium in conjunction with the 36th Brazilian Geological Congress), Natal, Rio Grande del Norte, Brazil. (Emanuel Ferraz Jardim de Sa, Departamento de Geologia - UFRN-Campus, 59.071 Natal RN, Brazil).

November 19-23, 1990

UNITED NATIONS GLOBAL SEMINAR ON URBAN GEOLOGY (International Symposium organized by UN-ESCAP, HABITAT, UNEP and UNESCO), Bangkok, Thailand.

1991

January 23-25, 1991

MINERAL DEVELOPMENT AND ENVIRONMENT (International Conference), New Delhi, India. (Prof. K.L. Rai, Indian School of Mines, Dhanbad 826 004, Bihar, India).

February 2-4, 1991

SMALL SCALE MINING (International Conference), Calcutta, India. (Organising Secretary ICSSM, c/o The Mining, Geological and Metallurgical Institute of India, 29 Chowringhee Road, Calcutta 700 016, India).

February 20-24, 1991

TECTONICS AND MINERAL DEPOSITS OF THE CARIBBEAN (10th Annual Symposium on Caribbean Geology) Mayaguez, Puerto Rico. (J.H. Schellekens, Department of Geology, University of Puerto Rico, P.O. Box 5000, Mayaguez, Puerto Rico 00709-5000).

March 1991

ECONOMIC EVALUATION OF MINERAL RESOURCES (International Conference), Kosice, Czechoslovakia. Languages: Russian and English. (Intergeoeconomika 1991 CSSR, GEOPOND, Eng St Richter, Garbanova 1, 040 11 Kosice, Czechoslovakia).

April 15-19, 1991

AQUIFER OVEREXPLOITATION (23rd International Congress), Puerto de la Cruz, Tenerife (Islas Canarias), Spain. (Dr. Fermin Villaroga, Departamento de Geodinamica, Facultad de Ciencias Geologicas, Universidad Complutense, 29040 Madrid, Spain).

April 26 - May 1, 1991

ASSOCIATION OF EXPLORATION GEOCHEMISTS (15th International Geochemical Exploration Symposium), Reno, U.S.A. (Richard B. Jones, Nevada Bureau of Mines and Geology, University of Nevada, Reno, Nevada 89557-0088, U.S.A.)

May 1991

QUANTITATIVE METHODS OF INVESTIGATION OF THE STRUCTURE OF SOILS AND ROCKS (IAEG International Symposium), Moscow. (Dr. M. Primel, LCPC, 58 Bd. Lafebvre, 75732 Paris Cedex 15, France)

May 7-22, 1991

GOLD '91 (5th International Conference), Belo Horizonte, Minas Gerais, Brazil. (Brazil Gold '91 Organizing Committee, Avenida Alfonso Pena, 3880-30/50 andares, 30130 Belo Horizonte, MG, Brazil).

May 12-18, 1991

LAND SUBSIDENCE (4th International Symposium), Houston, Texas, USA. (Ivan Johnson, FISOLS, 7474 Upham Court, Arvada CO 80003, USA).

June 10-12, 1991

AFRICAN MINING '91 (2nd International Conference), incorporating PROSPECTING IN AREAS OF ARID TERRAIN and MINE-EX '91, Harare, Zimbabwe: geology, exploration, mining, mineral processing, extractive metallurgy, finance. Organized by The Institution of Mining and Metallurgy in association with The Zimbabwe Section of IMM, The Geological Society of Zimbabwe and The Zimbabwe Institution of Engineers. (The Conference Office, IMM, 44 Portland Place, London W1N 4BR, UK).

August 2-9, 1991

QUATERNARY RESEARCH (13th INQUA International Congress), Beijing, People's Republic of China. (Secretariat, 13th INQUA Congress, Chinese Academy of Sciences, 52 Sanlihe, Beijing 100864, PRC).

August 11-24, 1991

IUGG (XX General Assembly), Vienna, Austria. (IUGG '91 Organizing Committee, c/o Prof. Peter Steihauser, ZAMG, Hohe Warte 38, A-1190 Vienna, Austria).

September 6-11, 1991

PALEOECOLOGY (2nd International Congress), Nanjing, People's Republic of China. (Ma Yu-Ying, Nanjing Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Ssu, Nanjing 210008, PRC).

September 16-20, 1991

ROCK MECHANICS (7th International Congress), Aachen, F.R. Germany. (Deutsche Gesellschaft für Erd- und Grundbau, Kronprinzenstrasse 35a, D-4300 Essen 1, F.R.G.).

September 22-27, 1991

CARBONIFEROUS-PERMIAN STRATIGRAPHY AND GEOLOGY (12th International Congress), Buenos Aires, Argentina. Language: English. (Dr. S. Archangelsky, Museo Argentino de Ciencias Naturales, Avenida A. Gallardo 470, Buenos Aires 1405, Argentina).

