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CATATAN GEOLOGI (GEOLOGICAL NOTES)

FOSSIL CRABS OF SABAH

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Abstract

Six localities in Sabah are known to have yielded fossil crabs. *Macroptalmus latreillei*, *Scylla serrata* and *Scylla* sp. have been recovered from the Quaternary alluvium along the coast of Kuala Padas, Labuan Island and Bengkoka Peninsula. These crabs indicate mangrove swamps and estuarine conditions. The specimens of *Euphylax* sp. and *Martincarcinus* sp. were recovered from the marine sediments of the Tanjung and Simengaris Formations of Pensiangan, respectively. These formations are of Upper Miocene age.

Abstrak

Fosil ketam telah ditemui di enam tempat di Sabah. *Macroptalmus latreillei*, *Scylla serrata* dan *Scylla* sp. telah dikeluarkan dari lanar Kuaternari yang terdapat di sisir pantai di Kuala Padas, Pulau Labuan dan Semenanjung Bengkoka. Ketam-ketam ini adalah penghuni paya-paya bakau dan muara-muara sungai. Spesimen-spesimen *Euphylax* sp. dan *Martinocarcinus* sp. telah ditemui dalam enapan marin Formasi Tanjung dan Formasi Simengaris, daerah Pensiangan. Formasi-formasi ini berumur Miosen Atas.

Introduction

Idris (*in press*) reported on the occurrences of some fossil crabs in Malaysia. Visit to the Sabah Geological Survey Museum in May this year, however, revealed a few more undescribed specimens. A more recent finding from the Meliau Basin is also included here.

Localities

Four specimens were collected from three different localities (Fig. 1). These are:-

- S1 - beach off the west coast of Bengkoka Peninsula
- S2 - Kuala Padas
- S3 - southwestern rim of Meliau Basin near Sg. Sinobang

Specimens from localities S4, S5 and S6 are described in Idris (*in press*).

Locality S1

A single not so well preserved specimen of *Scylla* sp. was recovered from loose beach sands by Mr. T.W. Koh in 1977. Broken fragments of the

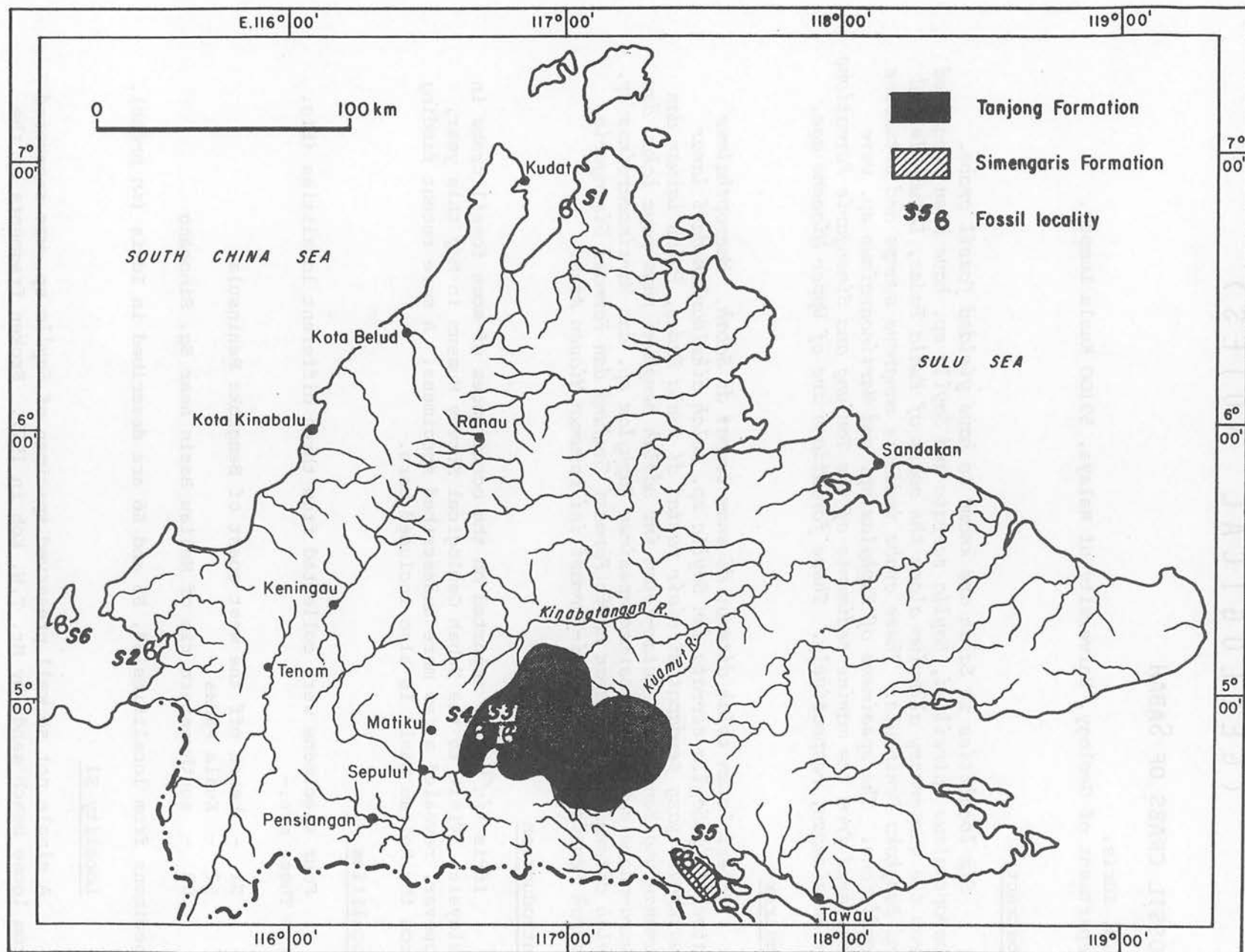


Fig. 1. Fossil crab localities of Sabah (Map modified after Collenete, 1965).

carapace left internal moulds on the dorsal area. Only fragments of the abdominal and sternal plates are seen in the ventral view.

Locality S2

Two reasonably well preserved specimens of *Macrothalmus latreillei* were dragged from a depth between 20-30 m off Kuala Padas by Mr. S.S. Wong. Although parts of the specimens are broken, the iron oxide replacement of the original material preserved the whole carapace and the lower parts of the appendages.

Locality S3

A single specimen of *Euphylax* sp. was recovered by Mr. S. Kanagesperan along with other marine bivalve fossils. The state of preservation of the specimen is similar to that of the S2 specimens, but here the appendages are missing.

Paleontology

The specimens are identified to belong to three crab species:-

Euphylax sp.
Macrothalmus latreillei
Scylla sp.

Their detailed taxonomy is provided below in the systematics section.

Repository

The *Euphylax* sp. specimen is deposited in the Paleontology Collection of Department of Geology, University of Malaya, Kuala Lumpur. The other specimens are kept in the Geological Survey of Sabah Museum, Kota Kinabalu, Sabah.

Age and significance

Macrothalmus latreillei and *Scylla* sp. are known to occur in Pleistocene - Recent sediments in the Indo-Pacific region (Glaessner, 1969). These crabs are commonly found in the coastal areas of today, especially in mangrove swamps and estuarine areas. As such they are probably derived from the Quaternary sediments of the Bengkoka Peninsula (Wilson, 1961) and of Kuala Padas (Wilson, 1964).

The marine crab *Euphylax* sp. has also been recovered from mudstone beds of the Tanjong Formation at Matiku along with corals, gastropods and bivalves (Idris, *in press*). The formation is of Upper Miocene age (Collenette, 1965). Their occurrence in the hinterland is not surprising, as the Meliau Basin was then a shallow sea. A fossil crab, *Martinocarcinus* sp. has been reported to occur in the Simengaris Formation which lies on the Sg. Silipompon in Pensiangan (Collenette, *op. cit.*). This formation is of similar age to that of the Tanjong Formation. Other reported occurrences of crab fossils in Sabah are the recovery of *Macrothalmus latreillei* and *Scylla serrata* from Labuan Island (Hashimoto, 1982). These are of similar age with the above specimens from S1 and S2 and were probably derived similarly.

The distribution of fossil crabs species in Sabah is tabled below.

Table 1. Fossil crab distribution in Sabah. For locality number - refer to Fig. 1.

FOSSIL CRAB	LOCALITY/FORMATION	
<i>Euphyllax</i> sp.	Meliau Basin (S4 & S3)	Tanjung Fm
<i>Macrophthalmus latreillei</i>	Labuan Island (S6)	} Quaternary
	Kuala Padas (S2)	
<i>Martinocarcinus</i> sp.	Sg. Silipompon (S5)	Simengaris Fm
<i>Scylla</i> sp.	Bengkoka Peninsula (S1)	} Quaternary
<i>Scylla serrata</i>	Labuan Island (S6)	

Systematic Paleontology

The classification and terminologies used here are based on Glaessner (1969) and Lovett (1981).

Order	Decopoda Latreille, 1803			
Suborder	Pleocyemata Burkenroad, 1963			
Infraorder	Brachyura Latreille, 1803			
Section	Brachyrhyncha Borradaile, 1907			
Superfamily	Ocyphodoidea Rafinesque, 1815			
Family	Ocyphodoidea Rafinesque, 1815			
Subfamily	Macrophthalminae Dana, 1852			
Genus	<i>Macrophthalmus</i> Demarest, 1823			
	<i>Macrophthalmus latreillei</i> (Demarest, 1817)			
	(Pl. 1, Figs. 1-4)			
Measurements	Specimen	Width (mm)	Length (mm)	%l/w
	J11357a	36	26	72.2
	J11357b	30	22	73.3

Remarks - The preservation of the specimens is good. The male specimen - J11357a, appears to be of larger size than the female one. However the length to width ratios are consistent, around 72-74% range. *M. Latreillei* differs appreciably from *Macrophthalmus vindobonensis* by the absence of a serrated anterolateral border and in possessing a less straight branchial furrow.

Range - Pleistocene to Recent

Materials - Two carapaces with the lower part of the appendages intact, J11357a and J11357b.

Superfamily Portunoidea Rafinesque, 1815.
Family Portunoidae Rafinesque, 1815
Subfamily Portuninae Rafinesque, 1815
Genus *Euphylax* Stimpson, 1860
Euphylax sp.

(Pl. 1, Figs. 5, 6)

Remarks - This specimen is similar to the one described by Idris (*in press*), is more complete except for the broken part of the dorsal area on the carapace. It measures 29 mm wide and 26 mm long. It is smaller than *Macrophthalmus* and *Scylla*. The state of preservation hinders identification to species level.

Range - Oligocene - Miocene

Material - A single carapace, A618.

Genus *Scylla* de Haan, 1833
Scylla sp.

(Pl. 1, Figs. 7, 8)

Remarks - The state of preservation is poor. The specimen is 45 mm wide and 30 mm wide. It represents the biggest specimen observed. Strong serration occurs on the anterolateral border.

Range - Pleistocene - Recent

Material - A single incomplete carapace, J11358.

Acknowledgements

This research is funded by University of Malaya research grant PJP 142/89. I would like to thank the Geological Survey of Sabah especially Mr. P.S. Lim for accessibility to the specimens. Encik Jaafar Abdullah photographed the fossils and Mr. Y.H. Ching drafted the illustration.

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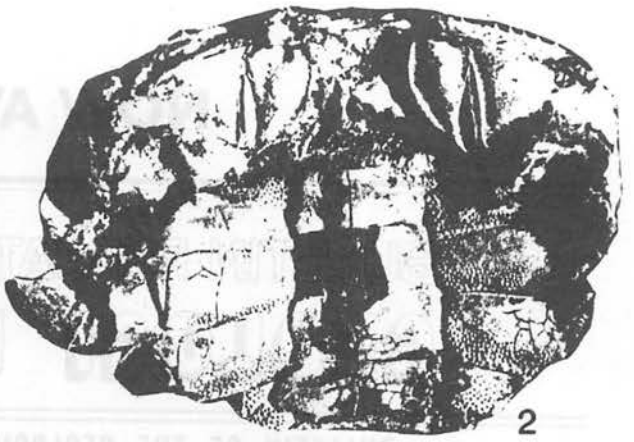
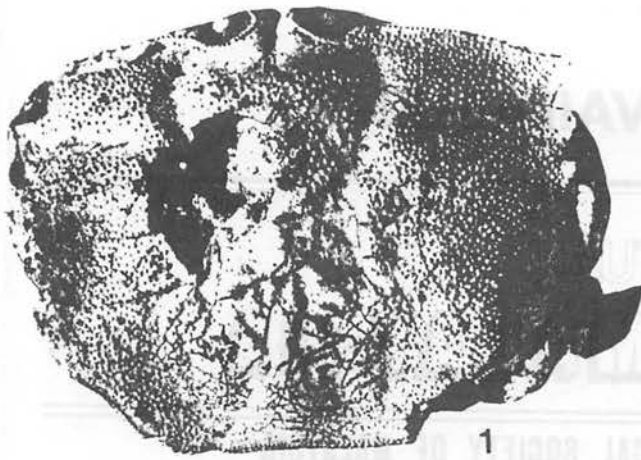
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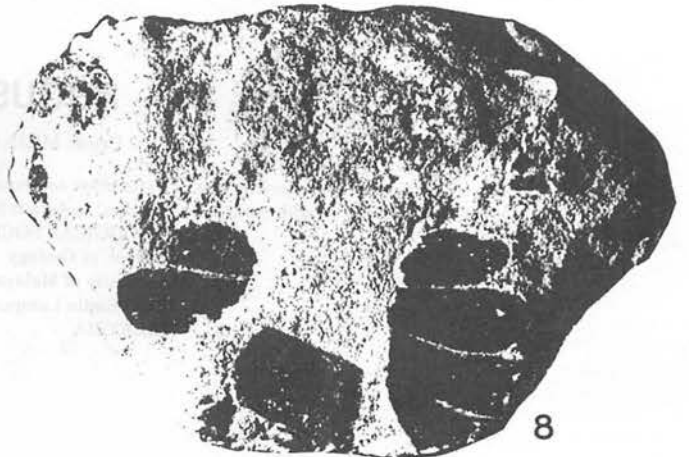
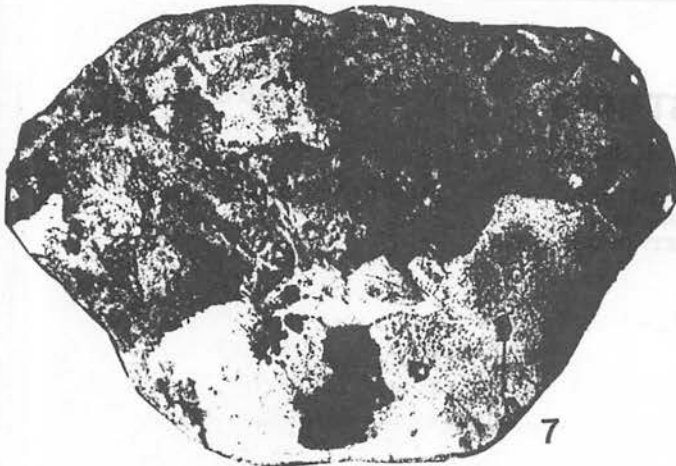
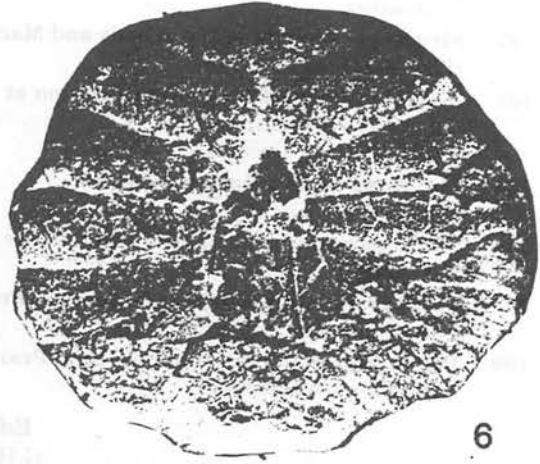
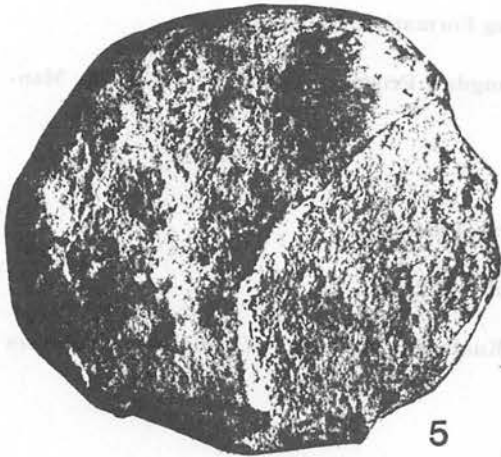
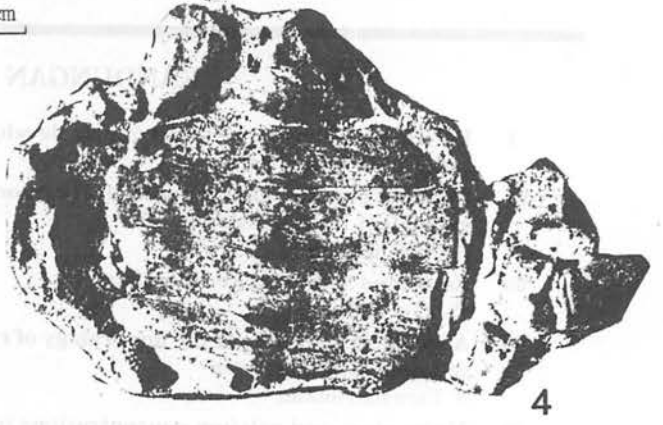
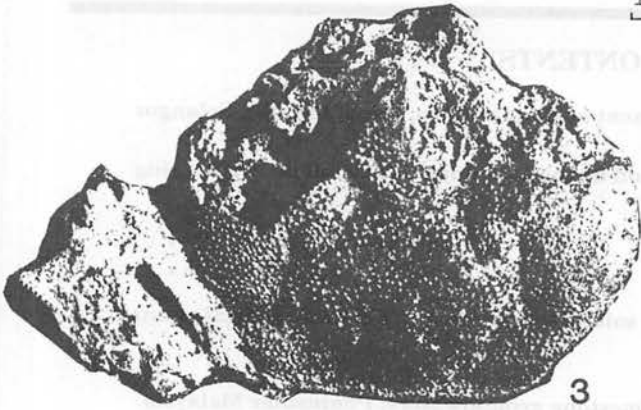
Manuscript received 4 September 1989.

