

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

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ISSUED BIMONTHLY

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CATATAN GEOLOGI (GEOLOGICAL NOTES)

DIAMICTITE ALONG THE EASTERN MARGIN OF THE CENTRAL BASIN OF THE MALAY PENINSULA

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Introduction

Variably sheared diamictites are known to occur along the Bentong - Raub zone which marks the western margin of the Central Basin of the Malay Peninsula (Chakraborty & Metcalfe, 1987; Metcalfe, *in press*). Diamictites have not however been hitherto reported from outside the Bentong - Raub zone.

Recently, the authors recorded an isolated exposure of diamictite on the Segamat - Kuantan highway at bench mark No. TP167 located 13 km north of the junction between the Segamat - Kuantan highway and the Bahau road. This diamictite occurrence is near the eastern margin of the Central Basin (Fig. 1) and this has important implications for interpreting the palaeotectonic evolution of the Malay Peninsula.

Description of diamictite

The diamictites comprise clasts of variable shape but are predominantly sub-angular to sub-rounded (Fig. 2) with occasional large clasts of ellipsoidal shape (Fig. 3). Clast sizes vary from a few mm to more than a meter but generally are of pebble size. Compositionally they are made up of sandstone, tuffaceous sandstone, carbonaceous tuff and mudstone. Some tuffaceous clasts show laminations (Fig. 4) and resemble Triassic laminated tuffaceous sandstones found elsewhere in the Central Basin. These clasts are embedded in a muddy matrix which is sheared and foliated, the foliation being braided in places (Figs. 5 & 6). The foliation strikes variably from NE to NW and dips steeply (about 65 to 90 degrees, commonly around 75 degrees) both easterly and westerly. In places the foliation was observed to curve around clasts resulting in anomolous attitudes.

Discussion

In previous tectonic models for the Malay Peninsula the diamictites have been interpreted as forming part of a subduction melange (Hamilton, 1979). More recently, these diamictites have been interpreted as

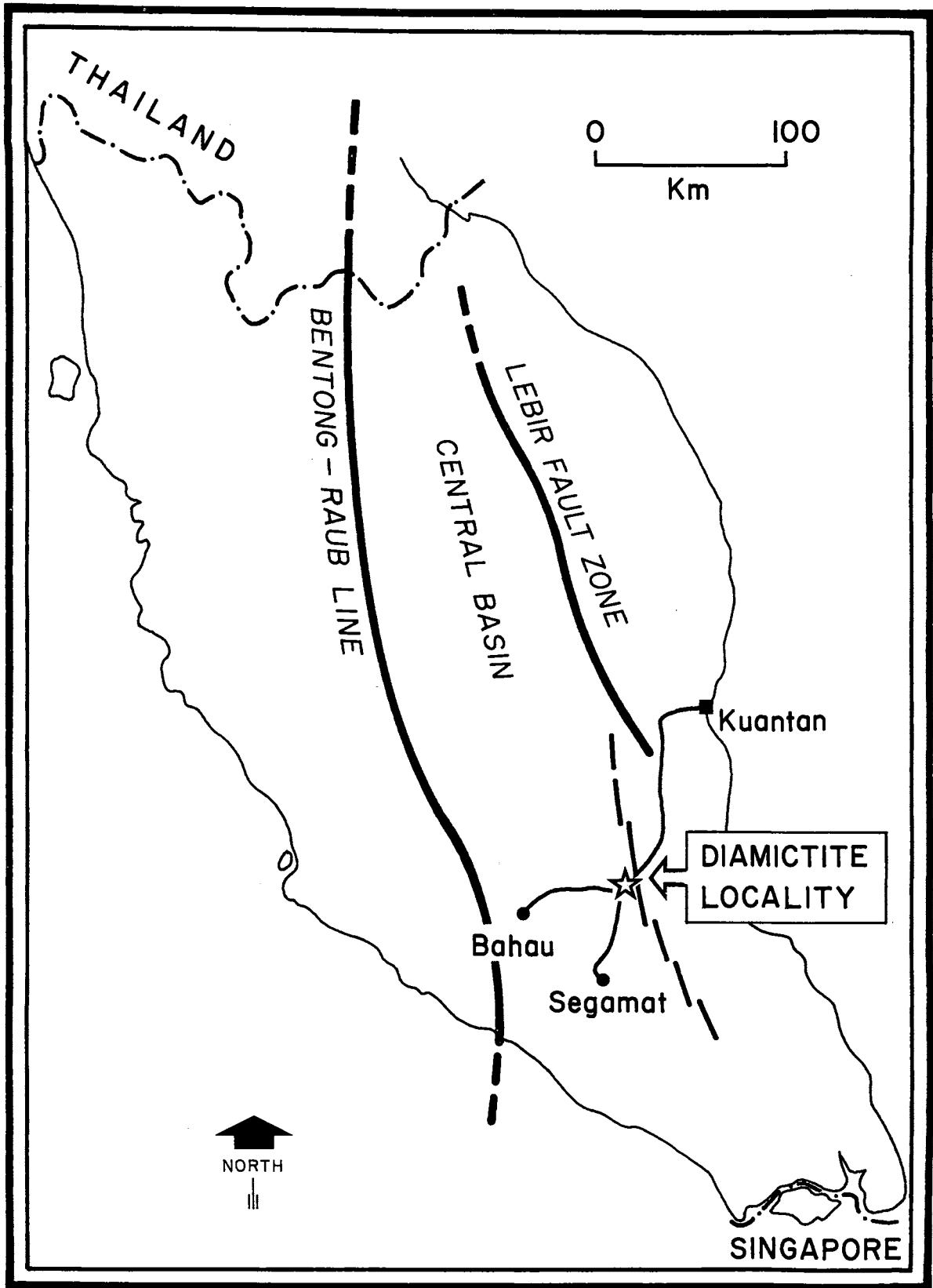


Fig. 1. Sketch map showing the diamictite locality on the Segamat - Kuantan highway.



Fig. 2. Diamictite showing sub-angular to sub-rounded clasts.



Fig. 3. Large ellipsoidal clast in the diamictite.



Fig. 4. Diamictite with tuffaceous clasts showing laminations.



Fig. 5. Diamictite showing well developed foliation.

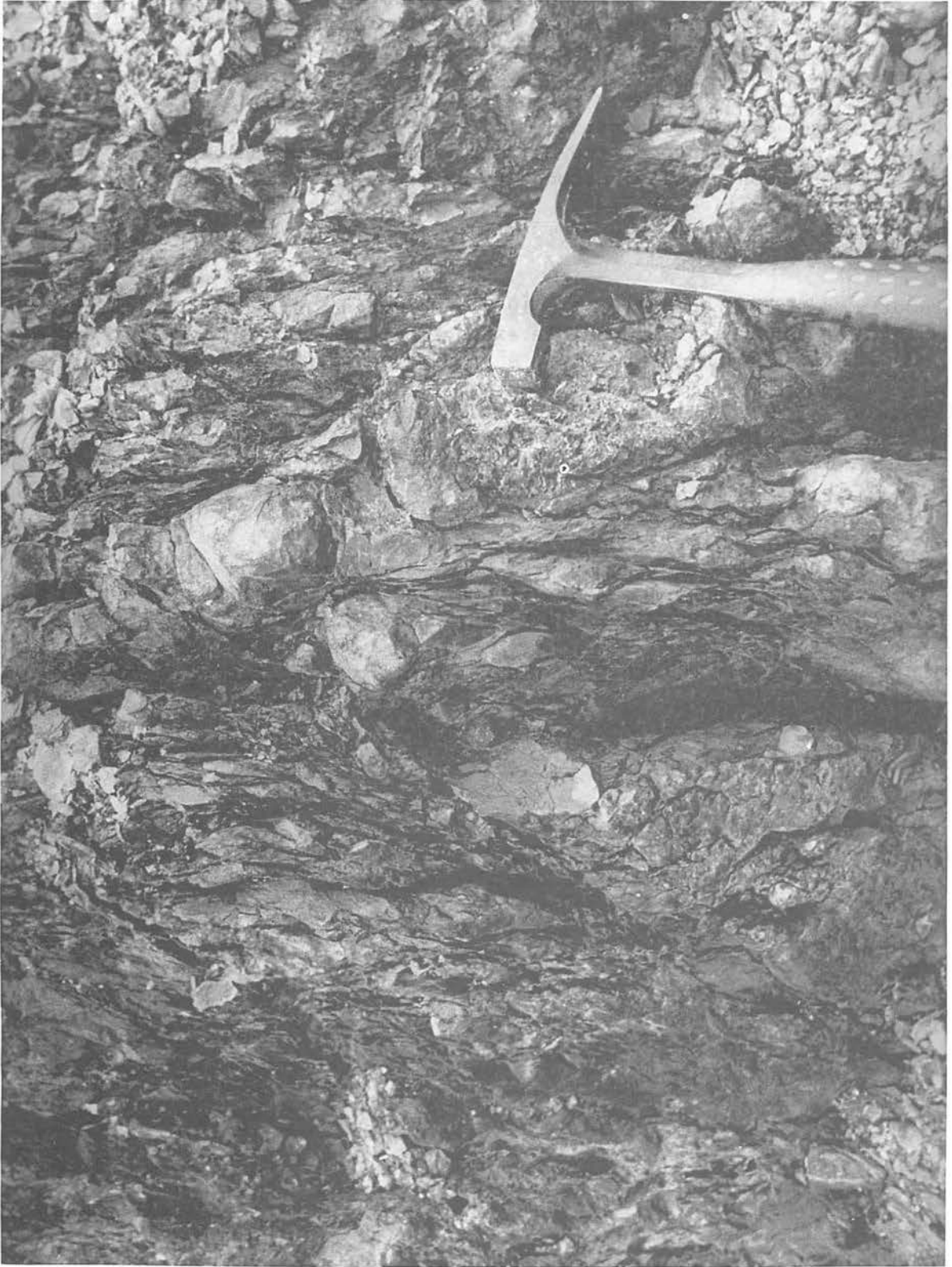


Fig. 6. Diamictite showing braided foliation.