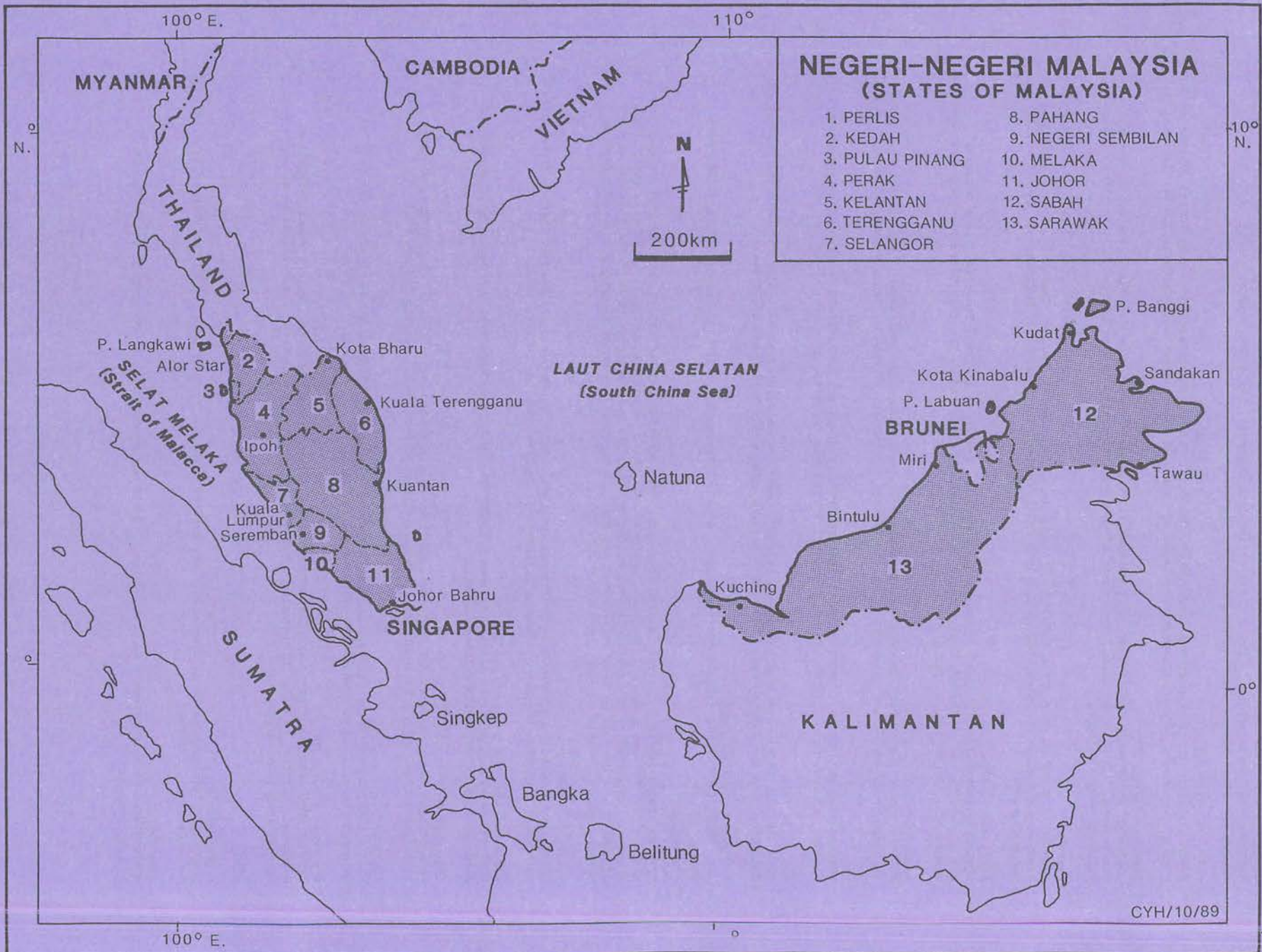
1992

February 9-12, 1992

LANDSLIDES (6th International Symposium), New Zealand. (Dr. M. Primel, LCPC, 58 Bd. Lafebvre, 75732 Paris Cedex 15, France)

June 1992

WORLD MINING (15th Congress), Seville, Spain. (World Mining Congress, Al Ujazdowskie 1-3, PL-00583, Warsaw, Poland).



**NEGERI-NEGERI MALAYSIA  
(STATES OF MALAYSIA)**

- |                 |                    |
|-----------------|--------------------|
| 1. PERLIS       | 8. PAHANG          |
| 2. KEDAH        | 9. NEGERI SEMBILAN |
| 3. PULAU PINANG | 10. MELAKA         |
| 4. PERAK        | 11. JOHOR          |
| 5. KELANTAN     | 12. SABAH          |
| 6. TERENGGANU   | 13. SARAWAK        |
| 7. SELANGOR     |                    |

**LAUT CHINA SELATAN**  
(South China Sea)

**BRUNEI**

**KALIMANTAN**