Plate 1

- Figs. 1 - 4. *Macrothalmus latreillei* (Demarest)
1. Dorsal view, X2.5, Male, S2, J11357a
2. Ventral view of the above, X2.5
3. Dorsal view, X2.3, Female, S2, J11357b
4. Ventral view of the above, X2.3
- Figs. 5, 6. *Euphylax* sp.
5. Dorsal view, X2.2, Male, S3, A618
6. Ventral view of the above, X2.2
- Figs. 7, 8. *Scylla* sp.
7. Dorsal view, X2.7, Male, S1, J11358
8. Ventral view of the above, X2.7



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THE SETUL FORMATION: A NOTE ON A CLASTIC UNIT AT TELUK EWA AND A SUGGESTION ON NAMING OTHER CLASTIC UNITS

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Abstract

An interbedded limestone/shale (clastic) unit of about 140 m thick at Teluk Ewa on the north coast of Pulau Langkawi, occurring at near the base of the Setul formation, is considered to belong to the Setul formation, and not to the Machinchang formation. Nine limestone/shale sequences (cycles) are recognised and described.*

Since there are several other occurrences of clastic units elsewhere within the Setul formation, a scheme of lithostratigraphic naming of these clastic units is suggested.

Abstrak

Satu unit selang lapis batu kapur/syal (klastik) setebal kira-kira 140 meter di Teluk Ewa, disebelah pantai utara Pulau Langkawi, dan didapati berhampiran dengan sempadan bawah formasi Setul, dianggap sebagai sebahagian formasi Setul, bukannya sebagai formasi Machinchang. Sembilan jujukan (kitaran) batu kapur/syal dikenali dalam unit ini dan dihuraiakan.

Oleh kerana beberapa unit klastik juga diketahui terdapat pada beberapa tempat lain di dalam formasi Setul, satu skema penamaan lithostratigrafi bagi unit-unit klastik tersebut dicadangkan.

Introduction

Based on field mapping in the late 50's and early 60's, Jones (1981), in his work on the geology of Kedah (including the Langkawi Islands) and Perlis, introduced the lithostratigraphic unit, the Setul formation. He made a detailed lithological map and description of the formation and recognised several 'detrital units', namely at the southern tip of Pulau Dayang Bunting, at the eastern parts of Pulau Tuba and the whole surrounding islets (P. Nyior Stali, P. Enggang, P. Pasir, P. Selang and P. Tiloi), the middle part of Pulau Timun, the middle part of Pulau Tanjung Dendang and the northwestern part of Pulau Langgon (Fig. 1). All these units are said to occur in the upper part of Setul formation. Jones further named two of these 'detrital units' at Pulau Langgon as the 'Lower Detrital Member' and the 'Upper Detrital Member', and correlated the 'detrital units' at Batu Puyuh and Teluk Bujur (Pulau Tuba) and Teluk China Mati (Pulau Tanjung Dendang) to his 'Lower Detrital Member'. There is no mention by

* The name 'Setul' is maintained to avoid confusion and any possible objection though there are reasons why the name 'Setul' should be discontinued.

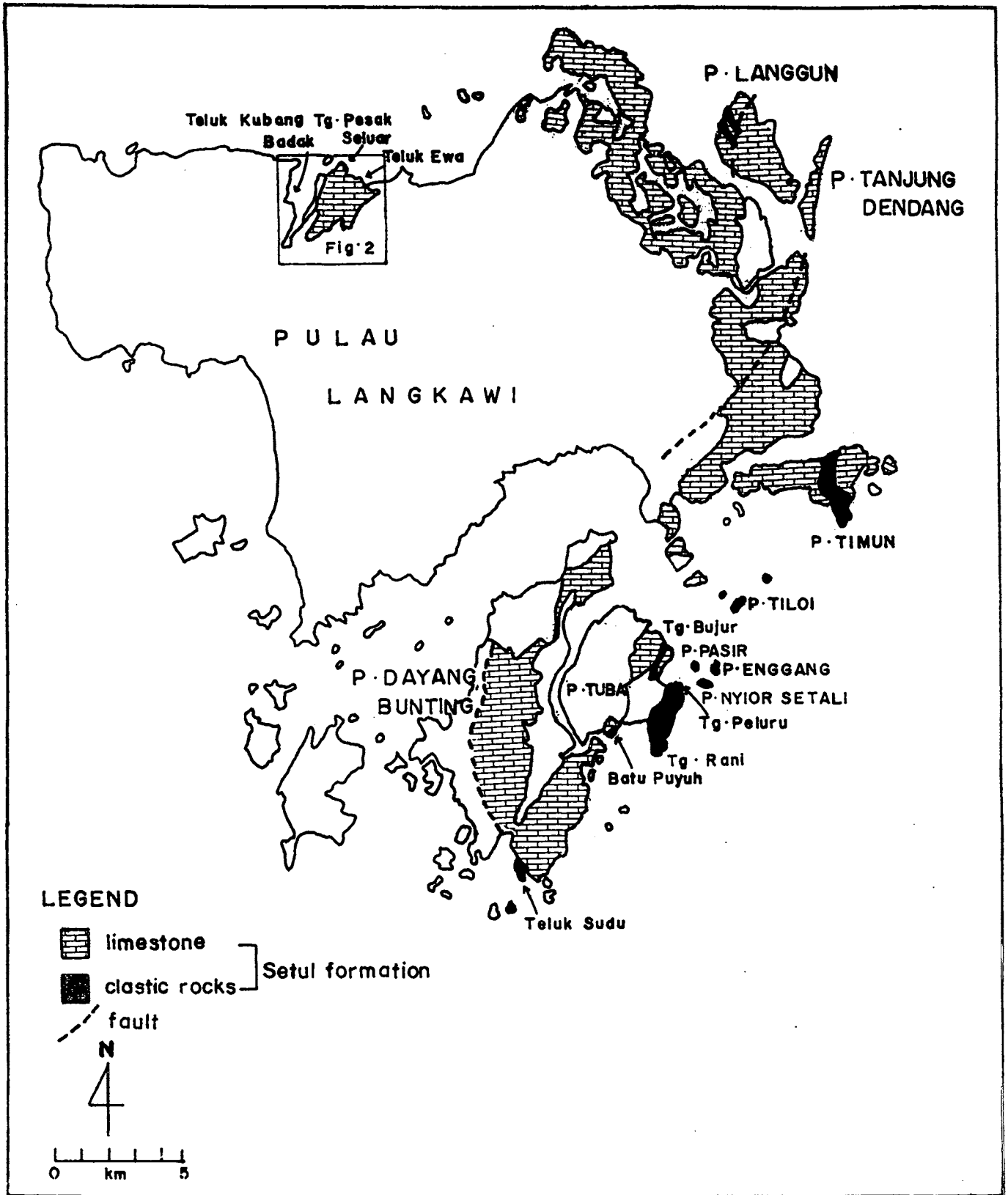


Figure 1. Langkawi Islands map showing the distribution of the Setul formation rocks.

Jones of any occurrence of 'detrital units' on the north coast of Pulau Langkawi itself.

Ong and Aw (1980) mentioned the occurrence of non-carbonate meta-sedimentary units interbedded with at least two marble units above the Machinchang formation east of Kuala Kubang Badak having a minimum thickness of at least 700 m. It is doubtful that this non-carbonate units are the one we shall be describing because Ong and Aw were describing the Machinchang-Setul boundary; and the geology around Kubang-Badak itself is structurally complicated (Ibrahim Abdullah *et al.*, in prep., will discuss the Machinchang-Setul formations boundary in more detail). Moreover, the thickness they quoted is too big (at least 700 meters). The stratigraphic thickness we measured from Pulau Jemuruk right up to the granite contact to the east is less than 600 m (Figure 2). Wongwanich *et al.* (1983) measured the same section and came to a figure of 570 m.

Field description of the clastic unit

On a short visit to the Langkawi Cement Quarry in November 1988, we recognised a thick interbedded limestone/shale sequence (for simplicity this will be referred to only as the clastic unit) within the limestone (Plate 1) near the base of Setul formation at the western end of Teluk Ewa along a quarry road from the Langkawi Cement Factory to Tanjung Pesak Seluar. Based on our familiarity with the local geology and stratigraphy, we know these clastic unit is within the Setul formation. We visited the quarry again in February 1989, revised the geological map around Teluk Ewa (Fig. 2), mapped the clastic beds in detail (Fig. 3), measured the sections and made a detailed stratigraphic log.

Structure

The structure of the area is rather simple. The general strike and dip range from (10-25)/(40-45) at the western part, (30-52)/(25-36) in the middle part and back to 30 degrees but steeper dip of 65 degrees at the eastern part. At the base of the section, the unit shows no deformation except for fracturing. There is evidence of slip along the bedding plane as shown by the slickensides on it. Near the top, the bedding shows slight crumpling into asymmetrical steeply plunging small scale folds (fold axis = 145/50).

The section is cut by a 200/82 striking normal fault. The fault partly repeated the sequence (Fig. 4). It could be this fault that modified the strike and dip of the middle section. Based on the lithologic correlation (Fig. 4), the amount of throw is calculated to be about 35 m. The cross-section in Figure 3 illustrates the change in dip as well as the amount of throw along the fault.

Based on the structural observation, one can say that this clastic unit of the Setul formation shows very different structural style as compared to other clastic units of the same formation exposed at Pulau Langgun, Pulau Timun and Pulau Tuba. As described earlier, the structure of this clastic unit is very simple. The simplicity in the structure is considered to be due to the fact that this unit lies very close to the Machinchang formation which acted as a competent and stable rockmass, protecting nearby rock units from the effect of deformation.

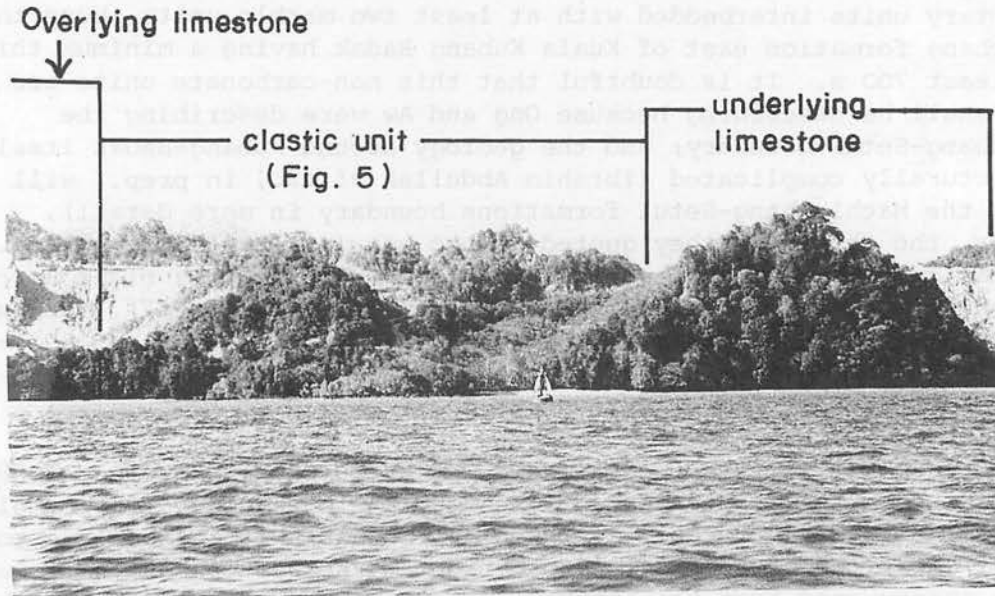


Plate 1: Overview of the western side of Teluk Ewa (from the northeast), showing the location of the clastic unit drawn in Fig. 5.