olistostromes by Chakraborty & Metcalfe (1987) and Tjia (1987). While Tjia (1987) explained the origin of the diamictites to be in a subduction setting, Chakraborty & Metcalfe (1987) maintained that the diamictites did not allow a clear cut recognition as to whether they represent a tectonic melange or an olistostrome developed in an extensional setting. The occurrence of diamictite along the eastern margin of the Central Basin supports their interpretation as olistostromes which formed along the fault scarps of a developing graben. If this interpretation is correct, then it would imply that the diamictite along the Segamat - Kuantan Highway is equivalent in age to those of the Bentong - Raub zone which have been suggested on palaeontological grounds to probably be early Triassic (Chakraborty & Metcalfe, 1987).

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- Tjia, H.D., 1987. The Bentong Suture, Paper presented at the sixth Regional Congress on Geology, Mineral and Hydrocarbon Resources of Southeast Asia (GEOSEA VI), Jakarta, Indonesia, 1987.
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Manuscript received 23 September 1988.

CATATAN GEOLOGI (GEOLOGICAL NOTES)

AN UPPER PERMIAN FOSSIL ASSEMBLAGE FROM GUNUNG SINYUM AND GUNUNG JEBAK PUYOH LIMESTONE, PAHANG

M.B. Idris & C.N. Hashim,
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Introduction

Geological investigations on these two prominent limestone hills have long been overlooked because the locality was once considered a restricted area and also due to poor accessibility. However, with the development of the Jengka FELDA project, these hills are now readily accessible. We have collected a large amount of samples from the top to ground level around these hills and recovered a reliable age determining fossil assemblage. These are featured below.

Location and geology

Gunung Sinyum (GS) and Gunung Jebak Puyoh (GJP) lie approximately 50 km north of Temerloh (Fig. 1). These hills are enclosed in the Jengka Forest Reserve and are flanked by Block J25 to the north and Blocks J21 and J22 to the east. They rise prominently (Gunung Sinyum - 525 m, Gunung Jebak Puyoh - 320 m) from the relatively low-lying surrounding areas and dominate the landscape on the northeastern bank of Sg. Pahang.

Gunung Jebak Puyoh consists of well-bedded limestone beds of thickness ranging from 10-150 cm, whereas the limestone beds in Gunung Sinyum are less prominent but appear similarly bedded in certain places only. Generally, the beds in Gunung Jebak Puyoh strike east-west and dip 15° south. Those in Gunung Sinyum strike north-north-west and dip 25° westerly.

Palaeontology and age

Fossils recovered from the limestones include algae, bryozoa, crinoids, echinoids, gastropods, conodonts and foraminiferas. Apart from the crinoid stems, the other fossils recovered are identified microscopically. The mode of preservation only permitted detail identifications of the latter two fossil groups. This fossil assemblage is listed in Table 1 and their illustrations are given in Plate 1.

The most diagnostic age indicators are *N. rosenkrantzii* and *N. serrata serrata* which are recovered from both hills. These conodonts are indicative of the Upper Permian, more accurately the Capitanian age. This age is in general agreement with the rest of the fossils recovered, especially the

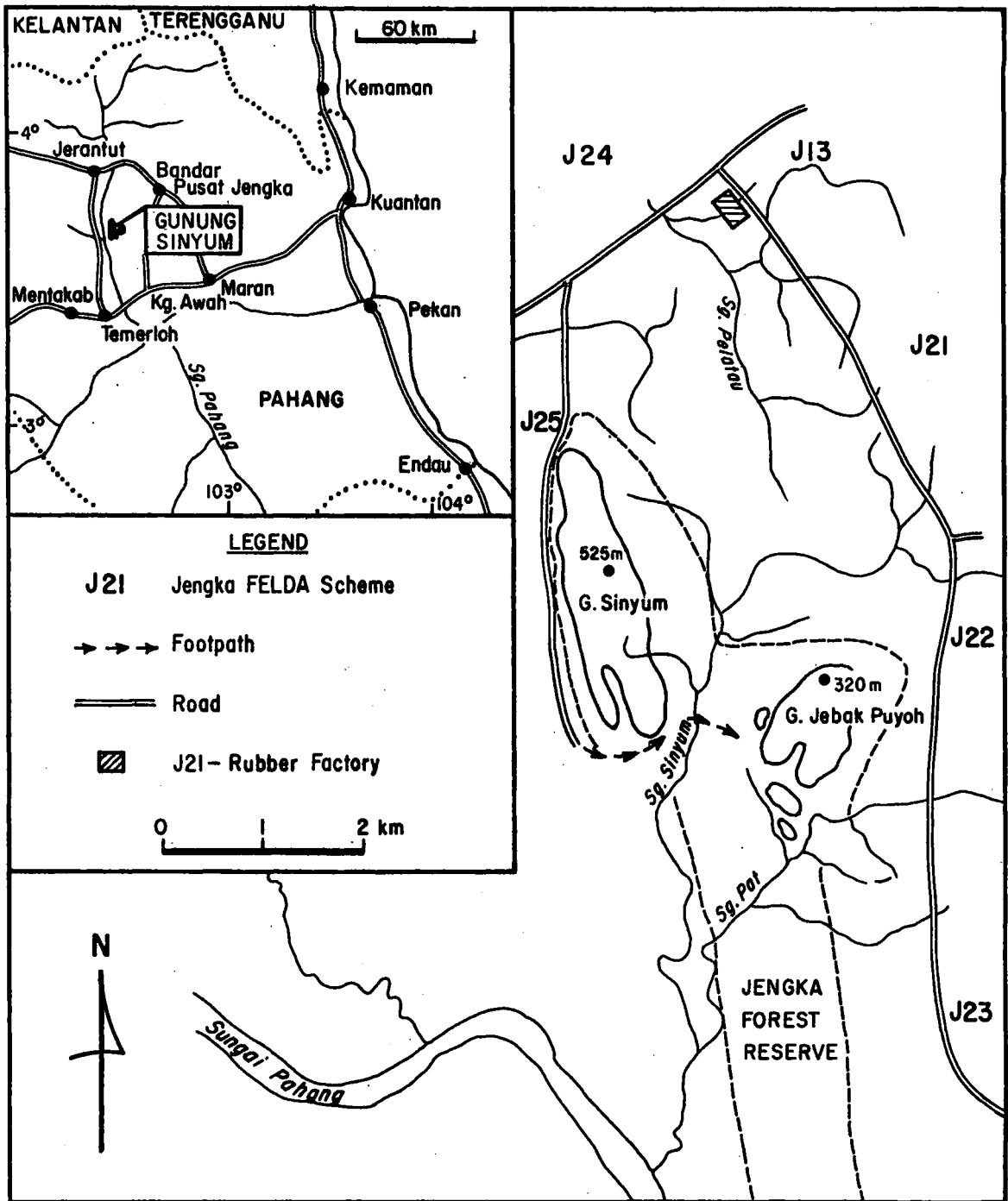
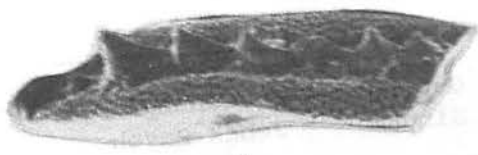
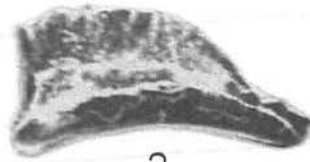


Fig. 1. Location of Gunung Sinyum and Gunung Jebak Puyoh.

Plate 1



1



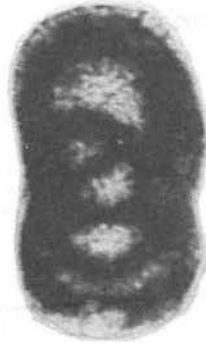
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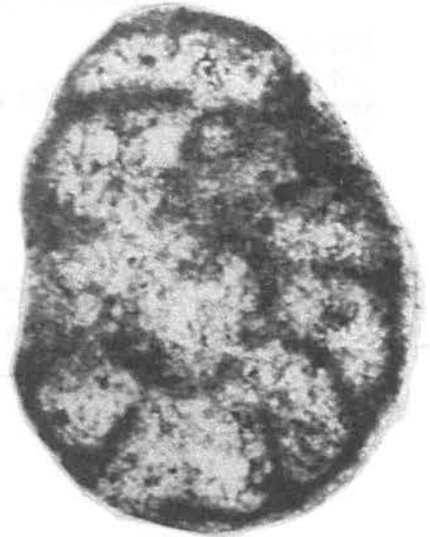
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Table 1. List of fossil assemblage from Gunung Sinyum and Gunung Jebak Puyoh.