Plate 2: Field photograph within cycle 7 to illustrate the presence of truncation feature within the clastic unit.

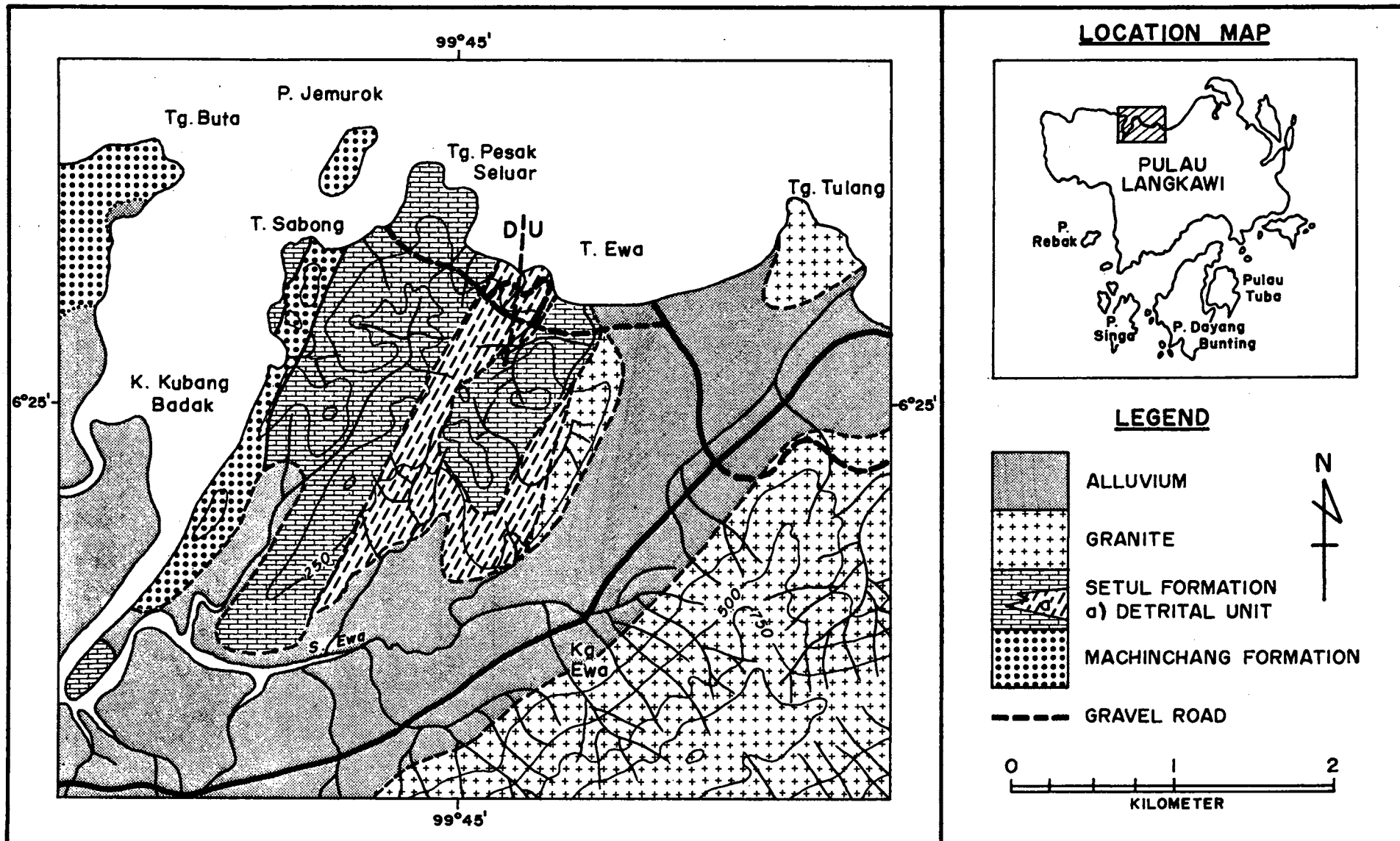
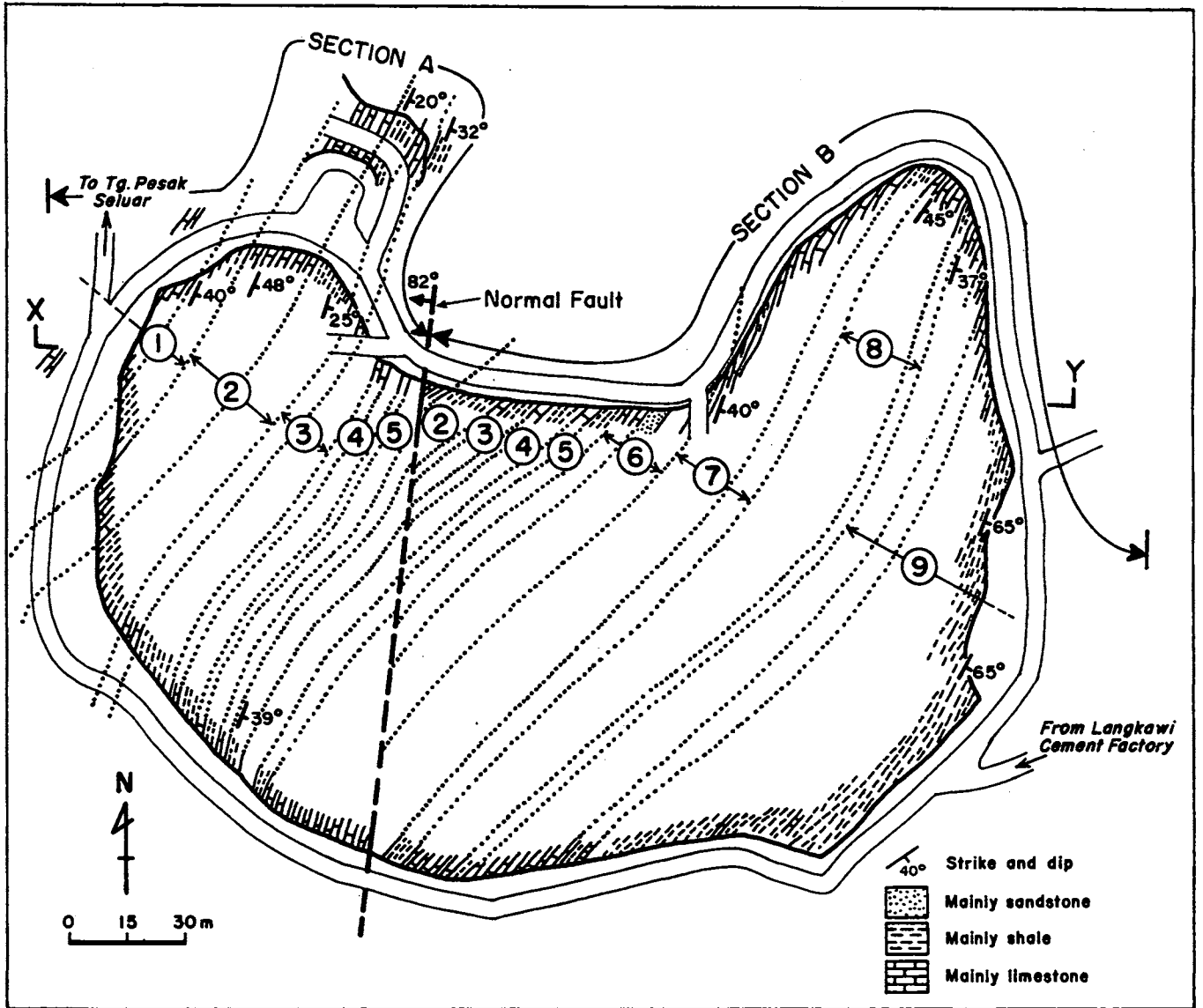


Fig. 2. Revised geological map of Teluk Ewa area.



CROSS-SECTION X-Y

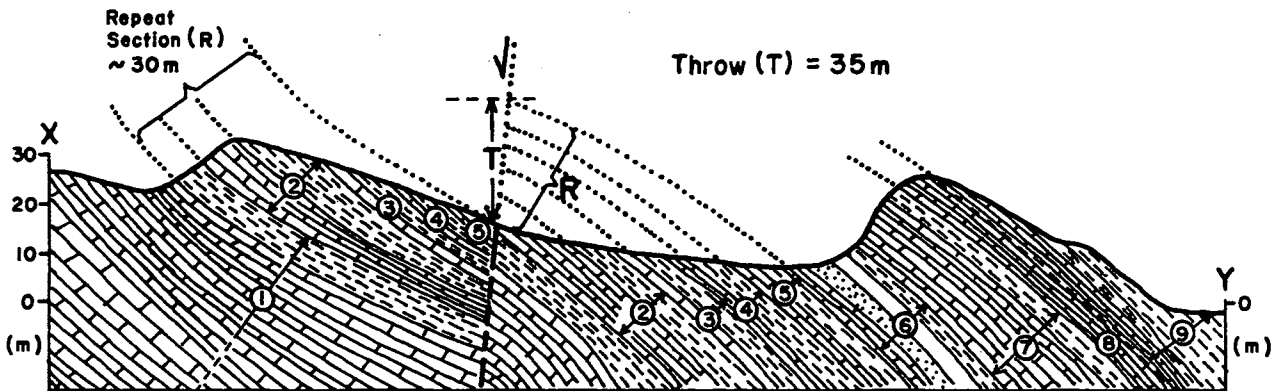


Fig. 3. Sketch map and cross-section to show the distribution and structural style of the clastic unit at the western side of Teluk Ewa.

Lithology

The clastic units are not tabular and laterally extensive along strike to the northeast, but instead they taper out, exhibiting lateral facies change to carbonate facies as well as being truncated (intraformational unconformity) by the overlying limestone proper. Evidence of intraformational unconformity (several truncated erosive contacts) is present even within the clastic unit (Plate 2). The clastic unit thickens to the southwest, then disappears under Sungai Ewa alluvium.

The clastic unit occurs at about 200 m above the base of Setul formation (Fig. 4). The interbedded limestone and shaly beds together measured about 110 m thick, with a possible maximum thickness of at the most 140 m. The limestone beds range from very thin, about 10 cm, occurring as interbeds within the thick shale, to as thick as 10 m. They vary from massive and thick-bedded to medium-bedded to thin bedded. Within the medium-bedded limestone beds, there are occasional massive ovoid bodies that measure over one meter thick and 3 m across, these being characteristic of stromatolitic structure, for example at level 2-6 meter in section A and at level 62-65 m in section B (Figure 5).

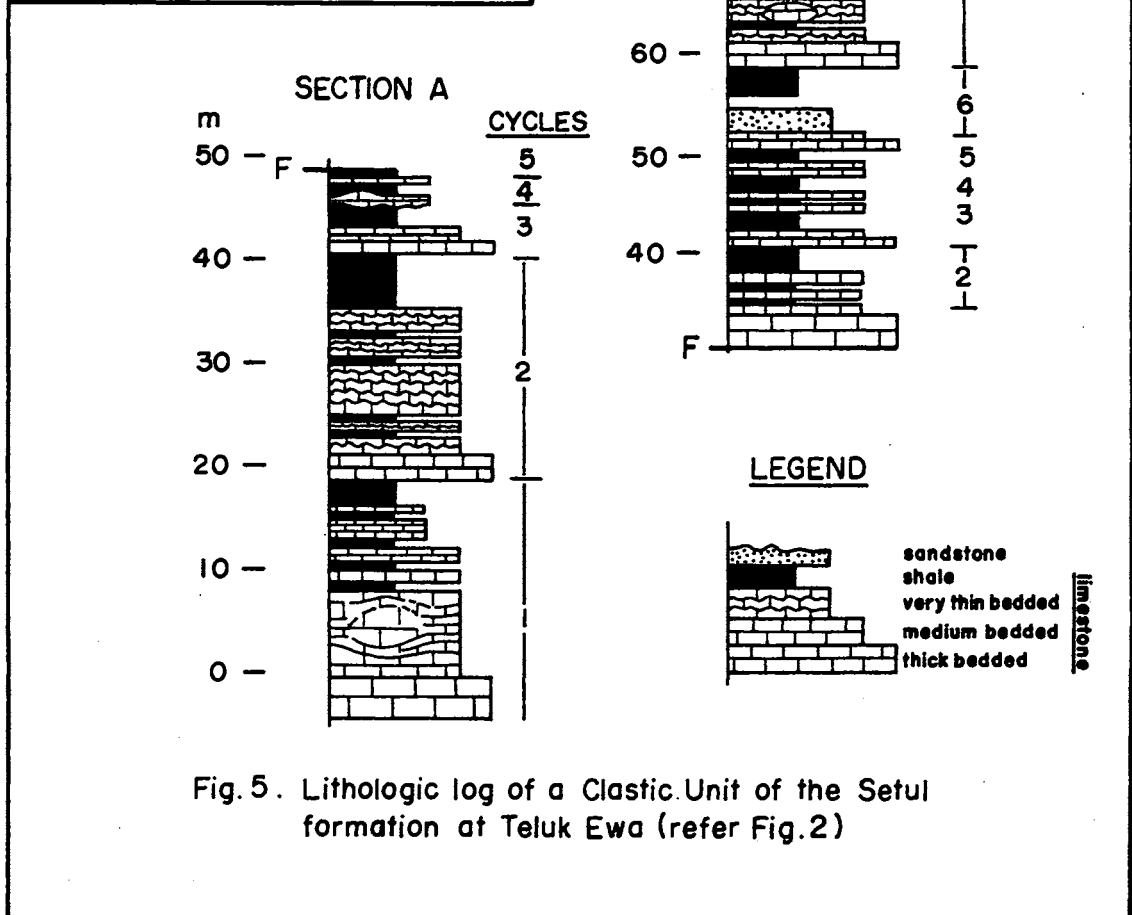
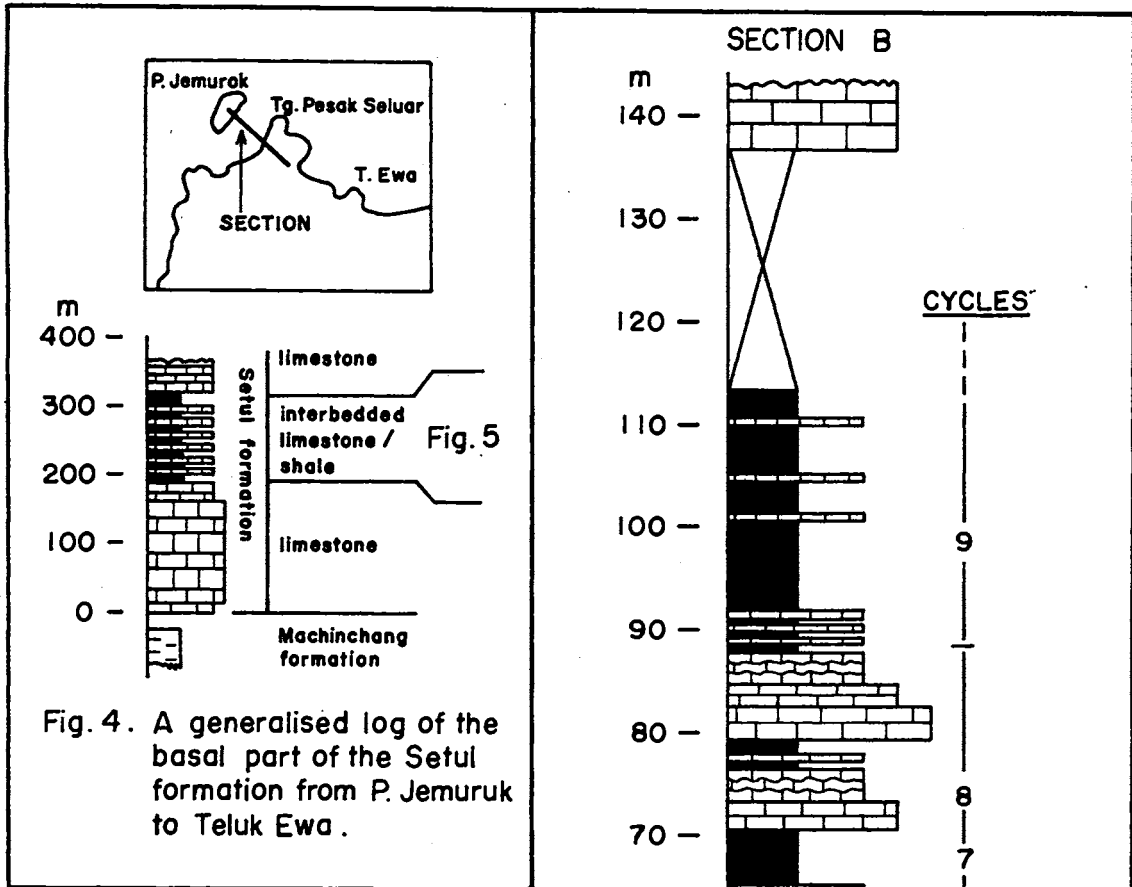
The shaly layers, except for one, are all argillaceous, that is shaly, ranging from very calcareous, calcareous to almost clean shale. They range in thickness from very thin as shale partings to as thick as over 6 m. There is only one layer of coarser-grained clastic of about 1.2 m thick which is calcareous and comprises very fine-grained shaly sandstone at level 52 m.

One significant observation about this section in this clastic unit is the presence of a repetitive sequence, starting from massive or thick-bedded limestone, passing into medium-bedded limestone with shale partings, into thin-bedded limestone with thicker shale partings, then into calcareous shale with limestone bands and into shale. At least nine of this repetitive sequence were recognised, 4 in section A and 5 in section B. The fault repeats sequence 2, 3, and 4 of section A in section B. Work on the sedimentology of this repetitive sequence, together with work on the fossil content are in progress.

Lithostratigraphic naming

Any distinct lithologic unit, readily recognisable in the field and mappable on a 1:50,000 map deserved to be given a lithostratigraphic category. Clastic units within the Setul formation are readily recognisable in the field and are mappable too. Jones (1981) used various terms at different places to refer to the many clastic units within the Setul formation he mapped, viz. clastic strata, clastic facies, detrital strata, detrital facies, detrital beds, detrital band, detrital member, Lower Detrital Member, and Upper Detrital Member. However, none of these terms satisfy the requirements of the Malaysian Code of Stratigraphic Nomenclature in naming lithostratigraphic units.

Article 12(a) of the Code requires that the name of a formation (or any other category) shall be binomial, consisting of a geographic term coupled with either a lithologic term which is generally descriptive of the



rock or with the word 'Formation' (or the appropriate category). However, the International Stratigraphic Guide of the International Subcommission on Stratigraphic Nomenclature (Hedberg, 1976 ed.) allow a trinomial naming, i.e. the geographic name followed by the lithology and lastly by the lithostratigraphic category (e.g. Taylor Coal Member, Setap Shale Formation).

Since the Setul formation is predominantly carbonate and several clastic units are non-carbonate, it will be clearer to insert the lithologic type, i.e. using a trinomial naming. However, both the binomial as well as the trinomial names are acceptable.

Choosing geographic names for various localities where the clastic units are found is not too difficult. The more difficult problem is to correlate the various clastic units. Where two or more clastic units are correlatable on paleontological and/or structural basis, they should be considered as one unit, and be denoted by one lithostratigraphic name. Where units could not readily be correlated, they should initially be considered as separate units and be denoted by different lithostratigraphic names.

The clastic unit at Teluk Ewa appear to have no relative. Similarly the same applies to the one at the southern tip of Pulau Dayang Bunting. The units at Batu Puyuh and Teluk Bujur (Pulau Tuba) are graptolitic and seem correlatable with Jones' (1981) Lower Detrital Member at Pulau Langgon. The units at Pulau Pasir and Tanjung Peluru to Tanjung Rami (Pulau Tuba) are arenaceous, occur above the unit at Batu Puyuh, and are correlatable with Jones' Upper Detrital Member. The units at Pulau Nyior Stali, Pulau Enggang, Pulau Selang and Pulau Tiloi seem to be continuous above the Tanjung Peluru unit but they are separated by a fault and should be considered as a separate unit (Ibrahim Abdullah, 1987). Jones (1981) correlated Pulau Tanjung Dendang unit with his Lower Detrital Member. It seems difficult to correlate the clastic unit at Pulau Timun to any of the other clastic units. It could be considered as a separate unit.

Following the above arguments, Table 1 is the authors' suggestion of how to name the various clastic units within the Setul formation. Although Pulau Langgon is better known, since Jones' two detrital members are exposed there, the name Langgon is avoided because it has two units there. Table 1 is only a suggestion and further work has to be done to support or to modify the scheme.

References

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Jones, C.R., 1981. Geology and Mineral Resources of Kedah, Perlis and the Langkawi Islands. *Mem. Geol. Surv. Dept. W. Malaysia*, No. 11.

Ong, Y.H. and Aw, P.C., 1980. Some Aspects of the Stratigraphy and Structure of the Upper Part of the Machinchang Formation and the Lower Part of the Setul Formation: in Geology of NW Peninsular Malaysia Seminar - Report and Abstract of papers. *Warta Geologi*, Vol. 6, No. 2, p.32.

Wongwanich, T., Wyatt, W., Raksaskulwong, L. and Mantajit, N., 1983. The Ordovician System in Southern Thailand and Northern Malaysia. *Proc. of the Workshop on Stratigraphic Correlation of Thailand and Malaysia*, Vol. 1, pp. 77-95, Hat Yai, Thailand.

Table 1. A suggested scheme for lithostratigraphic naming of the clastic units of the Setul formation

LOCALITY	SUGGESTED BINOMIAL NAME	SUGGESTED TRINOMIAL NAME
Teluk Ewa	Ewa member	Ewa shale member
Teluk Sudu (Southern tip of Pulau Dayang Bunting)	Sudu member	Sudu shale member
Batu Puyoh, Teluk Bujur (Pulau Tuba), lower unit of Pulau Langgon, Pulau Tanjung Dendang	Puyoh member	Puyoh shale member
Tg. Peluru-Tg. Rami (P. Tuba), P. Pasir, upper unit of P. Langgon	Peluru member	Peluru sand member
P. Nyior Stali, P. Enggang, P. Selang, P. Tiloi	Enggang member	Enggang shale member
Pulau Timun	Timun member	Timun shale member

Manuscript received 25 July 1989.

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

CERAMAH TEKNIK (TECHNICAL TALK)

Kerry A. Hegarty: Quantitative thermal history determination using
Apatite Fission Track Analysis (AFTA)

Abstrak (Abstract)

Apatite Fission Track Analysis (AFTA) is uniquely useful for a variety of geological problems encountered by exploration geologists in the oil industry. AFTA can provide quantitative paleotemperature information in both sedimentary basins and hard-rock provinces. The integrated AFTA approach to thermal history analysis has been developed by GEOTRACK research scientists in Melbourne, Australia over the last eight years and has been proven in application to many thermal and tectonic settings, for example, thrust belts, uplifted basement, extensional terrains, all types of sedimentary basins, basin inversion, recent heating. The technique is particularly useful in old basins devoid of plant matter, and in red-bed sequences, as well as in areas affected by more than one phase of high temperatures. In favourable situations, AFTA can provide a complete thermal history in the range of temperatures similar to the "oil window".

AFTA involves the analysis of radiation damage (fission tracks) to the crystal lattice of detrital apatite produced by the spontaneous fission of ^{238}U atoms. These tracks are progressively healed (annealed) at a rate which depends sensitively on temperature. The kinetics of this process have been intensively studied in laboratory experiments and in carefully controlled geological settings. Because new fission events occur continually, tracks are constantly forming and each track experiences a different proportion of the total thermal history. By analyzing the amount of annealing in apatite grains from a rock sample, constraints can be placed not only on the maximum paleotemperature but also on the timing of cooling from maximum paleotemperatures. In suitable cases, constraints can also be placed on the paleogeothermal gradient prior to uplift, and the amount of uplift and erosion.



KERRY A. HEGARTY

Laporan (Report)

Dr. Kerry A. Hegarty of Geotrack International Pty. Ltd., Melbourne, Australia, gave the above talk to about 25 members at the Geology Dept., University of Malaya, on 19 September 1989.

Besides giving a description of the basic principles of the technique Dr. Hegarty included a series of case studies, illustrating the application of AFTA in a variety of geological contexts. These include: Bowen Basin, Australia; East Midlands, United Kingdom; Taranaki Basin, New Zealand; Appalachian Basin, New York. In addition, she included a discussion of some of Geotrack's non-exclusive studies in California, Alaska, Papua New Guinea and New Zealand.

G.H. Teh

PETROLEUM GEOLOGY SEMINAR '89



Shangri-La Hotel, Kuala Lumpur
4-5th December, 1989

BERITA - BERITA PERSATUAN (NEWS OF THE SOCIETY)

RESIGNATION AND APPOINTMENT OF HONORARY TREASURER

At its Meeting on 20 October 1989, the Council appointed Dr. Lee Chai Peng to replace Dr. Ahmad Tajuddin Ibrahim as Honorary Treasurer. Dr. Ahmad had resigned earlier to pursue a course overseas. The Council thanked Dr. Ahmad Tajuddin for his services and welcomed Dr. Lee who has just returned from UK on obtaining his Ph.D.

Dr. Lee also replaces Dr. Ahmad Tajuddin as Chairman of the Young Geoscientist Publications Award.

KEAHLIAN (MEMBERSHIP)

The following applications for membership were approved:

Full Members

1. Liaw Kim Kiat, GSM Sarawak, Kuching.
2. Ponar Ak. Sinjing @ Paul Ponar Sinjeng, GSM Sarawak, Kuching.
3. Wan Zawawie bin Wan Akil, GSM Sarawak, Kuching.
4. Mohd Zailon bin Ramli, GSM Sarawak, Kuching.
5. Richard Mani Ak Banda, GSM Sarawak, Kuching.
6. Henry Litong Among, GSM Sarawak, Kuching.
7. Justine Jok Jau, GSM Sarawak, Kuching.
8. Paramaswaran Suppiah, Home Oil (M) Ltd., Kuala Lumpur.
9. Srimugayogam a/l Vethiah, Malaysia Soil Investigation Sdn. Bhd., Kuala Lumpur.
10. Chiong Siong Khai, Teca (B) Sdn. Bhd., Brunei.
11. John Arrington Hill, Core Laboratories, P.J.
12. Shane Stephen Wooding, Core Laboratories, P.J.
13. Maurou Papiro, Bukit Young Goldmine, P.O. Box 54, 94007 Bau, Sarawak.
14. Pedro B. Rovillos, Bukit Young Goldmine, P.O. Box 54, 94007 Bau, Sarawak.
15. Maria G. Ambuvirayan, Core Laboratories, Lot 10-B, Jalan 51A/223, 46100 Petaling Jaya.
16. Ade William Craig, Oxy, Letter Box 87, UBN Tower, 10 Jalan P. Ramlee, 50250 Kuala Lumpur.
17. Joseph Tang Eng Hoe, Geological Survey Malaysia, P.O. Box 560, 93712 Kuching, Sarawak.
18. Hiroatsu Yoshino, Nippon Oil, Letter Box 74, UBN Tower, 10 Jalan P. Ramlee, 50250 Kuala Lumpur.

Institutional Member

1. Oryx Energy Company, 8150 North Central Expressway, Dallas, TX. 75221-2880, USA.

Student Member

1. Kee Lek Yan, Universiti Kebangsaan Malaysia, Bangi, Selangor.

PERTUKARAN ALAMAT (CHANGE OF ADDRESS)

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

1. C.K. Burton, No. 52, RT 07, RW 04, Kebagusan Wates, Pasar Minggu, Jakarta 12520, Indonesia.
2. T.S. Burton, No. 52, RT 07, RW 04, Kebagusan Wates, Pasar Minggu, Jakarta 12520, Indonesia.
3. Robert A. McTavish, 24 Shepherds Hill, Highgate, London N6 5AH, England.
4. Au Yong Mun Heng, c/o Asian Outreach Sarawak, P.O. Box 2643, 93752 Kuching, Sarawak, Malaysia.
5. Ramli B. Mohd Osman, Karung Berkunci No. 17, 30990 Ipoh.
6. Awang Kasumajaya bin Awang Mahran, Kapelweg 12, 2587 BM The Hague, The Netherlands.
7. Lee Mun Kit, 1 Pesiaran Lidcol, Off Jalan Yap Kwan Seng, 50450 Kuala Lumpur.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. U.S. Geological Survey Professional Paper, (1988): 1366-A-D, 1404-C, 1460, 1363, 1486, 1311, 1403-C, 1241-F, 1471, 1049-F, 1480, 1440, 1044-K, 1355, 1403-H, 1432, 1473. (1989): 1422, 1453, 932-C, 1491, 1370-A, 1447-B, 1258-H, 1409-E, 1734-F.
2. U.S. Geological Survey Bulletin (1989): 1734-G, 1739-B, 1734-E, 1787-F, 1796, 1735-E, 1581-B, 1756-A, 1730-C, 1683-C, 1875-A, 1852, 1542, 1746-E, 1735-F, 1702-F, 1866-A, 1861, 1745-A, 1823, 1873, 1813, 1824, 1868, 1787-H-I, 1842-C, 1702-I, 1749-A, 1875-B, 1875-C, 1702-B, 1754-A, 1757-F. (1988): 1854, 1797, 1826, 1831, 1740-D, 1729-D, 1743-B, 1734-H, 1851, 1808.
3. U.S. Geological Survey Circular, 1989: 1026, 1032, 1028, 1050, 1014.
4. Bulletin Elf Aquitaine, Vol. 13, no. 1, 1989.
5. Earthquakes & volcanoes, vol. 20, nos. 4 & 5, 1988.
6. Oklahoma Geology Notes, vol. 49, nos. 1-3, 1989.
7. AAPG Explorer, July, Aug, Sept, Oct, 1989.
8. Geophysical Research Bulletin, vol. 27, no. 1, 1989.
9. A study of the difference of chemical and microscopic analysis of tin by Dodi S. Karsidi, 1988.
10. A study of wet magnet separation on Batu Besi complex ore, Belitung, Indonesia by Dodi S. Karsidi, 1988.
11. Commonwealth Science Council, Newsletter, May-June 1989.
12. Berliner Geowissenschaftliche Abhandlungen, Band 105 (1988), 106 & 107 (1989).