	Gunung Sinyum	Gunung Jebak Puyoh
Conodonts		
<i>Neogondolella rosenkrantzi</i>	1	1
<i>Neogondolella serrata serrata</i>	1	1
Foraminifera		
<i>Bradyina nautiliformis shikokuensis</i>	1	2
<i>Bradyina rotula</i>	2	1
<i>Climacammina lagenalis</i>	2	3
<i>Climacammina moelleri</i>	-	2
<i>Mediocris mediocris</i>	2	3
<i>Monogenerina otava</i>	1	-
<i>Parafusulina kaerimizensis</i>	3	-
<i>Schubertella muelleriedi</i>	2	1

Plate 1

- Fig. 1. *Neogondolella rosenkrantzi* (X50)
 2. *Neogondolella serrata serrata* (X50)
 3 & 6. *Bradyina rotula*
 3. sagittal section (X50)
 6. sagittal section (X500)
 4 & 5. *Bradyina nautiliformis shikokuensis*
 4. axial section (X50)
 5. tangential section (X50)
 7 & 8. *Climacammina lagenalis*
 7. axial section (X50)
 8. axial section (X50)
 9. *Climacammina moelleri* (axial section, X50)
 10. *Monogenerina otava* (axial section, X80)
 11. *Schubertella muelleriedi* (axial section, X50)
 12. *Parafusulina kaerimizensis* (sagittal section, X35)
 13, 14 & 15. *Mediocris mediocris*
 13. sagittal section (X50)
 14. tangential section (X50)
 15. sagittal section (X50)

foraminiferas, *B. nautiliformis shikokuensis* and *B. rotula* whose ranges extend to the end of the Guadalupian Age.

Discussion

Prior to this, the age of these limestone hills are vaguely designated as Upper Palaeozoic - Triassic by Koopmans (1968). With this age determination, it is now clear that Gunung Sinyum and Gunung Jebak Puyoh limestone beds are coeval with those limestones in Central Pahang - Jengka Pass, Kg. Awah and Sg. Atok (Toriyama, 1984).

Although Gunung Sinyum and Gunung Jebak Puyoh are surrounded by sediments of the Semantan Formation, it is obvious that these limestones are older and as such belongs to a different formation. More appropriately, they may be referred to the lower part of the Gua Musang Formation. As their occurrence is rather isolated, they may be relegated to member status.

On the Western Belt, *N. rosenkrantzi* has been reported from Bukit Hantu of the Kodingan Limestone in Kedah by Metcalfe (1981). This find contradicts the age determination of these limestone hills by Fontaine *et al.* (*in press*) who assigned them to a Triassic age based on forams and algae. However, Fontaine *et al.*'s samples come from a smaller limestone block south of Gunung Jebak Puyoh and Gunung Sinyum. As such, a possibility that the limestones here (the whole Gunung Sinyum and Gunung Jebak Puyoh area), transgresses the Permian - Triassic boundary cannot be rule out as yet. More detail sampling and studies are required.

Acknowledgements

This research is financed by University of Malaya Vote-F grant 103/83. Mr. Zulraini Mohd. Dhalim assisted in the fieldwork. The figures are drafted by Mr. Y.H. Ching and photography done by Ms. Christina Ong.

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GEOLOGICAL SOCIETY OF MALAYSIA
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FORTHCOMING PUBLICATION

SPECIAL BULLETIN ON PETROLEUM GEOLOGY Vol. III

some of the papers appearing

The role of carbonate diagenesis in exploration and production from Devonian pinnacle reefs, Alberta, Canada

N. R. Watts (Texaco)

Significance of stylolite development in hydrocarbon reservoirs with an emphasis on the Lower Cretaceous of the Middle East

R. B. Keopnick (Mobil)

Studies of carbonates of the Tembesi River Basin, Sumatra

L. Beavais (Univ. Paris)

Tectonic evolution and structural styles of Cenozoic basins around Taiwan area

Frank Fu-Wen Huang (CPC)

Advances in Diplog data processing for stratigraphic analysis

C. Carter Waid *et al.* (Dressler)

Habitat of Hydrocarbons on the Norwegian Continental Shelf

Odd R. Heim *et al.* (Statoil)

Stratigraphic tectonic model for Eastern Borneo

C. S. Hutchison (Univ. Malaya)

Stratigraphy and palaeofacies development of Blocks PM 6 and 12 Offshore Peninsular Malaysia

Md. Nazri Ramli (PETRONAS Carigali)

The geological configuration of the Betty Field, Baram Delta Province, offshore Sarawak

H. D. Johnson *et al.* (Sarawak Shell Berhad)

Better accuracy from sidescan records: The Object-Chord Method

Malcolm James and P. M. Tong (Racal)

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PERTEMUAN PERSATUAN
(MEETINGS OF THE SOCIETY)

CERAMAH TEKNIK (TECHNICAL TALKS)

J.F. Dewey: Tectonic Evolution of Asia

Laporan (Report)

The Society was recently treated to a most entertaining and well illustrated lecture by Prof. J.F. Dewey on the Tectonic Evolution of Asia. Prof. Dewey was one of a recent 24 member joint British-Chinese Expedition to Tibet and he presented results of their geotraverse from the Himalayas northwards across the Tibetan Plateau. He described how slivers of Gondwanaland (Lhasa and Changtang Blocks) had been 'sucked' off the Gondwanaland margin and how the older Palaeotethys had been destroyed and the Neotethys opened up during their travel northwards (*a la* Sengor) to eventually collide with Eurasia. India then followed upon the main break-up of Gondwanaland first travelling north-east at a rate of 10 cm a year and then (about 45 Ma) colliding with Eurasia and pursuing a northward track at 5 cm a year bulldozing into what is now Tibet.

Prof. Dewey advocated the view that the collision of India with Eurasia had in fact only a "local" effect and that there was no eastwards extrusion of China and Southeast Asia as proposed by Molnar & Tapponnier. He proposed that the compressional deformation zone caused by the impact of India was separated from extensional zones to the east and west by narrow North-South zones. The origin of the Cenozoic hydrocarbon-bearing basins in Southeast Asia were considered by Prof. Dewey to be due to "back-arc extension" and not related in any way to extrusion consequent upon the collision of India with Eurasia.

The typically provocative nature of Prof. Dewey's talk prompted many questions from the audience and these had to be curtailed eventually by the chairman due to lack of time. I am sure all who were present at this lecture "hunger" for more of the same and hope that Prof. Dewey will pass our way again in the not too distant future.

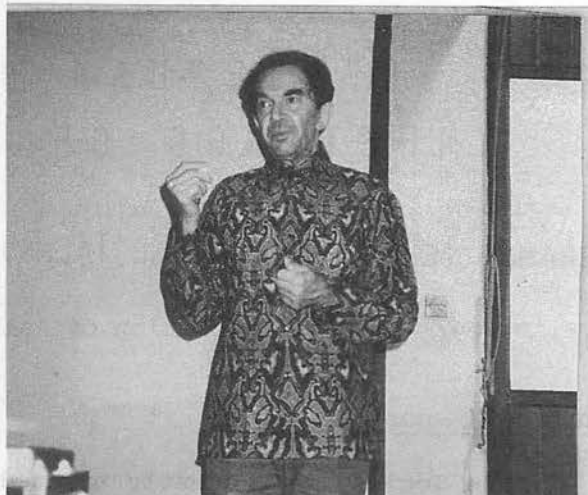
I. Metcalfe

Günter H. Moh:

- 1) 10 Oct. 1988 - The distribution of trace elements in polymetallic ores (with special reference to thallium, its geochemistry, mineralogy and crystal chemistry).
- 2) 10 Oct. 1988 - The development of a complex, polymetallic Sn-W-Mo-Bi-(Be) skarn-greisen deposit, Shizhuyuan, China; stages of metamorphism and reactions.
- 3) 11 Oct. 1988 - Black shale mineralization (including gold, silver, platinum etc.) with special reference to genesis and paragenesis.



J.F. DEWEY



G.H. MOH

Laporan (Report)

Prof. Günter H. Moh of the Mineralogy-Petrography Institute, University of Heidelberg, West Germany, is no stranger to members of the Society. As usual, during his stay, Prof. Moh will oblige with a few talks and at the same time he will be giving lectures on ore mineralogy or geochemistry to the University students.

In his first talk on thallium, Prof. Moh mentioned the occurrence and importance of the element thallium, Tl, which has an ionic radius of 1.47\AA and commonly found with Rb and Cs and replacing K. Thallium is commonly found associated with As, Sb and also Cu, Ag and Au. Thallium is found in low temperature deposits, both epithermal and hydrothermal. In fact 42 ppm Tl has been found in chalcopyrite from Rammelsberg. Next Prof. Moh showed recent work on the ternary systems, Tl-As-S, Tl-Sb-S and Tl-Bi-S, which show large liquid areas at low temperatures of 200° and 315° C.