13. Chronique de la recherche miniere, no. 495, 1989.
14. U.S.G.S. Yearbook Fiscal Year 1988.
15. Scripta Geologica, no. 89, 1989.
16. Annales Academiae Scientiarum Fennicae, no. 151, 1989.
17. Journal of water resources, vol. 5, no. 2, 1986.
18. In-pit screening by Dodi Sumardi Karsidi *et al.*, 1988.
19. In-pit dewatering by Vichit Boonrasri, & Nasharuddin Isa, 1988.
20. IMM Bulletin 989, 1989.
21. Seatrad Centre, Annual Report 1988.
22. Geological Report of the Hiroshima Univ. no. 27, 1987.
23. Journal of Science of the Hiroshima Univ. vol. 9, no. 1, 1989.



PERSATUAN GEOLOGI MALAYSIA
Geological Society of Malaysia

PERSIDANGAN TAHUNAN GEOLOGI '90

Annual Geological Conference '90

The Royal Casuarina Hotel
Ipoh
7th & 8th May 1990

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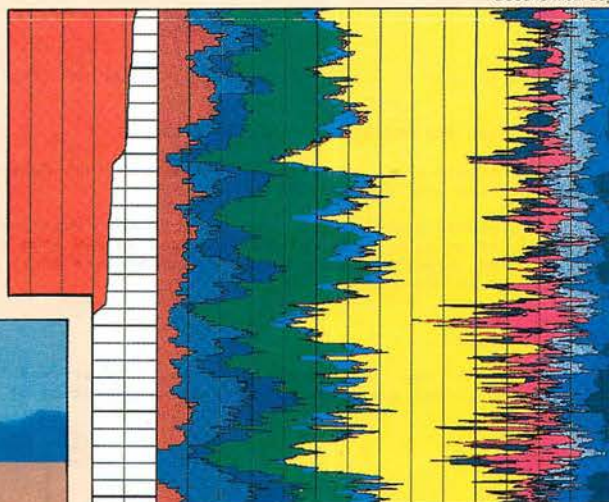
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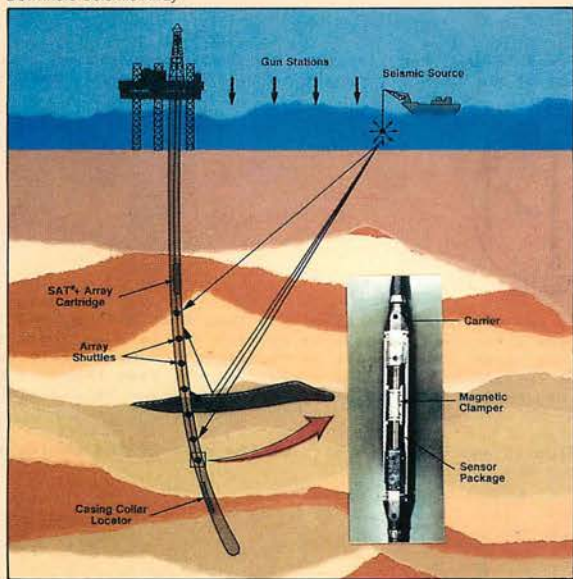
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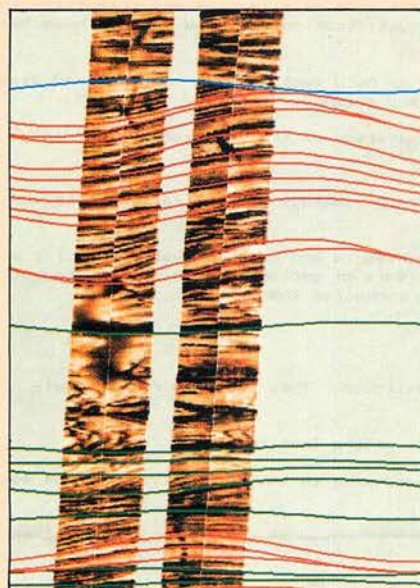
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BERITA - BERITA LAIN (OTHER NEWS)

CONSTITUTION OF THE INSTITUT GEOLOGI MALAYSIA

Article I: NAME AND REGISTERED PLACE OF BUSINESS

- 1. The Institute shall be called "Institut Geologi Malaysia" ("Institute of Geology, Malaysia"), hereinafter called the "Institute". Name
- 2. The registered place of business shall be the Department of Geology, University of Malaya, 59100 Kuala Lumpur, or at such other place or places as may from time to time be decided on by the Council. The registered place of business of the Institute shall not be changed without the prior approval of the Registrar of Societies. Address

Article II: SEAL

- 1. The Seal of the Institute, which shall be affixed to any certificate, document or writing of the Institute except where not authorized by resolution of the Council, shall be of the following design:- Seal



- 2. The Seal shall be of circular form, with an outer, and an inner, circle of not less than 3.5 cm, and 2.9 cm, diameter respectively, defining an annular space within which shall be clearly written, as depicted, the words "Institut Geologi Malaysia". Within the inner circle shall be centrally drawn a geological hammer of the depicted shape, with a height of not less than 2.5 cm and a width of not less than 1.1 cm. This hammer shall be flanked by silhouette maps of Peninsular, and East, Malaysia drawn to a scale of not more than 1:100 million.
- 3. The seal depicts the basic tool of the field geologist and thus symbolizes the role of the geologist within the country of Malaysia.

Article III: OBJECTS

- 1. The objects of the Institute are: Objects
 - a) to provide a central organisation for geologists in the form of a learned and scientific institute for geology and to provide for the definition of, and qualification for, the various branches of the profession of the geological sciences.
 - b) to promote friendly interaction amongst geologists and to hold meetings for readings and discussions of matters relating to geology and their various arts and sciences connected therewith.
 - c) to regulate and to uphold the dignity, standing and reputation of the profession of geology.
 - d) to promote and advance the knowledge, study and practice of geology and the various arts and sciences connected therewith.
 - e) to assist, advise and co-operate with government departments and other private or public bodies in an honorary capacity on questions relating to the science of geology and policy in respect of land and earth resource utilisation and all other matters connected therewith.

Article IV: MEMBERSHIP

- 1. There shall be four (4) classes of membership of the Institute. They shall be respectively Fellows, Members, Licenciates and Graduate Members. Membership

Fellows, Members and Licenciates shall be Corporate Members of the Institute.

Members of the Institute shall use the abbreviations corresponding to the respective class of membership as follows:-

Fellow	F.I.G.M.
Member	M.I.G.M.
Licenciate	L.I.G.M.

Graduate members shall not be designated by any abbreviation.

- 2. All applications for membership shall be made on forms approved by the Council and shall be proposed by two corporate members of the Institute, one of whom must certify his personal knowledge of the applicant. Such application shall be submitted to the Secretary who shall table the same before the next following Council meeting for their consideration. Application For Membership

Every applicant shall satisfy the Council that he or she has fulfilled the requirements prescribed by these rules and such other bye-laws which may be imposed by the Council as a condition of membership and he or she shall produce such evidence of fitness for admission as the Council shall require.

3. The Council may in their absolute discretion, by resolution passed at a meeting of the Council and without assigning any reason for their refusal, refuse to admit to membership of any applicant. Refusal Of Application
4. Members of the Institute shall be admitted to the classes of members in accordance with their qualification and experience herein-under specified by the Council whose decision shall be final.
5. A candidate for transfer or election into the class of Fellows shall possess the following qualifications: Fellows
 - a) He/She shall be a member or shall have satisfied the conditions for admission to the class of members.
 - b) He/She shall have at least fifteen years of professional experience in the geology profession of which at least five years
 - i) shall be in responsible charge of important geological operations, or
 - ii) shall have been a consultant or advisor in the branches of geology provided that the Council shall be satisfied that the training and technical experience of the candidate engaged as a consultant or advisor justified such professional status.
 - c) He/She shall be practising at the time of his application and shall satisfy the Council that he or she is a fit and proper person to become a Fellow.
6. A candidate for transfer or election into the class of Members shall not be less than twenty-one years of age and shall possess the following qualifications: Members
 - a) i) He/She shall be a person who has a Bachelor's degree with Honours in geology from a University or Institution of higher learning recognised by the Government of Malaysia or equivalent qualification.
 - ii) He/She shall be in possession of professional experience in a branch of geology of at least three years duration which shall include at least one year of responsible work in geology.
 - b) He/She shall be practising his or her profession at the time of his or her application and shall satisfy the Council that he or she is a fit and proper person to become a member.
7. A candidate for election into the class of Licenciates shall not be less than twenty-one years of age and shall possess the following qualifications: Licenciates
 - a) He/She shall be in possession of at least a Diploma in geology or equivalent qualification.
 - b) He/She shall be in possession of experience in a branch of geology of at least five years duration.
 - c) He/She shall have passed the Membership examinations of the Institute provided that the Council may exempt a candidate from part of the Membership examinations if he/she has passed other recognised external examinations approved by the Council.
 - d) He/She shall satisfy the Council that he/she is a fit and proper person to become a Licentiate.
8. A candidate for election into the class of Graduate Member shall be a person who has a Bachelor's degree with Honours in Geology recognised by the Government of Malaysia or equivalent qualification. Graduate Members
9. Every applicant for corporate membership shall give an undertaking that he or she will, if admitted: Undertaking
 - a) observe and be bound by the rules and bye-laws of the Institute which may be in force so long as he or she is a corporate member,
 - b) return to the Institute any certificate of membership which may have been issued to him or her, on his or her resignation or on demand of the Council.
10. Every corporate member shall be bound by the Rules of Professional Conduct as laid down by the Institute Professional Conduct
11. Any corporate member shall, if required by the Council, satisfy the Council that he or she is qualified to retain his or her corporate membership of the Institute. Retention Of Membership
12. A Register of members shall be kept and maintained by the Council at such place or places as the Council may from time to time decide. Such Register shall show the class of membership to which each and every member of the Institute has been admitted, and the date of admission. Register
13. The Council, upon being satisfied of the death of any corporate member or graduate member, shall remove his or her name from the Register of the Institute. Death Of Member
14. The Council may from time to time prescribe, shall issue, to each member a Certificate showing the Class to which he or she belongs. Every such Certificate shall remain the property of, and shall on demand, be returned to the Institute. Such Certificates shall be signed by the President or Vice-President and by two members of the Council, for the time being and countersigned by the Secretary of the Council, and bear the Seal of the Institute. Certificate
15. Any member may at any time, by giving notice in writing and sent by registered post or delivered to the Secretary at the registered place of business of the Institute, and accompanied by the certificate of membership held by him or her, resign his or her membership. Resignation Of Membership

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| 16. The Council shall have the right, by a majority of three quarters of the Council present at a Council Meeting specially convened to consider the case and voting to expel or suspend from the Institute any member, who has been guilty of any conduct contravening the Institute's Code of Professional Conduct or of any laws introduced to govern the conduct of a Geologist, or which in the discretion of the Council unfits him or her for membership of the Institute, provided that such member shall have been given at least fourteen days notice in writing of a motion to that effect on the Agenda paper and shall be permitted to be present at the meeting, and be heard in his or her own defence. Such expulsion or suspension of a member shall have to be confirmed during an Annual General Meeting of the Institute which shall have the right to overrule such expulsion or suspension on the appeal of the member. | Expulsion
Or
Suspension |
| 17. In the event of the suspension or removal of a member, the Council shall be at liberty to cause notice of cessation of membership to be published in such newspapers or journals as they may decide. | Notices |
| 18. The re-election to membership of any person who has for any reason ceased to be a member of the Institute shall be dealt with in the same manner as an original application. | Re-admission
To Membership |

Article V: ENTRANCE FEES, SUBSCRIPTIONS AND OTHER DUES

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| 1. Every person duly elected, or transferred from one class of membership to another, shall be so informed by the Secretary and shall pay the entrance or transfer fee, and the annual subscription for the current year within three months after the date of his or her election or transfer which otherwise shall become void, but the Council may in particular cases extend this period. | Payments |
| 2. Annual subscriptions shall be payable in the month of January of every year. | Annual
Subscription |
| 3. The entrance fee shall be M \$ 50 (Fifty), the transfer fee M \$ 50 (Fifty), and the annual subscription due M \$ 20 (Twenty). | Fees and Dues |
| 4. Members elected in any year shall pay the annual subscription payable for the current year. | Annual
Subscription |
| 5. No corporate member, whose annual subscription remains unpaid for a period of three months shall be entitled to attend, or take part in the meetings of the Institute, nor to receive the notices or publications of the Institute, nor shall he or she be entitled to vote, until he or she has paid in full such subscription. | Penalty For
Non-payment |
| 6. The name of any member whose annual subscription remains unpaid for six months after it shall become due and payable shall be reported to the Council and such member shall cease, ipso facto, to be a Member of the Institute, and his or her name shall be removed from the Register of members, but such removal shall not relieve him or her from his or her liability for the payment of arrears of the subscriptions due from him or her, provided that the Council shall have power to extend such period of six months as they may think fit. | Cessation Of
Membership |

Article VI: OFFICERS AND THEIR DUTIES

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| 1. The Council shall consist of a President, Vice President, Secretary, Treasurer and seven Ordinary Council Members, all of whom shall be corporate members. All members of the Council and every officer performing executive functions in the Institute shall be Malaysian citizens. | Council |
| 2. Besides the post of President, the Council shall consist of ten corporate members duly elected by the corporate members of the Institute at one time or another. Each elected corporate member shall serve on Council for a maximum period of two consecutive years, except in the first elected Council when the five elected members with the lowest number of votes shall serve for a maximum period of one year. | Method
Of
Election |
| 3. The President who must be a corporate member shall be the Director-General or the Deputy Director-General or the Acting Director-General or the Acting Deputy Director-General of the Geological Survey of Malaysia. The President shall be the presiding officer at all meetings of the Institute and shall serve as Chairman of the Council. | President |
| 4. The Vice President shall be elected by the Council Members themselves within a month after the Annual General Meeting of the Institute. The Vice President shall assume the office of President in case of a vacancy from any cause in that office and shall assume the duties of President for such period or periods as that officer for any reason may be unable to perform his official duties. | Vice-
President |
| 5. The Secretary shall be elected by the Council Members themselves within a month after the Annual General Meeting of the Institute. The Secretary shall be responsible for keeping the records of the Institute and shall, under the direction of the Council, annually submit a report as Secretary covering the year. | Secretary |
| 6. The Treasurer shall be elected by the Council Members themselves within a month after the Annual General Meeting of the Institute. The Treasurer shall have charge of the financial affairs of the Institute, under the direction of the Council, and shall annually submit a report as Treasurer covering the year. The Treasurer shall receive all funds of the Institute and, under the direction of the Council, shall perform all disbursement of funds of the Institute. The Treasurer shall also cause an audit to be prepared annually by the Honorary Auditor. | Treasurer |
| 7. Any casual vacancy amongst the Members of the Council may be filled by the Council for the current year. | Vacancies |
| 8. The Council shall remain in office subject to Article VI, Section 6 whereby the corporate members shall have to elect amongst themselves to fill the 5 vacancies at the Annual General Meeting. | Term Of
Office |
| 9. The office of a member of the Council shall be vacated:
a) By notice in writing to the President or the Secretary, | Vacation
Of Office |

- b) If he or she ceases to be a Member,
 - c) If he or she fails to attend three successive meetings of the Council without first having obtained the permission of the President of the Council for the time being or unless he or she is able to satisfy the Council with adequate reasons for non-attendance,
 - d) If he or she is suspended by the Council for unprofessional conduct.
10. Subject to the Rules, the Council may, meet for the despatch of business, adjourn or otherwise regulate their meetings as they think fit provided there is a quorum of six members. Council Meeting
 11. Questions arising or decisions arising at any meeting of the Council shall be decided by a majority of votes, except as otherwise provided for in the bye-laws. In the case of an equality of votes, the President shall have a further of casting vote. Council Votes
 12. The Council shall meet not less than once in every three months and Council meetings shall at any time be called by the Secretary at the request of the President or at the request of five members of the Council by giving, at least fourteen days clear notice, to all members of the Council provided that due to the emergency nature of the business and with the consent of the President such notice shall be waived. Notice Of Council Meeting
 13. At any meeting of the Council, if the President or the Vice President be not present within thirty minutes after the time appointed for the Meeting, the members of the Council shall adjourn and hold the said meeting within seven days. Adjournment
 14. A meeting of members of the Council at which a quorum is present together with the presence of the President and/or Vice President shall be competent to exercise all the authorities, powers and discretion by or under the Rules of the Institute for the being vested in the Council generally. Power
 15. The Council may appoint Committees from amongst themselves, or corporate members of the Institute, in accordance with the bye-laws for the time being in force and subject to the provisions of these Rules, the Council may delegate any of their powers to Committees as they consider fit. Any Committee so formed shall conform to any regulations imposed on it by the Council. The meetings and proceedings of any such Committee shall be governed by the Provisions of these Rules for regulating the meetings and the proceedings of the Council so far as applicable and so far as the damage shall not be superseded by any regulations made by the Council aforesaid. Committees
 16. All acts, bona fide, done by any meeting of the Council or of any Committee appointed by the Council or by any member acting as a member of the Council, notwithstanding it shall be afterwards discovered that there was some defect in the appointment of such Council, Committee or any such person as a Council member or members of the Council acting as aforesaid or that they or any of them were not qualified at the time of their appointment or had become disqualified shall be valid as if such Council, Committee or persons or members of the Council had been duly appointed and was qualified to act. Validity Of Act
 17. The Council shall cause proper minutes to be made, of proceedings at all meetings of the Institute and of the Council and of Committees, and of all business transactions at such meetings, and minutes of any such Meetings signed by the President or Vice President or Chairman of Committee of the next succeeding meeting shall be conclusive evidence without any further proof of the facts therein. Minutes of minutes shall be sent not less than seven days before the date fixed for the next Meeting. Minutes
 18. The business of the Institute shall be managed by the Council who may exercise all such powers of the Institute and do on behalf of the Institute all such acts as may be exercised or done by the Institute on General Meeting; subject nevertheless to these Rules and to such further Rules as may be prescribed by the Institute in General Meeting but no rule made by the Institute in General Meeting shall invalidate any prior act of the Council which would have been valid if such rule had not been made. Business
 19. In the event the members of the Council shall at any time be reduced in number to less than six, it shall be lawful for them to act as the Council for summoning an Extraordinary General Meeting for the purpose of filling up vacancies in their body but not for any other purposes. Power Of Continuing Council
 20. The Council may arrange for the publication in any manner which they may deem advisable of such statistics, papers, documents and publications as may be considered by the Council to be likely to promote knowledge of the work, theory, law and practice relating to the profession of the geological sciences. Publications
 21. Every member of the Council shall be indemnified out of the funds of the Institute against all liability incurred by him or her as a member of the Council in defending any proceedings whether civil or criminal in which judgement is given in his or her favour or being acquitted or in connection with any application in which relief is granted to him or her by the Court. The funds of the Institute shall on no account be used to pay the fine of any member who may be convicted in a Court of Law. Indemnity
 22. Subject to the provisions contained in these Rules, meetings of the Institute shall be held at such times and places as the Council may appoint. Place Of Meeting

Article VII: FINANCE

1. The property and funds of the Institute shall be administered by the Council in accordance with the provisions contained in these Rules. Funds
2. The income of the Institute whencesoever derived, shall be applied solely towards the promotions of the objects of the Institute as set forth in these Rules, and no portion thereof shall be paid or transferred directly or indirectly by way of dividend, bonus or otherwise howsoever by way of profit to any or all of the Members of the Institute. Provided that nothing herein shall prevent the payments in good faith of remuneration to any officers, servants, or members of the Institute or other person in return for any service actually rendered to the Institute. Income

3. The Treasurer may hold a petty cash advance not exceeding M \$ 500 at any one time. All money in excess of this sum shall within seven days of receipt be deposited in a bank approved by the Council. The bank account shall be in the name of the Institute. Petty Cash
4. No expenditure exceeding M \$ 500, at any one time, shall be incurred without the prior sanction of the Council, and no expenditure exceeding M \$ 2,000, at any one time, shall be incurred without the prior sanction of a General Meeting. Expenditure less than M \$ 500 may be incurred by the Treasurer.
5. Cheques on the Institute's Bankers, until otherwise from time to time resolved by the Council, shall be signed by two Council Members, one of whom must be the President or the Vice President or the Treasurer. Cheques
6. The Council shall cause proper and sufficient accounts to be kept with respect to: Accounts
 - a) The assets, credits and liabilities of the Institute
 - b) The sum of monies received and expended by the Institute and the matters in respect of which such receipts and expenditure take place.

The books and financial records shall be kept by the Treasurer at the premises of the Institute or at such other place as the Council shall determine.
7. At least once in every year the accounts of the Institute shall be examined and the correctness of the Receipts and Payments Account and Balance Sheet ascertained by an Auditor appointed by the Institute in the Annual General Meeting. The audited accounts shall be submitted for the approval of the next Annual General Meeting, and copies shall be made available at the registered place of business of the Institute for the perusal of members. Audit
8. The financial year of the Institute shall end on the thirty first day of December in each year and an Receipts and Payments Account made up each to that date together with a Balance Sheet made up as at the same date and such Account shall be laid before the Institute at its Annual General Meeting. A copy of every such account and balance sheet duly audited as herein provided together with the Council's report shall not less than fourteen days before the Annual General Meeting of the Institute be sent to all members entitled to receive notices of such meetings in the manner in which notices are hereinafter directed to be served. Financial Year

Article VIII: MEETINGS

1. The General Meeting of the Institute shall be as follows: Type Of Meetings
 - a) The Annual General Meeting
 - b) Ordinary Meetings
 - c) Extraordinary General Meetings
2. The Annual General Meeting shall be held in the month of March each year or as soon thereafter as practical provided that every such Meeting shall be held not more than fifteen months after the holding of the last preceding Annual General Meeting and not later than the month of June of the following year. Annual General Meeting

The notice of the Annual General Meeting shall be sent out at least one month before the Annual General Meeting.

The ordinary business of the Annual General Meeting shall be as follows:

 - a) to receive, and if approved, to pass the Accounts for the year ended on the thirty first December last preceding and to receive the Report of the Council,
 - b) election of five Council Members to fill vacancies so created at the Annual General Meeting,
 - c) to appoint an Auditor,
 - d) to transact any other business of which due notice shall have been given at least seven days before the Annual Meeting or otherwise items for discussion shall be entertained only by majority vote at the Annual General Meeting.
3. Nominations for the posts of Council Members shall only be valid if made by not less than two corporate members who have received the agreement in writing of the nominee. Such nominations and agreements shall be delivered to the Secretary to reach him or her by hand or by registered post not later than fourteen days before the date of the Annual General Meeting. Nomination

Voting for election shall be by ballot.

Ballot papers shall be sent, together with the nomination list, not less than seven days before the date fixed for the Annual General Meeting to all corporate members. Such ballot papers shall be returned to the Secretary to reach him/her not later than twenty-four hours before the commencement of the Annual General Meeting.

The corporate members present at the Annual General Meeting shall appoint two scrutineers amongst themselves, whose duty shall be to open and examine the ballot papers and to report the result. The scrutineers shall reject any ballot paper on which a Member has voted for a number more than that prescribed in the voting paper.

Should any person elected to office decline to serve, the candidate with the next highest number of votes shall be deemed to be elected.

4. The Ordinary Meetings of the Institute shall be held and conducted as prescribed by the Council from time to time. Ordinary Meetings
- The Ordinary Meeting shall be held for the purpose of delivery of lectures, social and discussions.
- No motion shall be made at any Ordinary Meeting relating to the direction or management of the Institute, such direction and management being vested in the Council subject to the provisions of the Constitution of the Institute, Rules and Bye-laws, schedules and of the resolution of Extraordinary General Meetings.
5. The Council may at any time call an Extraordinary General Meeting of corporate members for a specific purpose relating to the direction and management of the Institute. Extraordinary Meeting
- a) The Council are at all times bound to do so on a requisition in writing of not less than ten corporate members calling for such a meeting.
 - b) Such requisitions shall state the matters to be brought before such Extraordinary General Meeting and the resolutions (if any) to be moved.
 - c) If within twenty-one days of receipt of such requisitions the Council do not proceed to cause a meeting to be held, the requisitionists may themselves convene the meeting.
 - d) A notice shall be sent to every corporate member at least twenty-one days before the time appointed by the Council for such Extraordinary General Meeting and the notice shall specify the general nature of the matters to be brought before such Extraordinary General Meeting and the resolutions (if any) to be moved, and no other than that business shall be transacted at that Meeting.
- No other persons except corporate members whose subscriptions are not overdue shall have a right to attend and vote. The accidental omission to send notice of a Meeting to or the non-receipt of a notice by any Corporate Member shall not invalidate the proceedings at the Extraordinary General Meeting.
- The President, or the Vice President in his absence, shall preside at the Extraordinary General Meeting. If at any time he shall not be present within thirty minutes after the time appointed for such a Meeting, a member of the Council chosen by the members present shall preside. If no Member of the Council be present or if any of the Council Members decline to preside, the members present shall choose one of their number to take the Chair for the purpose of conducting the Extraordinary General Meeting.
6. No business shall be transacted at any General Meeting unless a quorum is present when the Meeting proceeds to business. Quorum
- For all purposes, the quorum at a General Meeting shall be at least one-half of the total voting membership of the Institute or twice the total number of Council members.
7. If a quorum is not present half an hour at a General Meeting after the time appointed, the Meeting shall be adjourned for the same place, time and day of the week following, or at such place as the person holding the Chair shall decide and if, at such adjourned Meeting, a quorum is again not present within half an hour of the time appointed for holding the Meeting, the corporate members present shall be a quorum. Adjournment
- No business shall be transacted at an adjourned Meeting other than the business which might have been transacted at the General Meeting from which the adjournment took place.
8. At all General Meetings, a resolution put to the vote of the Meeting shall, except as herein otherwise provided, be decided on a show of hands unless a poll be demanded by the person holding the Chair or by at least fifty percent of the members present in person entitled to vote. A declaration by the person holding the Chair for the Meeting that a particular resolution has been carried by a particular majority or lost or not carried by a particular majority shall be conclusive and an entry to that effect in the Minute Book of the Institute shall be conclusive evidence thereon without proof of the number or proportion of the votes recorded in favour of or against such resolution.
- If a poll be demanded, it shall be taken at the Meeting and in such a manner as the person holding the Chair shall direct and the result of the poll shall be deemed to be the resolution of the General Meeting at which the poll was taken.
- In the event of the Council deeming it desirable that the votes of Corporate Members (entitled to vote) of the Institute not present at the General Meeting shall be taken into account, then voting at that General Meeting shall be by ballot only.
- The procedures and time limits for despatch, examination, counting and verification of the ballot papers shall be the same as that for the election of Council Members at the Annual General Meeting.
9. No amendment of any resolution shall be proposed or voted upon at a General Meeting. Resolutions At General Meeting

Article IX: TRUSTEES

1. Three Trustees, who must be over 21 years of age, shall be appointed at a General Meeting and shall hold office during the pleasure of the Institute. They shall have vested in them all immovable property whatsoever belonging to the Institute and shall deal with it in such manner as the Institute may direct. Appointment

2. The Trustees shall not sell, withdraw or transfer any of the property of the Institute without the consent and authority of a General Meeting of the Institute.
3. A Trustee may be removed from office by a General Meeting of the Institute on the grounds that, owing to ill health, unsoundness of mind, absence from the country or for any other reason, he or she is unable to perform his/her duties or unable to do so satisfactorily. In the event of the death, resignation or removal of a Trustee the vacancy shall be filled by a General Meeting of the Institute.

Article X: VOTING AND BYE-LAWS

1. Every corporate member, whether on a show of hands or upon a poll or by ballot shall be entitled to vote. Vote
 2. Save as herein expressly provided, a corporate member duly registered and who shall have paid every subscription and other sum which shall be due and payable to the Institute in respect of the membership shall be entitled to be present or to vote on any question or resolution at any General Meeting. Eligibility
 3. No member shall act by proxy except where provided in the Rules. Proxy
 4. The Council may from time to time make such Bye-laws as they judge necessary for carrying on the business of the Institute and may at any time, in like manner, approve, annul or vary any Bye-laws for the time being in force shall be binding on the Members of the Institute and shall have full effect accordingly provided that notice of such Bye-laws or recession or alterations thereto shall be becoming effective, during which time any ten corporate members may give notice in writing to the Secretary requesting an Extraordinary General Meeting to be convened for the purpose of considering, confirming or revoking the same. Bye-laws
- If no such notice is received by the Secretary the Bye-laws shall become binding on all Members at the expiry of the above mentioned thirty days.

Article XI: AMENDMENTS

1. Amendments to this Constitution may be proposed by a resolution of the Council or in writing by at least ten Corporate Members of the Institute. All such proposals or resolutions must be submitted to the Secretary of the Council. The Council shall cause a postal ballot to be taken of all corporate members and a majority vote of ballots of at least two-thirds of the total current members received within sixty days of mailing shall be sufficient to amend the Constitution. Amendments
2. Any amendment to the Constitution shall be forwarded to the Registrar of Societies within twenty-eight days of being passed by the General Meeting.

Article XII: INTERPRETATION OF CONSTITUTION

1. Between Annual General Meetings, the Council shall interpret the Constitution and, when necessary, determine any point on which the Constitution is silent. Interpretation
2. Except where they are contrary to, or inconsistent with, the policy previously laid down by the General Meeting, the decisions of the Council shall be binding on all members of the Institute unless and until countermanded by a resolution of a General Meeting.