In his second talk, Prof. Moh spoke on the development of the complex, polymetallic Sn-W-Mo-Bi-(Be) skarn-greisen deposits of Shizhuyuan, Hunnan, China. The deposit is hosted in Mid-Devonian carbonates which have been intruded by Mesozoic multistage acid intrusives - the Quianlishan granite of Early Yanshanian age and granite porphyry which bear the sulphides. Zoning is well demonstrated from the development of the following minerals from the carbonate to the granite end - grossularite, diopside, vesuvianite, wollastonite, nigerite, anorthite, hornblende, scapolite and biotite.

In his last talk, Prof. Moh discussed the recent discovery of gold, silver and platinum associated with black shale mineralization. This arose from the research on the 'kupferschiefer' of Europe and the minerals 'thucholite' (thorium, uranium, carbon) and 'ucholite' (uranium, carbon). Mossbauer studies on gold shows that it occurs both as a metal and a compound. Gold is found in pyrite as a compound. Gold compounds are stable below 200° C, however, at 350° C they form metallic gold. Gold has also been detected as a compound and native metal in bravoite, villamanite and bornite.

G.H. Teh

BERITA - BERITA PERSATUAN (NEWS OF THE SOCIETY)

KUMPULAN KERJA GEOLOGI KEJURUTERAAN (ENGINEERING GEOLOGY STUDY GROUP)

Mesyuarat diadakan pada awal bulan September ini. Lebihkurang 12 peserta menghadirinya di mana Pengerusi, Setiausaha dan Kumpulan Kerja telah dilantikan. Satu kerja lapangan ke sekitar Sg. Piah yang telah dirancangkan terpaksa ditangguhkan sebab banjir.

CHAIRMAN OF STRATIGRAPHY AND SEDIMENTOLOGY STUDY GROUP

Dr. Azhar Hj. Hussin tendered his resignation as Chairman of this Study Group effective from 17.9.88 as he will be leaving for England for a one-year sabbatical leave.

A meeting of the Study Group held on the 8th October, 1988 elected Noor Azim Ibrahim of Petronas Research Institute as the new Chairman for the Group and also discussed future programmes for the Study Group.

KEAHLIAN (MEMBERSHIP)

The following applications for membership were approved:

Full Members

1. Wan Zurusdi Bin Wan Muhammad, 831, Jalan Kubang Bemban, Alor Lintah, 22000 Jertih, Terengganu.
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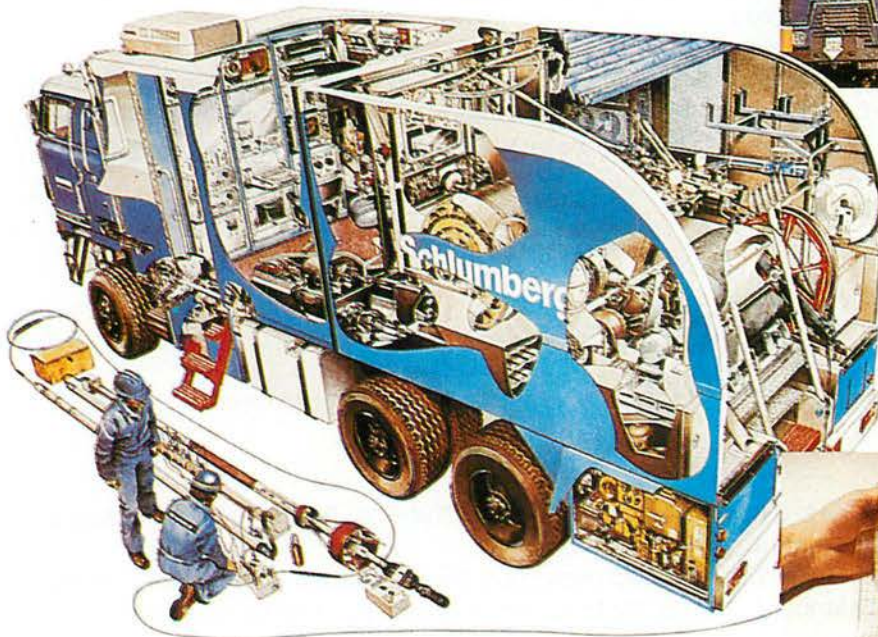
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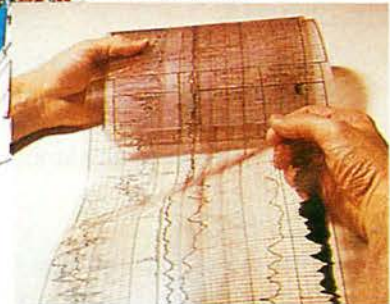


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PERTUKARAN ALAMAT (CHANGE OF ADDRESS)

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

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2. Saim Suratman, 82, Jalan Jasa 4, Taman Jasa, 68100 Batu Caves.
3. Glenn L. Shepherd, Tanglin P.O. Box 402, Singapore 9124.
4. Zulkifli Abdul Majid, PPA Jabatan Petroleum, Universiti Teknologi Malaysia, Jalan Semarak, 54100 Kuala Lumpur.
5. D.A.C. Manning, Department of Geology, The University, Manchester, United Kingdom, M13 9PL.
6. Cheah Eng Hoe, T-48 Taman Raub Jaya, 27600 Raub, Pahang Darul Makmur.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. Berliner Geowissenschaftliche Abhandlungen, Band 74 (1986), 76 (1986), 77 (1986), 80 (1986), 71 (1986), 72 (1986), 73 (1986), 83 (1987), 82 (1987), 78 (1987), 87 (1987), 86 (1987), 84 (1987), 81 (1986), 85 (1987), 88 (1987), 89 (1987), 90 (1987), 91 (1988).
2. USGS Bulletin 1746-A (1988), 1806 (1988), 1811 (1988), 1729-B (1988), 1705-C (1987), 1736-A (1987), 1706-D (1988), 1734-D (1988), 1735-A (1988), 1674-A (1987), 1729-A (1988), 1799 (1988), 1733-A (1987), 1733-C (1988), 1736-B (1988), 1735-B (1988), 1725-E (1988), 1722-B (1987), 1835 (1988), 1838 (1988), 1738-A (1988), 1722-A (1987), 1729-C (1988), 1731-H (1988), 1706-C (1988), 1705-D (1988), 1770 (1987), 1567 (1987), 1715-B (1987), 1733-B (1987), 1830 (1988), 1731-G (1988), 1734-C (1988), 1726-D (1987).
3. Bulletin Des Centres De Recherches Explor-Prod. Elf-Aquitaine 12 (1), 1988.
4. AGID News, no. 56, 1988.
5. Petromin, July, 1988.
6. Commonwealth Sci. Council, May-June & July-Aug 1988.
7. Oklahoma Geology Notes, vol. 48, nos. 1-3, 1988.
8. Scripta Geologica, nos. 87 & 88, 1988.
9. AAPG Explorer, July 1988.
10. USGS Circular 1006, 1987.
11. Seatrad Bulletin vol. IX, no. 2, 1988.
12. USGS Prof. Paper 1393 (1988).
13. Episodes, vol. 11, no. 2, 1988.

BERITA - BERITA LAIN (OTHER NEWS)

PROPOSAL FOR AN IGCP PROJECT

SHORT TITLE: Terranes in the circum-Pacific Paleozoic orogens.
FULL TITLE: Terranes in the circum-Pacific Paleozoic orogens; the characterization of accretionary history, structure and metallogenesis, palinspastic reconstruction and consequences for mineral and energy exploration.

Proposed by: Dr. M.J. Rickard Department of Geology, Australian
National University, GPO Box 4,
Canberra, ACT 2601.
Prof. Guo Lingzhai Department of Geology, University of
Nanjing, Nanjing, China.

Brief outline and main objectives of the project

To continue the work of, the now terminated, IGCP27 (Caledonide Orogen) and in association with the sister projects (IGCP233 & 270) working on the Atlantic margins and Latin America, to extend studies to the Paleozoic deformational episodes in the whole of the Pacific margin belt. Comparison of tectonic and paleomagnetic syntheses in different regions and characterization of terranes. Emphasis on the change from Proterozoic passive margins to Paleozoic active margins. Reconstructions of Paleozoic paleogeography and syntheses of tectonic evolution around the Pacific margin. The project would provide a focus to national efforts in publication of strato-tectonic terrane analyses, tectonic maps and crustal profiles.

Estimated duration of project

10 years.

Tentative work schedule

1989: Form an International Working Group to establish guide-lines for project objectives and formulate priorities for future research and meeting schedule.

1990-1995: Specific projects in local regions, compilation of tectonic maps, characterization of terranes. Determination of paleomagnetic characters of terranes. Organize an International Meeting every 2 years in various countries e.g. Australia, China, Canada, U.S., Mexico, Argentina. Encourage holding of regional workshops.

1996-1999: Syntheses of structures and paleogeographies, role of terranes in genesis of orogens and implication for mineral and energy exploration.

Concrete results

- (a) by 1999 publish a series of terrane maps and accompanying correlation charts (1:5 mill scale) these will provide a basis for paleotectonic maps and models for the genesis of the orogens. Determination of relationships between eastern and western Pacific margins and position of dismembered splinters e.g. Japan, Indonesia and New Zealand. Comparison with established Caledonian and Variscan histories of the northern hemisphere and South Atlantic.
- (b) The metallogenic signature of each terrane, the role of terrane boundaries and other structural elements in controlling mineralization. A better understanding of the broad tectonic and physico-chemical controls of Paleozoic ore deposits e.g. cooperation with IGCP project 220 on tin and tungsten granites in S.E. Asia and W. Pacific.