Article XIII: PROHIBITION

1. None of the following games shall be played in the premises of the Institute: Roulette, Lotto, Fan Tan, Poh, Peh Bin, Belangkai, Pai Kau, Tau Ngau, Tien Kow, Chap Ji Kee, Sam Cheong, Twenty-One, Thirty-One, Ten and a half, all games of dice, banker's games and all games of mere chance. Prohibition
2. Neither the Institute nor its members shall attempt to restrict or in any other manner interfere with the trade or prices or engage in any Trade Union activities as defined in the Trade Union Ordinance, 1959.
3. The Institute shall not hold any lottery, whether confined to its members or not, in the name of the Institute or its office-bearers, Council or member.

Article XIV: DISSOLUTION

1. The Institute may be voluntarily dissolved by a resolution of not less than two-thirds of the total current corporate membership. Dissolution
2. In the event of the Institute being dissolved as provided above, all debts and liabilities legally incurred on its behalf shall be fully discharged, and the remaining funds shall be disposed of in such manner as may be decided upon by a General Meeting of the Institute.
3. Notice of such dissolution of the Institute shall be forwarded to the Registrar of Societies within fourteen days of the date of dissolution.

"CLAIM" - 19TH COMPUTER SIMULATED MINERAL EXPLORATION WORKSHOP

Sponsored by UNESCO and CESMAT

April 24th to May 18th, 1990

Centre de Geologie Generale et Miniere Fontainebleau - France

Objectives and methods

The aim of this workshop is to train participants in all phases of mineral exploration, through the use of personal computer (one per team of three). In four weeks, the trainees learn to react as they should do in reality, taking into account all available scientific and technical information, considering the economic issue, managing a budget, selecting exploration targets, methods and tools, making important decisions and reaching a balanced conclusion on the value of ore bodies.

Initially, they are given geological, technical and socio-economic data. With these data they establish an exploration program and manage the corresponding budget (appraisal of the various prospecting methods, choice of a strategy). Subsequently, they carry out their investigations (geochemical prospecting, various types of drilling, sample analysis,). Results and costs are provided by the computer. As prospecting progresses, they have to synthesis results and adjust strategy, as they should do in real life.

Simulation is thus like an experimental laboratory that allows time and costs to be squeezed, strategies to be multiplied and diversified. At the end of the course, results can be compared with the computer geological model. The real success factor of the operation can thus be assessed, which is never the case in reality.

Program

The course consists of the following phases:

- a) *preparation*: understanding of the training method and procedures used; definition of the problem and presentation of the possible approaches; study of the proposed area and its characteristics; general discussion.
- b) *selection of mineral occurrences*: fields survey, detection, evaluation and sorting of occurrences.
- c) *systematic exploration*: grid drilling, geometrical understanding and evaluation of a potential orebody; particular emphasis will be placed on modelling exploration results and on 3-D representation of structures.
- d) *report writing*: presentation and discussion of the results.
- e) *final discussion* and workshop criticism.
- f) *optional*: the participants may carry out personal work to test exploration strategies or verify forecasting methods: they may study the discovered orebody by using geostatistical methods.

Registration conditions

- Open to graduate geologists and mining engineers (or equivalent) with professional experience.
- Fees: 12,000 FF, plus living and travel expenses.
- UNESCO grant for tuition fees possible if required.

Registration deadline: - UNESCO grant applicants: February 1st, 1990.
- Other participants: March 1st, 1990.

WORKSHOP LEADER: Prof. Ch. BAUCHAU, Institut de Minéralogie,
Université de Lausanne, Switzerland.

WORKSHOP LOCALIZATION: Ecole des Mines de Paris,
Fontainebleau (60 km South of Paris).

Further Information:

Dr. L. Zanone,
CGGM-IGM,
Ecole des Mines de Paris,
35 rue Saint-Honore,
77305 Fontainebleau Cedex,
FRANCE.

PACIFIC RIM 90 CONGRESS

Gold Coast Queensland Australia,
Conrad International Hotel and Jupiters Casino
6-12 May 1990

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.

The success of the 1987 Pacific Rim Congress and its publications on the geology, structure, mineralisation and economics of the Pacific Rim confirmed world interest in the subject and the region.

The 1990 congress is the natural sequential chapter in the study and exchange of knowledge of this important sector. Again it is attracting an extensive and exciting program of papers representing a wide variety of disciplines in science, engineering, economics and politics, presented by authors drawn from even wider geographic sources than in 1987.

During and since the 1987 Pacific Rim Congress, the PACRIM 90 organising committee clearly realised that not all geologists share the same ideas about the Pacific Rim. The AusIMM PACRIM 90 Congress will facilitate an exchange of views on all aspects of the region ranging from its geological formation to future economic factors and political influences.

The range of topics to be discussed are:

The Pacific Rim's Economic Potential Sir Eric Neal AC.

Science, Minerals and the Environment:

Role of National Science Foundation in Pacific Geoscience Research Dr Jim Hays, Director, National Science Foundation, USA.

Geology and the Environment - A Century of Resource Use: Is there sufficient for the future? Prof. Brian Skinner, Yale University, USA.

Geotechnic Framework of Mexican and Central American Mineral Deposits Dr. Zoltan de Cserna, University Nacional Autonoma de Mexico, Mexico.

Concurrent sessions:

Precious and Base Metals - Australasia

Geological History - Western Pacific and Eastern Australia

Mining, Environment, Law and Economics

Mining and Exploration Technology

Sir Edgeworth David Memorial Lecture Prof. Sam Carey, University of Tasmania, Australia

Pacific Geology:

Regional Geology and Tectonic Evolution of Alaska and Adjacent Parts of the North East Pacific Dr. George Plafker, United States Geological Survey, USA.

Regional Geology and Tectonics of the South East Quadrant of the Pacific Dr. Jose Corvalan Diaz, Subdirector, Nacional de Geologia, Servicio Nacional de Geologia y Minería, Chile.

Regional Geology and Tectonics of the North-West Quadrant of the Pacific Prof. Tadashi Sato, Institute of Geoscience, University of Tsukuba, Japan.

New Discoveries and Developments in the South West Pacific Quadrant Dr. Roy Bichan, Group Chief Executive, Robertson Group plc, United Kingdom.

Finance, Politics and Mining:

The Role of Project Finance in Developing Minerals and Energy Industries in Pacific Rim Countries Mr. Philip Deer, Chief General Manager - Corporate and International, Westpac Banking Corporation, Australia.

The Investment Potential of Resource Projects in the Pacific Rim Dr. Peter Woodford, Director - Resource Corporate, J.B. Were & Son, Australia.

Concurrent sessions:

Finance and Mining

Precious and Base Metals of the Pacific Basin

Mining, Environment, Law and Economics

Mining and Exploration Technology

Volcanicity and Volcanic Processes

Pacific Geology and Tectonics:

Pacific Rim of Australia: The 600 million year partnership of Gondwanaland and the ocean Dr. John Veevers, Macquarie University, Australia.

Terrane Accretion, Lithosphere Thickening and Orogenic Collapse in the Canadian Cordillera Prof. Richard Brown, Carleton University, Canada.

Sea Level Changes - Past, Present and Future Dr. Kurt Lambeck, Australian National University, Australia.

Continent-Marine Processes - Erosion of Passive Margins, Sedimentation and Heavy Metals Dr. Jeffrey Weissel, Columbia University of New York, USA

Extension and Terrane Analysis:

Extension Tectonics: An overview Prof. Brian Wernicke, Harvard University, USA.

Continental Extension Tectonics Prof. Gordon Lister, Monash University, Australia.

Terranes, Tectonics and the Pacific Rim Prof. Peter Coney, University of Arizona, USA.

Modern Technique Developments:

Overview

Remote Sensing for the Minerals Industry in the 1990s Dr. Ken McCracken, CSIRO, Australia.

The SeaMARK II Seafloor Mapping System: Seven years of Pacific Research Dr. Alexander Shor, Hawaii Institute of Geophysics, USA.

Fission Track Analyses Prof. Andy Gleadow, Latrobe University, Australia.

Processes in Magmatism and Mineralisation:

Geochronology of Ore Bodies Dr. Caroline Perkins, Australian National University, Australia.

Igneous Processes in Sills Prof. Bruce Marsh, Johns Hopkins University, USA.

Applications of Fluid Dynamics to Petrology and Ore Genesis Prof. J. Stewart Turner, Australian National University, Australia.

Concurrent sessions:

MICA Seminar: Resource and Reserve Estimation

Geological History - Eastern Australia

Precious and Base Metals - Australia

Mine Infrastructure and Planning

Antarctica

Natural Hazards:

Overview

Seismology - Global Digital Seismic Data: Interpretation of the earthquake mechanism from broadband data Dr. Geroge Choy, United States Geological Survey, USA.

Beware! Some of your Volcanoes are Sleeping! Dr. John Latter, Department of Scientific & Industrial Research, New Zealand.

Insurance, Risk and the Pacific Rim Dr. Gerhard Berz, Munich Reinsurance, West Germany.

Economics and Ore Reserves:

Mineral Economies Prof. Willem van Rensberg, University of Texas at Austin, USA.

Has the Mining Industry the Courage to Implement New Technology? Mr. Ray Frost, BHP Engineering, Australia.

Cut-off Grades and Geological Reserves Mr. Ken Lane, RTZ Consultants Limited, United Kingdom.

Concurrent sessions:

MICA Seminar: Resource and Reserve Estimation (continued)

Natural Hazards

Finance and Politics relevant to the Mining Industry

Metallogenic Processes

Pacific Terranes

Regional Geology and Tectonics of the Antarctic Dr. Ian Dalziel, University of Texas at Austin, USA.

The Breccia Ore Environment: 50 year retrospection Dr. Willard Lacy, Lacy & Associates, USA.

Natural Hazards in the Pacific (including Earthquake Risk) Dr. Riley Chung, National Research Council, USA.

Contrasting Metallogenesis and Settings of Circum Pacific Cu-Au Porphyries Dr. Spencer Titley, University of Arizona, USA.

Modern Volcanic Concepts Prof. George Walker, University of Hawaii at Manoa, USA.

Gold Rich Porphyry Copper Deposits of the Circum Pacific Region - An updated overview Dr. Richard Sillitoe, Consulting Geologist, United Kingdom.

Thinning of the Ozone Layer Dr. Michael McElroy, Harvard University, USA.

Isotopes and the Environment Prof. Roy Krouse, University of Calgary, Canada.

Rare Earth Element Behaviour and Hydrothermal Alteration, Lihir Island, Papua New Guinea Dr. Berndt Lottermoser, Consultant, West Germany.

Submarine Hot Springs, Cold Seeps and Serpentinite Diapirs on the Pacific Rim Dr. Michael Mottl, University of Hawaii, USA.

The Economic Context for Future Mining Development in the Pacific Rim Mr. Terry Larkin, KPMG Peat Marwick Hungerfords, Australia.

Energy for 10 Billion: how? Prof. William Fyfe, University of Western Ontario, Canada.

VANCOUVER '90

Geological Association of Canada
Mineralogical Association of Canada

GAC-MAC Joint Annual Meeting - May 16-18, 1990.

Registration & Accommodation

Technical activities will be held at the Hotel Vancouver, where accommodation and meals will be available. Accommodation will also be available in motels and hotels. Registration and reservation forms will accompany the second circular, to be issued in fall, 1989.

Social Events

A number of exciting events are being organized for members and their guests. These will include a welcoming reception, boat cruise, dances, luncheons, and a farewell 'geomixer'.

Exhibits

Space will be available for exhibits by companies, universities, and other organizations. The deadline for requests from exhibitors is February 1, 1990.

Second Circular

The second circular for the Vancouver '90 meeting will be distributed to all members of GAC and MAC in fall, 1989. The second circular will include pre-registration forms, accommodation and reservation forms, abstract forms, and a full outline of the program. The deadline for the receipt of abstracts submitted for the technical program is January 15, 1990.

Conferences

Acid mine drainage - Designing for closure (J. Malick, Environmental Earth Sciences Division).

The topic of this session is acid drainage from mine workings, waste rock dumps and tailings impoundments, focusing on techniques for prediction, prevention, treatment and control of this environmental problem.

Cordilleran mineral deposits colloquium (A. Jackson; Mineral Deposits Division).

The chain of events that have lead to the development of specific deposit types will be examined in an attempt to simplify the concepts involved in discovering precious metal-bearing ore deposits.

Structural controls on ore deposits (K. McClay)

The effects of brittle and ductile deformation on mineralization will be described by case histories from Western Australia, Canada and Zimbabwe. Shear zones, extensional and wrench fault systems, as well as structural control of alteration of sedimentary, volcanogenic and vein deposits will be addressed.

Symposia

Geology of Canada: A DNAG perspective (J.O. Wheeler)
Quantitative methods in petrology - The Greenwood Symposium (T.M. Gordon, G.B. Skippen, T.H. Brown, J.K. Russell; MAC).
Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens (C.J. Hickson, D.W. Peterson, Volcanology Division)

Special Sessions

Bridging the disciplines: Mineral physics in Canada (C. McCammon; MAC).
Cordilleran ice sheet: Formation and decay (L.E. Jackson and J.J. Clague, Canadian Quaternary Association).
Current crustal structure and past evolution of the Southern Canadian Cordillera - A multidisciplinary approach (R. Clowes, F. Cook).
Evolution of the autochthonous Northern Cordillera, Canada and Alaska (J. Dixon, W.T. Wallace, L. Lane).
Geoarchitecture of the Fraser Delta (J.L. Luternauer, Institute for Quaternary Research, Simon Fraser University)

- Geological transect of the Northwestern Canadian Cordillera* (R.G. Anderson, G. Gehrels)
- Hydrocarbon potential of Canada's Pacific Margin* (J. Haggart)
- Hydrothermal vent/cold seep chemosynthetic communities: geological processes and their products from modern and ancient times* (B. Beauchamp, P.H. von Bitter)
- Landslide hazards in the Canadian Cordillera* (S.G. Evans)
- Nature and tectonic evolution of the Yukon-Tanana Terrane, Yukon and Alaska* (J. Mortensen)
- Origin and organic maturation of petroleum source rocks and oil shales* (R.M. Bustin)
- Precambrian basement in the Canadian Cordillera: Isotopic insights* (G.M. Ross, Precambrian Division).
- Rheology and dynamics of the lithosphere* (G. Ranalli, Geophysical Division).
- Sedimentary and structural evolution of Cordilleran interior basins* (C.A. Evenchick).
- Shelf sediments - Ancient and modern* (V. Barrie, R. Higgs, Marine Geosciences Division, Canadian Sedimentology Research Group).
- Stable isotopes and depth-related diagenetic zones of sedimentary rocks* (I. Al-Aasm B. Beauchamp).
- The application of cathodoluminescence to geological problems* (R.A. Mason, A.N. Mariano; MAC).