Short term results

Incentive to accelerate present work on tectonic maps, continental profiles and paleomagnetic syntheses (2 to 5 yrs). Establishment of links between Chinese, Australian and North and South American orogenic belts and their relationships to other regions (2 to 10 yrs). Relationship of mineral deposits to stratotectonic/petrologic units (2 to 10 yrs).

After each International meeting collections of papers will be published. The project will provide a focus for collaborative research and exchanges between Geological Surveys and Universities in all participating countries.

What countries and institutions are in your opinion likely to participate in the project

Universities, Geological Surveys and Academies in Australia, China, Japan, U.S.A., Mexico, Peru, Argentina, Chile, New Zealand, Malaysia and Indonesia. Possibly also Venezuela, Columbia, Ecuador and Bolivia.

Countries that have agreed to participate

Australia (M.J. Rickard, C. Burrett, C. Klootwizk and several others)
China (Guo Lingzhi, Zheng Yadong)
Indonesia (Rab. Sukanto)
New Zealand (R.A. Cooper, J. Bradshaw, R. Norris)
Japan (K. Ichikawa - IGCP 224 convener)
U.S.A. (R.D. Dallmayer - IGCP 233 convener, A.J. Rowell, I.W.D. Dalziel)

Suggested location of major field activities

Research will be conducted in all of the countries involved in the project with emphasis placed on areas essential to terrane analysis. A detailed program will be put forward during organizational stages. Initially focus will be on eastern Australia and eastern China where the Paleozoic orogens are best developed, later considerations will embrace the dismembered terranes of New Zealand, Indonesia and Japan and in parallel studies the more enigmatic eastern Pacific terranes buried in the younger Cordilleran Orogen Field conferences are anticipated in Australia, China and in North and South America.

Laboratory research will be carried out at institutions which agree to participate together with others recruited during the organizational period. Support from Paleomagnetic and geochronological laboratories will be sought locally.

TUNNEL CONSTRUCTION '90 AND DRILLEX '90

Two International Conferences and Exhibitions, 3-7 April, 1990, Wembley Stadium Complex, London, England.

Organized by The Institution of Mining and Metallurgy.

Tunnel Construction '90 and Drillex '90 will form part of the International Construction Equipment Exhibition (ICE '90), which will be the major international exhibition for the construction and public works industries in 1990 as well as the largest trade fair ever held in London.

The ICE '90 event will feature:

- Construction equipment
- Access equipment and cranes
- Tunnel construction
- Concrete plant and production
- Hydraulics and components
- Drilling equipment
- Public services

TUNNEL CONSTRUCTION '90

Tunnel Construction '90 will have as its theme the design, construction, operation, maintenance and refurbishment of tunnels worldwide, with particular emphasis on municipal engineering.

Papers

Papers are invited on practical developments in safety, technology and cost-effectiveness of tunnelling and associated works for water distribution, sewerage systems and underground services. The technical sessions will include presentations on the following topics:

1. Machines and methods - shields, roadheaders, drill/blast, automation and robotics, pipejacking, cut and cover, immersed tube and research and development.
2. Geotechnical topics - site investigation, ground treatment (e.g. by dewatering, grouting or freezing), lining and support, ground movements and measurements.
3. Services - planning, surveying, contractual and legal aspects, materials supply and handling, safety and health, operation, maintenance and refurbishment, including relining systems.
4. Complete projects - design, construction and reconstruction of underground excavations for municipal purposes, management and control of time, cost and quality.

Abstracts (ca. 300 words) of proposed papers should be submitted to the Conference Office, 'Tunnel Construction '90', The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, England. Completed manuscripts of selected papers will be required in October, 1989.

Technical Visit - Channel Tunnel.

DRILLEX '90

Theme and papers

'Drilling for construction and mining' is the theme of Drillex '90 and some ten papers will be presented for discussion at the one-day conference. Summary versions of these texts will be made available to conference registrants, complete papers being published in the Mining Industry and/or Applied earth science Sections of the Transactions of the Institution of Mining and Metallurgy from May, 1990.

Enquiries and information

All enquiries in connection with the Tunnel Construction '90 and Drillex '90 conferences should be addressed to the Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, England (Telephone: 01-580 3802; Telex: 261410 IMM; Fax: 01-436 5388).

PERSATUAN GEOLOGI MALAYSIA

Geological Society of Malaysia

**PETROLEUM GEOLOGY
SEMINAR '88**



Hotel Merlin, Kuala Lumpur
5-6 December 1988

PACIFIC RIM 90 CONGRESS

An international congress on the geology, structure, mineralisation, economics and feasibility of mining development in the Pacific Rim. Including feasibility studies of mines in remote, island, rugged and high rainfall locations.

Gold Coast, Queensland, Australia.
6-12 May 1990

The AusIMM 1990 PACIFIC RIM CONGRESS (PACRIM 90) will be an outstanding technical meeting, addressing all aspects of Pacific geology, mineralisation and mine development relevant to the next decade. The AusIMM has reappointed the organising committee responsible for the highly successful PACRIM 87. In addition correspondents from all Australian states and Pacific Rim nations have been enlisted. They will be responsible for promoting the congress and ensuring that the most appropriate speakers from each region participate. The five day technical program, pre-congress workshops, comprehensive trade display and extensive tours program guarantee that PACRIM 90 will be the highlight of the geological community's calendar of events.

Where and when

PACRIM 90 will be held at Conrad International Hotel and Jupiters Casino complex - one of the best congress venues in Australia - located on Australia's Gold Coast - Queensland's premier beachside holiday resort. The congress runs from Sunday 6 May to Saturday 12 May 1990. This avoids clashing with the Circum-Pacific Council conference in Hawaii in late August 1990.

Pre-congress workshops will be held on 5 and 6 May. An exciting and technically regarding program of pre-congress tours to geologically significant sites in Australia and post-congress tours of the Pacific are being planned.

Setting the theme for 1990

The PACRIM 87 congress theme has been expanded to: "An International Congress on the Geology, Structure, Mineralisation, Economics and Feasibility of Mining Development in the Pacific Rim. Including Feasibility Studies of Mines in Remote, Island, Rugged and High Rainfall Locations".

Negotiation with many of the world's most distinguished geoscientists and engineers will ensure the broad range of topics encompassed in the congress theme are addressed. Authors will present papers ranging from global issues which influence the Pacific region through to specific case study data on exploration and mine sites.

The congress technical program has five principal streams.

- Stream 1: Fundamental Geology
Chairman: Dr. Tony Ewart, University of Queensland.
- Stream 2: Mineralisation
Chairman: Dr. Hugh Herbert, University of Queensland.
- Stream 3: Technology
Chairman: Dr. Cliff Mallett, CSIRO, Division of Geomechanics.

- Stream 4: Law and environment
Chairman: William Stubbs, Stubbs Bonutto Barbeler & Grant.
- Stream 5: Infrastructure and mine planning
Chairman: John McDougall, Consultant.
- Stream 6: Technical film program
Chairman: Lance Grimstone, Consultant.

Congress timetable

Deadline for receipt of brief paper synopsis	1 March 1989
Advice of provisional acceptance	1 May 1989
Distribution of registration brochure and provisional program	31 May 1989
Camera-ready copy required	1 November 1989
Registration late fee applies	28 February 1990
Pre-congress workshops and tours	5 and 6 May 1990
Congress sessions	7 to 12 May 1990
Post-congress tours	13 May and following

Congress sessions will be from 8.30 am.m until 5.20 p.m. each day. Wednesday afternoon will be free for local tours, social events and relaxation. Social activities and a technical film program will be arranged each evening.

Submission and format of papers

English is the official congress language.

A synopsis of up to 1,000 words must be submitted by 1 March 1989 for assessment.

Once accepted, authors must submit completed papers or extended abstracts of up to 5,000 words by 1 November, 1989. These will be published, preferably with selected diagrams and photographs to be used during paper presentation. One half of an A4 page has been allocated for each paper for full colour diagrams or photographs and these will be printed in a special colour segment of the proceedings.

Presentation time is 25 minutes including questions from the floor.

Congress proceedings

Bound copies of the congress proceedings will be distributed to delegates at the congress. Additional copies will be available for purchase at the congress.

Copies of the PACRIM 87 proceedings are still available from The AusIMM, P.O. Box 122, Parkville VIC 3052.

Congress Secretariat

The AusIMM - PACRIM 90, P.O. Box 731, TOOWONG QLD 4066, AUSTRALIA.
Telephone: (07) 371 7900
(+617) 371 7900 (international)
Facsimile: (07) 371 4876
(+617) 371 4876 (international)

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

1989

September 1989 - November 1989

DRILLING OF GEOTHERMAL WELLS (Mexicali, Mexico). Annual 12-week seminar organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For Information: Organizacion Latino-americana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

September 1989 - November 1989

GEOTHERMAL RESERVOIR ENGINEERING (Mexicali, Mexico). Annual 9-week course organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For Information: Organizacion Latino-americana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

September 1989 - November 1989

GEOTHERMAL ENERGY (Kyushu, Japan). Annual short course organized by the Government of Japan and sponsored by Unesco. Language: English. For Information: Japan International Cooperation Agency (2nd Training Division, Training Affairs Department), P.O. Box 216, Shinjuku Mitsui Building, 2 - 1, Nishi-shinjuku, Shinkuku-ku, Tokyo 160, Japan.

September 1989 - July 1990

PETROLEUM EXPLORATION GEOLOGY (Headington, Oxford, U.K.). An annual diploma course designed by Oxford Polytechnic to prepare post-graduate geologists for the duties of geologists in oil exploration teams. For Information: M. Hoggins, Department of Geology and Physical Sciences, Oxford Polytechnic, Headington, Oxford OX3 0BP, U.K.

September 1989 - August/November 1990

AEROSPACE SURVEYS FOR: 1) GEOCHEMICAL SURVEY; 2) WATER RESOURCES SURVEY; 3) APPLIED GEOMORPHOLOGY AND ENGINEERING GEOLOGY (Enschede, The Netherlands). Annual post-graduate courses, organized by the International Institute for Aerospace Survey and Earth Sciences (ITC), with Unesco. Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

September 1989 - August 1990

MINERAL EXPLORATION AND EXPLORATION GEOPHYSICS (Delft, The Netherlands). Annual diploma courses organized by the International Institute for Aerospace Survey and Earth Sciences with Unesco. Language: English. For Information: ITC Student Registration Office (ME), P.O. Box 6, 7500 AA Enschede, The Netherlands.

October 1989 - August 1989

HYDROLOGY AND HYDROGEOLOGY (Belgium). Language: French. For Information: Professeur Dr. ir. A. Monjoie, Directeur des Laboratoires de Géologie de l'Ingénieur, d'Hydrogéologie et de Prospection géophysique - Batiment B19, Faculté des Sciences Appliquées, Université de Liège - SART TILMAN, B-4000 Liege, Belgium.

October 1989 - November 1989

TECTONICS, SEISMOLOGY AND SEISMIC RISK ASSESSMENTS (Potsdam, D.D.R.). One-month training course organized annually by East German Academy of Sciences in collaboration with Unesco. Language: English. For Information: Prof. Dr. H. Kautzleben, Director, Central Earth's Physics Institute, Academy of Sciences of the German Democratic Republic, Telegraphenberg, DDR-500 Potsdam, German Democratic Republic.

October 1989 - July 1990

ENGINEERING HYDROLOGY (Galway, Ireland). Annual diploma and post-graduate courses organized by the Dept. of Engineering Hydrology, University College, Galway, Ireland. Sponsored by Unesco-IHP and the World Meteorological Organization. For Information: Prof. J-E. Nash, Department of Engineering Hydrology, University College Galway, Galway, Ireland.

October 1989 - September 1990

WATER AND WASTE ENGINEERING FOR DEVELOPING COUNTRIES (Loughborough, England, U.K.). Twelve-month MSc. programme organized annually for engineers and scientists from developing countries by WEDC. For Information: John Pickford, WEDC, University of Technology, Loughborough, Leics, LE11 3TU, U.K.

October 1989 - September 1990

HYDRAULIC ENGINEERING AND HYDROLOGY (Delft, The Netherlands). Diploma courses organized annually by the International Institute for Hydraulic and Environmental Engineering and sponsored by Unesco for professionals from developing countries. Language: English. For Information: International Institute for Hydraulic and Environmental Engineering (IHE), Oude Delft 95, P.O. Box 3015, 2601 DA Delft, The Netherlands.

October 1989 - September 1991

FUNDAMENTAL AND APPLIED QUATERNARY GEOLOGY (Brussels, Belgium). Annually organized training course leading to a Master's degree in Quaternary Geology by the Vrije Universiteit Brussel (IFAQ) and sponsored by Unesco. Language: English. For Information: Prof. Dr. R. Paepe, Director of IFAQ, Kwartairgeologie, Vrije Universiteit Brussel, Pleinlaan 2, B-1050, Brussels, Belgium.

November 1989 - December 1989

REMOTE SENSING APPLICATIONS FOR EARTH SCIENCES (Enschede, The Netherlands). Annual short course organized by International Institute for Aerospace Survey and Earth Sciences (ITC), with Unesco. Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

November 1989 - June 1990

GEOTHERMICS (Pisa, Italy). Certificate course organized annually by the Istituto Internazionale per le Ricerche Geotermiche and sponsored by Unesco, UNDP and Italy. Language: English. For Information: Istituto Internazionale per le Ricerche Geotermiche, I Via Buongusto, 56100 Pisa, Italy.

November 1989 - October 1990

ENGINEERING GEOLOGY (Delft, The Netherlands). Annual post-graduate course organized by the International Institute for Aerospace Survey and Earth Sciences (ITC). Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

1990

January 1990 - July 1990

GENERAL AND APPLIED HYDROLOGY (Madrid, Spain). An annual, 6-month course sponsored by Unesco. Language: Spanish. For Information: Centro de Estudios y Experimentacion de Obras Publicas y Urbanismo, Alfonso XII, Num. 3, Madrid 7, Spain.

January 1990 - July 1990

GROUNDWATER HYDROLOGY (Barcelona, Spain). An annual 6-month, post-graduate course sponsored by Unesco. Language: Spanish. For Information: Curso Internacional de Hidrologia Subterranea, Calle Beethoven, 15, 3^o, 08021 Barcelona, Spain.

February 1990

METALLOGENY (Quito, Ecuador). Annual 3-week training course for Latin Americans organized by Central University of Quito, the Autonomous University of Madrid (Spain), and Unesco. Language: Spanish. For Information: Director, Curso Internacional de Metalogenia, Escuela de Geologia, Minas y Petroleos, Division de Post-grado, Universidad Central, Apartado Postal 8779, Quito, Ecuador.

February 1990 - March 1990

GEOCHEMICAL PROSPECTING TECHNIQUES (Tervuren, Belgium). Annual course sponsored by the Royal Museum of Central Africa and UNDP. Language: French. For Information: Musée royal de l'Afrique centrale, Steenvogel Leuven, 13, B-1980 Tervuren, Belgium.

February 1990 - April 1990

INTRODUCTION TO DIGITAL IMAGE PROCESSING (Enschede, The Netherlands). Annual course organized by the International Institute for Aerial Survey and Earth Sciences, Enschede, The Netherlands, with Unesco. Language: English. For Information: Student Registration Office, ITC, P.O. Box 6, 7500 AA Enschede, The Netherlands.

February 1990 - June 1990

MINERAL EXPLORATION (Leoben, Austria). Diploma course organized annually by the University of Mining and Metallurgy in Leoben and sponsored by Unesco. Language: English. For Information: University for Mining and Metallurgy, Post-graduate course on mineral exploration, Montanuniversität, Leoben, A-8700, Austria.

February 1990 - July 1990

HYDROLOGY (Budapest, Hungary). An annual six-month, post-graduate course organized by the Research Centre for Water Resources Development (Budapest) and sponsored by Unesco. Language: English. For Information: VITUKI International Post-Graduate Course on Hydrology, H-1453 Budapest, Pf. 227 Hungary.

February 1990 - August 1990

HYDROLOGY (Padova, Italy). An annual, 6-month, postgraduate course sponsored by Unesco. Language: English. For Information: Professor A. Ghetti, Centro Internazionale di Idrologia "Dino Tonini," via sette Chiese, 35043 Monselice, Italy.

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.

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.

KALENDAR (CALENDAR)

1989

- September 10-15, 1989
GEOLOGY AND RESERVOIR HETEROGENEITY (Symposium), Banff, Alberta, Canada. (Mrs.) Pat Larlham, Faculty of Extension, University of Alberta, Edmonton, Alberta, Canada T6G 2G4).
- September 10-16, 1989
PALAEOCEANOGRAPHY (3rd International Conference), Cambridge, U.K. (N.J. Shackleton, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, U.K.).
- September 11-22, 1989
ARCHEAN - PROTEROZOIC TRANSITION (Field Conference), Harare, Zimbabwe. Co-sponsored by IGCP and IUGS. (Apt 89, Geological Society of Zimbabwe, P.O. Box 8427, Causeway, Harare, Zimbabwe).
- September 12-15, 1989
COAL: Formation, Occurrence and Related Properties (International Meeting), Orléans, France. (P. Bertrand, Unité de Recherche en Pétrologie, Organique, Université d'Orléans, 45067 Orléans, Cedex 2, France).
- September 14-19, 1989
EDITING INTO THE 90's (Joint CBE, EASE, AESE Meeting), Ottawa, Canada. (Conference Office, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6).
- September 17-24, 1989
AGGLUTINATED FORAMINIFERA (3rd International Workshop), Tübingen, F.R.G. (Dr. C.H. Leben, Geologisches Institut der Universität, Sigwartstrasse 10, D-7400 Tübingen, Federal Republic of Germany).
- September 17-24, 1989
ENERGY (14th World Congress), Montreal, Quebec, Canada. (World Energy Conf., 34th St. James's Street, London SW1A 1HD, U.K.).
- September 18-22, 1989
ORGANIC GEOCHEMISTRY (14th International Congress), Paris, France. (Ms. Yolande Rondot, Institut Français du Pétrole, B.P. 311, 92506 Rueil-Malmaison cedex, France).
- September 24-30, 1989
CARBONIFEROUS STRATIGRAPHY (IUGS Subcommittee Biennial Field and General Meeting), Utah/Nevada, U.S.A. (Walter L. Mangar, Department of Geology, University of Arkansas, Fayetteville, AK 72701, U.S.A.).
- September 25-28, 1989
MINING LATIN AMERICA (IMM Conference and Exhibition), Rio de Janeiro, Brazil. (The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, U.K.).
- October 1-4, 1989
SINKHOLES AND THE ENGINEERING AND ENVIRONMENTAL IMPACTS OF KARST (3rd Multidisciplinary Conference), St. Petersburg, Florida, U.S.A. (Conference, Florida Sinkhole Research Institute, University of Central Florida, Orlando, FL 332816, U.S.A.).
- October 1-6, 1989
GEOCHEMICAL EXPLORATION (13th International Symposium) and BRAZILIAN GEOCHEMICAL CONGRESS (2nd), Rio de Janeiro, Brazil. Co-sponsored by AEG. Languages: Symposium - English; Congress - Portuguese. (D.C. Bruni, 13th IGES, P.O. Box 2432, 20010, Rio de Janeiro, R.J., Brazil).
- October 2-4, 1989
FLUVIAL SEDIMENTOLOGY (4th International Conference), Barcelona, Spain. (C. Puigdefàbregas, Servei Geològic de Catalunya, carrer Diputació 92, 08015 Barcelona, Spain).
- October 2-5, 1989
GROUNDWATER MANAGEMENT: QUANTITY AND QUALITY (International Symposium), Benidorm, Alicante, Spain. Language: English. (Secretary General, IAHS, Institute of Hydrology, Wallingford, Oxon. OX10 8BB, U.K.).
- October 16-20, 1989
EARTHQUAKE PROGNOSTICS (4th International Seminar). Beijing, P.R. China. Language: English. (Prof. Wu Yilin, Crustal Deformation Department, Institute of Seismology, State Seismological Bureau of China, Xiao Hong Shan, Wuhan, P.R. China).
- October 16-20, 1989
MATHEMATICAL METHODS IN GEOLOGY (IAMG Symposium), Příbram, Czechoslovakia. Sekretariat symposia, Hornická Příbram ve Vede a Technice, post. schr. 41,261 02 Příbram, Czechoslovakia).
- October 18-20, 1989
STRUCTURAL AND TECTONIC MODELLING AND ITS APPLICATION TO PETROLEUM GEOLOGY (Meeting), Stavanger, Norway. (Norwegian Petroleum Society, P.O. Box 1897 - Vika, 0124 Oslo, Norway).
- October 22-25, 1989
WORLD GOLD '89 (Meeting), Reno, Nevada, U.S.A. (Society of Mining Engineers, P.O. Box 625002, Littleton, CO 80162, U.S.A.).

October 23-27, 1989

COAL SCIENCE (International Conference), Tokyo, Japan. Language: English. (Secretariat for ICCS, Coal Conversion Department, New Energy Development Organization (NEDO), Sunshine 60 Building, 1-1, Higashi-Ikebukuro 3-chome, Toshima-ku, Tokyo 170, Japan).

October 29 - November 2, 1989

SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Meeting), Dallas, Texas, U.S.A. (Convention Assistant, SEG, P.O. Box 3098, Tulsa, OK 74101, U.S.A.).

November 6-9, 1989

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), St. Louis, Missouri, U.S.A. (Meetings Department, GSA, P.O. Box 9140, Boulder, CO 80301, U.S.A.).

November 13-15, 1989

MINERAL EXPLORATION PROGRAMME '89 (Symposium), Madrid, Spain. (MEP '89, 4 Brandon Road, London N7 9TR, England, U.K.).

November 14-16, 1989

WORLD WATER (Conference), Wembley, London, U.K. (World Water '89, Conference, Office, Institution of Civil Engineers, 1 - 7 Great George Street, Westminster, London SW1P 3AA, U.K.).

November - December 1989

PETROLEUM GEOLOGY SEMINAR '89, Kuala Lumpur, Malaysia. (c/o Organizing Chairman, Geological Society of Malaysia, Geology Department, University of Malaya, 59100 Kuala Lumpur, Malaysia).

December 4-8, 1989

AMERICAN GEOPHYSICAL UNION (Fall Meeting), San Francisco, Calif., U.S.A. (AGU Meetings, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.).

1990

January, 1990

ANNUAL CONFERENCE '90, GEOLOGICAL SOCIETY MALAYSIA (Organising Chairman, Geological Society of Malaysia, c/o Geology Dept., University of Malaya, 59100 Kuala Lumpur, Malaysia).

January 15-27, 1990

OMAN OPHIOLITE, STRUCTURE, PETROLOGY, STRATIGRAPHY (International Symposium), Muscat, Sultanate of Oman. (Secretary, Hilal Azry, Ministry of Petroleum and Minerals, P.O. Box 551, Muscat, Oman).

February 5-9, 1990

BRACHIOPODS (2nd International Congress), Dunedin, New Zealand. (J.D. Campbell, Geology Department, University of Otago, P.O. Box 56, Dunedin, New Zealand).

April 18-20, 1990

OROGENESIS IN ACTION: Tectonics and Processes in the West Equatorial Pacific Margin (Meeting), London, U.K. (R. Hall, Department of Geological Sciences, University College London, Gower Street, London WC1E 6BT, U.K.).

May 6-12, 1990

PACIFIC RIM 90 (International Congress), Gold Coast, Queensland, Australia. (The AusIMM-Pacrim 90, P.O. Box 731, Toowong Qld 4066, Australia).

May 14-18, 1990

WORLD MINING (14th Congress), Beijing, P.R. China. (China Organizing Committee, 14th World Mining Congress, 54 Sanlihe Road, Beijing, People's Republic of China).

May 29 - June, 1990

EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (52nd Annual Meeting), Copenhagen, Denmark. (J. Tychsen, Miljøministeriet, Amaliegade 13, DK-1265, Copenhagen K, Denmark).

June 1990

GEOCHEMISTRY OF WEATHERING (2nd International Symposium), Aix-en-Provence, France. Sponsored by IAGC. (B. Hitchon, Alberta Research Council, Box 8330, Station F. Edmonton, Alberta, Canada T6H 5X2).

June 3-6, 1990

AAPG/SEPM (Annual Meeting), San Francisco, California, U.S.A. (Convention Department, AAPG, Box 979, Tulsa, OK 74101, U.S.A.).

June 25-30, 1990

GEOSCIENCE INFORMATION (4th International Conference), Ottawa, Canada. (A. Bourgeois, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8).

June 28 - July 3, 1990

INTERNATIONAL MINERALOGICAL ASSOCIATION (15th General Assembly), Beijing, P.R. China. (Prof. Huang Yunhui, c/o Institute of Mineral Deposits, Chinese Academy of Geological Sciences, Baiwan-zhuang Road 26, Fuchengmenwai, Beijing, P.R. China).

July, 1990

CAMBRIAN SYSTEM (3rd International Symposium), Novosibirsk, U.S.S.R. (Dr. J.W. Cowie, Department of Geology, University of Bristol, Queen's Building, University Walk, Bristol BS8 1RJ, England).

- July 19-28, 1990
INTERNATIONAL UNION OF CRYSTALLOGRAPHY (15th Congress), Bordeaux, France. (Stefan S. Hafner, University of Marburg, 3550 Marburg, F.R. Germany).
- July 29 - August 3, 1990
CIRCUM-PACIFIC ENERGY AND MINERALS RESOURCES (Conference), Honolulu, Hawaii. (Mary Stewart, Circum-Pacific Council on Energy and Mineral Resources, 5100 Westheimer Road, Houston, TX 77056, U.S.A.).
- 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, U.S.A.).
- August 6-10, 1990
IAEG (6th International Congress), Amsterdam, The Netherlands. Language: English and French. (Dr. L. Primel, L.C.P.C., 58 Boulevard Lefebvre, 75732 Paris Cedex 15, France).
- 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 15-17, 1990
ARCTIC GEOLOGY AND PETROLEUM POTENTIAL (Meeting), Troms, Norway. (Norwegian Petroleum Society, Box 1897-Vika, 0124 Oslo 1, Norway).
- August 26 - September 1, 1990
SEDIMENTOLOGY (13th International IAS Congress), Nottingham, U.K. (I.N. McCave, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, U.K.).
- August 26 - September 8, 1990
LATIN AMERICAN CONODONT SYMPOSIUM, La Paz, Bolivia and San Juan, Argentina. (Mario Hunicken, Academia Nacional de Ciencias, Casilla Correo 36, 5000 Cordoba, Argentina).
- August 27 - September 1, 1990
WATER RESOURCES IN MOUNTAINOUS REGIONS (International Symposium and IAH 22nd Congress), Lausanne, Switzerland. (Dr. A. Parriaux, Laboratory of Geology EPFL (GEOLEP), CH-1015 Lausanne, Switzerland).
- September 1990
GEOCHEMICAL EXPLORATION (13th International Symposium), Prague, Czechoslovakia. Joint IAGC and AEG meeting. (B. Hitchon, Alberta Research Council, P.O. 8330, Station F. Edmonton, Alberta, Canada T6H 5X2).
- September - October 1990
IPA GRAPTOLITE WORKING GROUP (4th International Conference), Nanjing, P.R. China. (Chen Xu, Nanjing Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Sau, Nanjing, P.R. China).
- September 3-8, 1990
VOLCANOLOGY (International Congress), Mainz, F.R.G. (G. Brey, Max Planck Institut für Chemie, Abtl. Kosmochemie, Saarstrasse 23, 6500 Mainz, Federal Republic of Germany).
- September 4-7, 1990
DEEP SEISMIC REFLECTION PROFILING OF THE CONTINENTAL LITHOSPHERE (4th International Symposium), Bayreuth, F.R.G. (C. Reichert, DEKORP, NLFb, Postfach 510153, D-3000 Hannover 51, F.R. Germany).
- September 17-21, 1990
ARCHAEN (Symposium), Perth, Australia. (D.I. Groves, Department of Geology, University of Western Australia, Nedlands, Western Australia 6009).
- September 23-27, 1990
SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Meeting), San Francisco, U.S.A. (Convention Assistant, SEG, P.O. Box 3098, Tulsa, OK 74101, U.S.A.).
- September 24-29, 1990
GEOCHRONOLOGY, COSMOCHRONOLOGY AND ISOTOPE GEOLOGY (7th International Conference), Canberra, Australia. (Organizing Committee, ICOG 7, Research School of Earth Sciences, Australian National University, GPO Box 4, Canberra, ACT 2601, Australia).
- September 28 - October 2, 1990
BENTHIC FORAMINIFERA (4th International Symposium), Sendai, Japan. (Dr. Yokichi Takayanagi, Institute of Geology and Paleontology, Tohoku University, Sendai, 980 Japan).
- October 29 - November 1, 1990
GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Dallas, Texas, U.S.A. (GSA, P.O. 9140 Boulder, CO 80301, U.S.A.).
- November 1990
MEDITERRANEAN NEOGENE (9th International Congress), Barcelona, Spain. Cosponsored by IUGS. (Prof. Jordi Martinell, Fac. de Geologia, Univ. de Barcelona, Zona Universitaria de Pedralbes, 08028 Barcelona, Spain).

1991

March, 1991

ECONOMIC EVALUATION OF MINERAL RESOURCES (International Conference), Kosice, Czechoslovakia. Languages: Russian and English. (Intergeoekonomika 1991 CSSR, GEOFOND Bratislava-branch Kosice, Eng. St. Richter, Garbanova 1, 040 11 Kosice, Czechoslovakia).

April 7-10, 1991

AAPG/SEPM (Annual Meeting), Dallas, Texas, U.S.A. (Convention Department, AAPG, Box 979, Tulsa, OK 74101, U.S.A.).

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 27-29, 1991

GAC/MAC (Joint Annual Meeting), Toronto, Canada. (J. Fawcett, Department of Geology, University of Toronto, Toronto, Ontario, Canada M5S 1A1).

August 2-9, 1991

QUATERNARY RESEARCH (13th International Congress), Beijing, P.R. China. (Secretariat, 13th INQUA Congress, Chinese Academy of Sciences, 52 Sanlihe, Beijing 100864, P.R. China).

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Application for Full, Associate & Student Membership
(refer to particulars attached)

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Dengan ini saya mengaku iaitu semua maklumat-maklumat yang saya catitkan diatas adalah betul dan benar, dan jika saya dilantik, akan mematuhi Perlembagaan dan Undang-undang Persatuan.
I declare that the information given above is true and accurate and also, if elected, will observe the Constitution and By-Laws of the Society.

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Particulars

1. Completed application form should be sent to the Hon. Secretary, Geological Society of Malaysia, c/o Dept. of Geology, University of Malaya, 59100 Kuala Lumpur, Malaysia.

2. Article III, Constitution of Society

Candidates for Full Member shall be persons who have a Bachelors degree in geology or equivalent qualifications in a related science or an equivalent training through practical experience.

Section 6

Any person who is enrolled as a student in geology or related science in an institution of higher learning is eligible for Student Membership.

Student Members shall enjoy all the privileges of Corporate Membership save that they shall not hold office or vote. The Council may advance to Corporate Membership upon application those Student Members in good standing who have subsequent to election fulfilled the requirements therefore. Student membership shall be limited to a maximum of five years. Any Student Member who has (1) not applied for transfer to another class of membership or (2) whose application for such transfer has not been approved prior to the termination of five years of membership shall be considered as having resigned. At the discretion of the Council the five years period may be extended upon application to the Council.

Section 7

Any person who is interested in geology, but who does not meet the requirements of other classes of membership, shall be eligible for Associate membership. Associate Members shall enjoy all the privileges of Corporate membership in the Society except that they shall not be eligible to vote or hold office. The Council upon application may transfer to Corporate membership, those Associate Members in good standing who have subsequent to election, fulfilled the requirements therefore.

3. By-Laws 1, Section 2, Constitution of Society

The annual dues of Full, Associate and Professional Members shall be 40.00 ringgit. An entrance fee of 20.00 ringgit shall be payable on election.

The annual dues of student members shall be 10.00 ringgit. No entrance fee shall be payable by persons elected as Student Members, nor by Student Members promoted to Corporated Membership provided they have been student members for at least two years.

Section 3

Upon the payment of 400.00 ringgit, any Full or Associate Member in good standing may be elected to Life membership.

Butir-butir

1. Borang permohonan yang telah dipenuhi hendaklah dikirimkan kepada Setiausaha Kehormat, Persatuan Geologi Malaysia, d/a Jabatan Geologi, Universiti Malaya, 59100 Kuala Lumpur, Malaysia.

2. Artikel III, Perlembagaan Persatuan

Calun-calun untuk menjadi Ahli Penuh adalah seseorang yang mempunyai ijazah didalam bidang geologi atau kelulusan yang sama di dalam bidang sains berhubungan atau mempunyai latihan yang sama menerusi pengalaman amali.

Seksyen 6

Seseorang yang berdaftar sebagai seorang penuntut di dalam geologi atau sains yang berhubungan didalam mana-mana satu institusi pengajian tinggi adalah layak menjadi seorang Ahli Penuntut.

Ahli-ahli penuntut adalah layak menikmati keistimewaan-keistimewaan yang sama seperti Ahli Sekutu tertakluk kepada bahawa mereka tidak memegang apa-apa jawatan atau hak mengundi. Pihak Majlis boleh memajukan permohonan Ahli Penuntut menjadi Ahli Sekutu dengan syarat permohonan mempunyai kedudukan baik dan setelah dilantik memenuhi keperluan-keperluan yang ada. Tempoh maksima keahlian bagi Ahli Penuntut ialah lima tahun. Seseorang Ahli Penuntut yang (1) belum membuat permohonan pemindahan kepada kelas ahli yang lain, atau (2) permohonannya untuk pemindahan belum lagi diluluskan sebelum keahlian selama lima tahun tamat; adalah dianggap telah berhenti. Tertakluk kepada budibicara dan pertimbangan Majlis, jangka masa lima tahun boleh dilanjutkan semasa membuat permohonan kepada Majlis.

Seksyen 7

Seseorang yang berminat dalam bidang geologi akan tetapi tidak memenuhi keperluan seperti diperlukan didalam kelas-kelas keahlian yang lain adalah layak untuk memohon menjadi Ahli Gabungan.

3. Undang-undang 1, Fasal 2, Perlembagaan Persatuan

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- Bulletin 9** (1977). 277 p. The relations between granitoids and associated ore deposits of the Circum-Pacific region. A collection of papers presented at the IGCP Circum-Pacific Plutonism Project Fifth Meeting. 12–13 November 1975, Kuala Lumpur. Edited by J.A. Roddick & T.T. Khoo. Price: M\$25.00 (US\$12.00).
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- Bulletin 18** (1985). 209 p. Special Issue on Petroleum Geology. Edited by G.H. Teh & S. Paramanathan. Price: M\$30.00 (US\$14.00).

Bulletins 19 & 20 (1986). GEOSEA V Proceedings Vols. I & II, Fifth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia, Kuala Lumpur, 9–13 April 1984. Edited by G.H. Teh & S. Paramanathan. Price for both Bulletins 19 & 20: Members — M\$50.00 (US\$21.90), Non-members — M\$125.00 (US\$53.20).

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Field Guide 1 (1973). A 7-day one thousand mile, geological excursion in Central and South Malaya (West Malaysia and Singapore). 40 p. by C.S. Hutchison. Price: M\$5.00 (US\$2.50).

Abstracts of papers. (1972). Regional Conference on the Geology of Southeast Asia, Kuala Lumpur, 1972. 64 p. 8 figs. 3 tables, many extended abstracts. Edited by N.S. Haile. Price: M\$6.00 (US\$3.00).

Proceedings of the Workshop on Stratigraphic Correlation of Thailand and Malaysia Vol. 1. (1983). Technical Papers. 383 p. Price: M\$25.00 (US\$12.40) (Members: M\$12.00/US\$6.50).

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The Society publishes the *Buletin Persatuan Geologi Malaysia* (Bulletin Geological Society of Malaysia) and the *Warta Geologi* (Newsletter of the Geological Society of Malaysia) which is issued bimonthly.

Papers of general interest or on the geology of the Southeast Asian region (South China, Burma, Thailand, Indochina, Malaysia, Singapore, Indonesia, Brunei and the Philippines) and also marine areas within the region are welcome for publication in the *Bulletin*. Short notes, progress reports and general items of information are best submitted to the *Warta Geologi*.

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