Short Courses

Fluids in tectonically active regimes of the continental crust (Co-ordinator: B. Nesbitt; Presenters: L. Smith, R. Sibson, T. Kyser, R. Kerrich, T. Lewis, I. Gough, B. Nesbitt, E. Ghent, C. Forestor; MAC)

This course focuses on the role of fluids in deformation, metamorphism, heat flow, mineralization and chemistry of continental crust.

Ore deposits, tectonics and metallogeny in the Canadian Cordillera (Co-ordinator: W.J. McMillan, Presenters: B.C. Geological Survey Branch staff; Mineral Deposits Division).

This one-day course will provide an outline of the geological setting, mode of formation, age and tectonic settings of Canadian Cordilleran ore deposits.

Field Trips

The Vancouver '90 field trip committee is well along in organizing an assortment of Cordilleran "old favourites," brand-new domestic trips and three exotic foreign excursions. International field trips range from Volcanology Division's Hawaiian trip to Mineral Deposits Division's two trips to Chile and Japan. Domestic field trips emphasize northwestern B.C. mineral deposits, tectonics of southern B.C., landslide hazards, volcanogenic massive sulphides, hydrocarbon potential of the Nanaimo basin, and the Fraser Delta. Other local mineral deposit field trips complement the extensive Mineral Deposits Colloquium.

5TH INTERNATIONAL SYMPOSIUM ON PRE-JURASSIC GEOLOGICAL EVOLUTION OF EASTERN CONTINENTAL MARGIN OF ASIA (IGCP PROJECT 224)

Ulan-Ude (USSR) August 13-20, 1990.

Schedule

1. August 12 (Sun): Registration
2. August 13 (Mon): 9.00 - 10.00 Opening Ceremony
10.15 - 11.30 Reports on scientific activities by
National Working Groups
13.30 - 17.00 Sessions
18.00 Welcome party
3. August 14 (Tue) - 15 (Wed): Sessions
4. August 15 (Wed): Organizing Symposium on Project 283
'Evolution of Paleo-Asian Ocean'
5. August 16 (Thu) - 20 (Mon): Field Excursions - Transbaikalia
(South Western Buryatia)

If the number of reports require more time, the session will last from 13th till 16th of August and accordingly the Symposium will end on the 21th of August.

Abstract

1. Abstracts or papers (not more than 6 pages) must be written in English and are requested to be typed single-spaced in a 14X21 sm block on plain white paper and to cover full pages for photo-offset printing.
2. Make two photocopies of the typed abstract and mail them with the original (do not fold) before April 15, 1990.

Presentation

1. Time: Each oral presentation shall be limited to 20 minutes (including discussion).
2. Slides: Projector for 35 mm slides and OHP for transparent sheets will be available
3. Language: English

Fee

1. Registration fees: (a) Participants: 150US\$
(b) Accompanying members (spouse only): 100US\$
2. The preliminary fee for accomodation and geological Field Excursion is about 350-400US\$. The more detailed enumeration of fees will be placed in the Second Circular.

Address of correspondence

Prof. Boris A. Litvinovsky, Geological Institute, Buryatian Scientific Centre of the USSR Academy of Sciences, 6 Sakhyanova Street, Ulan-Ude 670015, USSR.

8TH OFFSHORE SOUTH EAST ASIA

Conference & Exhibition
World Trade Centre Singapore
4-7 December 1990

Conference

Sponsors (continuously since 1976):

Society of Petroleum Engineers
South East Asia Petroleum Exploration Society
Society of Naval Architects & Marine Engineers, Singapore

Probable session titles:

Geophysics, Structural Geology, Drilling, Well Completions,
Production, Petroleum Engineering, General Exploration, Marine
Design, Marine Construction, Marine Structures, Safety & Environment
& Natural Gas.

Further Information:

Shaun Goh,
Offshore South East Asia,
c/o Singapore Exhibition Services,
11 Dhoby Ghaut,
15-09 Cathay Building,
Singapore 0922

Tel: 3384747

Tlx: 23597

Fax: 3395651

REMOTE SENSING: AN OPERATIONAL TECHNOLOGY FOR THE MINING AND PETROLEUM INDUSTRIES

International conference and exhibition
London, England.

Please note that the conference and exhibition will be held from
29-31 October, 1990, and not 8-10 October, 1990, as originally planned.
All other details remain as indicated in the First Circular.

All enquiries to:

The Conference Office,
The Institution of Mining and Metallurgy,
44 Portland Place,
London W1N 4BR.

Telephone: 01-580 3802
Telex: 261410 IMM G
Fax: 01-436 5388

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

1990

January - 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 - 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 - November, 1990

PHOTOINTERPRETATION APPLIED TO GEOLOGY AND GEOTECHNICS (Bogota, Colombia). Forty-week course organized by the Government of Colombia, the Interamerican Centre of Photointerpretation (CIAF), International Institute for Aerial Survey and Earth Sciences (The Netherlands) and Unesco. Language: Spanish. For Information: Academic Secretariat of the CIAF, Apartado Aereo 53754, Bogota 2, Colombia.

March - April, 1990

MINERAL EXPLORATION (Paris, France). A 4-week annual course organized by the Ecole Nationale Superieure des Mines and sponsored by Unesco. Language: French. For Information: Prof. K.D. Khan, Ecole des Mines, 35 rue St. Honoré, 77305 Fontainebleau Cedex, France.

March - 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.

June - 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 - 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.

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 - 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 - 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 Hidrológico Internacional de la Republica Argentina, Av. 9 de Julio 1925 - 15^o piso, 1332 Buenos Aires, Argentina.

August - 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)

1989

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).

November 10-13, 1989

RARE METAL GRANITOIDES (IGCP-282 Meeting), Nanjing, P.R. China. (Prof. Zhu Jinchu, Department of Earth Science, Nanjing University, Nanjing 210008, P.R. China).

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

ASEAN COUNCIL ON PETROLEUM (Meeting), Singapore. (Salk International, 2950 Airway Avenue, Suite D-1, Costa Mesa, CA 92626, U.S.A.).

November 14-16, 1989

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

November 20-21, 1989

MODERN EXPLORATION TECHNIQUES (Symposium), Regina, Saskatchewan. (Bob Troyer, Saskatchewan Geological Survey, P.O. Box 234, Regina, Sask., Canada S4P 2Z6).

November 23-24, 1989

MESOZOIC EUSTACY RECORD ON WESTERN TETHYAN MARGINS (Meeting), Lyon, France. (Prof. P. Cotillon and Dr. S. Ferry, Université Claude Bernard, Institut TOAEE, Centre des Sciences de la Terre, 29-43 Blvd. du 11 novembre, F-69622 Villeurbanne Cédex, France).

December 4-5, 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 18-20, 1989

GEO THERMOMETRY AND GEOBAROMETRY (Session in Conference, The Stability of Minerals), London, U.K. (Dr. B.W.D. Yardley, Department of Earth Sciences, University of Leeds, Leeds LS2 9JT, U.K.).

1990

January 29-30, 1990

ADVANCES IN RESERVOIR GEOLOGY (Meeting), London, U.K. (Dr. Ashton, Badley, Ashton & Associates Ltd., Winceby House, Winceby, Horncastle, Lincs. LN9 6PB, U.K.).

February 4-9, 1990

GONDWANA, TERRANES AND RESOURCES (10th Australian Geological Convention), Hobart, Australia. (10th AGC, c/o P.O. Box 56, Rosny Park, Tasmania TAS 7018, Australia).

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).

February 12-14, 1990

PNG PETROLEUM CONVENTION (Conference), Port Moresby, Papua New Guinea. (Mr. M. McWalter, First PNG Petroleum Convention, c/o PNG Chamber of Mines and Petroleum, P.O. Box 7059, Boroko, Port Moresby, Papua New Guinea).

March/April 1990

ENGINEERING GEOLOGY PROBLEMS IN RESIDUAL SOILS (International Symposium), Abidjan-Yamassoukro, Ivory Coast. Sponsored by IAEG. English and French. (G. Cougny, Laboratoire du Bâtiment et des Travaux Publics, O4BP3 Abidjan O4, Ivory Coast).

March 14-17, 1990

ASIA/PACIFIC MINING (2nd Conference), Jakarta, Indonesia. (Asia/Pacific Mining Conference Secretariat, c/o Cahners Exposition Group (S) Pte. Ltd., 1 Maritime Square, #13-02 World Trade Centre, Singapore O409).

April 4-6, 1990

THRUST TECTONICS (International Conference), Egham, U.K. (Dr. K. McClay, Department of Geology, Royal Holloway and Bedford New College, Egham, Surrey TW20 OEX, U.K.).

May 7-8, 1990

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

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. (14th World Mining Congress, 54 Sanlihe Road, Beijing, P.R.C.).

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 2-6, 1990

GEOANALYSIS 90 (International Symposium), Muskoka area, Canada. (Dr. A. Vander Voet, Ontario Geological Survey, 77 Grenville Street, Toronto, Ontario, Canada M7A 1W4).

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, U.K.).

July 2-6, 1990

GEOLOGY AND MINERAL RESOURCES OF CONTINENTAL MARGINS: ANCIENT AND MODERN (23rd Earth Science Conference, Geological Society of South Africa), Cape Town, South Africa. (Dr. P.G. Gresse, Geological Survey, P.O. Box 1739, Bellville, 7530, South Africa).

July 2-6, 1990

MINERALS, MATERIALS & INDUSTRY (IMM 14th Congress), Edinburgh, Scotland, U.K. (Secretary, Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, U.K.).

July 2-6, 1990

BASEMENT TECTONICS (9th International Conference), Canberra, Australia. (91BT ACTS, GPO Box 2200, Canberra, ACT 2601, Australia).

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 19-28, 1990

INTERNATIONAL UNION OF CRYSTALLOGRAPHY (15th Congress), Bordeaux, France. (Stefan S. Hafner, University of Marburg, 3550 Marburg, Federal Republic of 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 6-10, 1990

INTERNATIONAL ASSOCIATION OF ENGINEERING GEOLOGY (6th International Congress), Amsterdam, The Netherlands. English and French. (Dr. L. Primel, L.C.P.C., 58 Blvd. Lefebvre, 75732 Paris Cedex 15, France).

August 12-18, 1990

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

August 12-18, 1990

MINERAL DEPOSIT MODELING (International Conference), Ottawa, Canada. Held with 8th IAGOD Symposium. Sponsored by IUGS and Unesco. (R.V. Kirkham, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8).

August 25-31, 1990

GEOCHEMICAL EXPLORATION (14th International Symposium), Prague, Czechoslovakia. (Geological Survey/UUG, Symposium on Geochemical Prospecting, Malostranske nam. 19, 118 21 Prague 1, Czechoslovakia).

August 26 - September 1, 1990

SEDIMENTOLOGY (13th International IAS Congress), Nottingham, U.K. (I.N. McCave, Dept. Earth Sciences, Cambridge University, Downing Street, Cambridge CB2 3EQ, U.K.).

August 26 - September 8, 1990

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

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-Ssu, Nanjing, P.R. China).

September 17-18, 1990

GEOCHEMISTRY OF CLAY-PORE FLUID INTERACTIONS (meeting), London, U.K. (D. Savage, Fluid Processes Research Group, British Geological Survey, Keyworth, Notts. NG12 5GG, U.K.).

September 17-21, 1990

ARCHEAN (Symposium), Perth, Australia. (D.I. Groves, Department of Geology, University of Western Australia, Nedlands, Western Australia 6009).

September 18-20, 1990

HYDROGEOLOGY: Parameter Identification and Estimation for Aquifer and Reservoir Characterization (5th Canadian-American Conference), Calgary, Alberta. (S. Bachu, Alberta Research Council, Box 8330, Station F, Edmonton, Alberta, Canada T6H 5X2).

September 24-29, 1990

GEOCHRONOLOGY, COSMOCHRONOLOGY AND ISOTOPE GEOLOGY (7th International Conference), Canberra, Australia. (Organizing Committee, ICOG 7, Research School of Earth Science, 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).

1991

March 1991

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

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).

August 2-9, 1991

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

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, Av. A. Gallardo 470, Buenos Aires 1405, Argentina).

1992

June 1992

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

June 28 - July 1, 1992

PALEONTOLOGY (5th North American Convention), Chicago, U.S.A. (Dr. Peter R. Crane, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605-2496, U.S.A.).

Forthcoming Bulletin

BULLETIN 24 (October 1989)

Among the papers appearing:-

1. **Wan Fuad Wan Hassan**
Some characteristics of the heavy detrital minerals from Peninsular Malaysia
2. **E.H. Tan & Mahan Singh**
Groundwater supply studies in Northern Kelantan
3. **Mohammad Sayyadul Arafin & C.Y. Lee**
Diagnostic resistivity sounding curves of karstic aquifers in the Chuping Limestone
4. **Abdul Ghani Rafek**
Contoh penggunaan Kaedah Kerintangan Geoelektrik untuk penjelajahan bawah tanah
5. **Kamaludin bin Hassan**
Significance of palynology in Late Quaternary sediments in Peninsular Malaysia
6. **Fan Choon Meng & P.C. Aw**
Processing of illite powder in Bidor, Perak: A study of the process and the potential uses of illite clay
7. **Kwan Tai Seong**
K/Ar mica dates for granites from the Bujang Melaka area
8. **M.B. Idris & M.S. Azlan**
Biostratigraphy and palaeoecology of fusulininids from Bukit Panching, Pahang
9. **C.S. Hutchison**
Chemical variation of biotite and hornblende in some Malaysian and Sumatran granitoids
10. **Mohd. Suhaimi, Abd. Khalik, Zaini Hamzah & Che Seman**
Beberapa aspek penggunaan teknik analisis pengaktifan neutron dalam kajian Geologi
11. **Tajul Anuar Jamaluddin**
Struktur sedimen dalam Formasi Crocker di kawasan Tamparuli, Sabah
12. **Yusuf bin Bujang**
Penyiasatan terperinci hidrogeologi di kawasan Jebungan, Mukah, Sarawak
13. **Henry Litong Among**
Pembinaan perigi-perigi mendatar di Kampung Paloh, Bahagian Sarikei, Sarawak

Forthcoming Bulletin

BULLETIN 26 (April 1990)

Among the papers appearing:-

1. **Tan Teong Hing & Lim Kin Leong**
Environment of placer gold deposits in Northern Pahang
2. **Alan J. Burley & Jamaluddin Othman**
A gravity survey of Perlis, Kedah and Penang
3. **K.F.G. Hosking**
Prospect over and around a strange hill
4. **M.B. Idris & K.H. Kok**
Stratigraphy of the Mantanani Islands, Sabah
5. **Kamaludin bin Hassan**
A summary of the Quaternary geology investigations in Seberang Perai, Pulau Pinang and Kuala Kurau
6. **V.R. Vijayan**
Gravity survey of the Layang-Layang Tertiary Basin in Johore, Peninsular Malaysia – A preliminary report
7. **David T.C. Lee**
Formation of Pulau Batu Hairan and other islands around Pulau Banggi, Northern Sabah
8. **Kwan Tai Seong**
K-Ar Dating of micas from granitoids in the Kuala Lumpur – Seremban area
9. **Chow Weng Sum & Abdul Majid Sahat**
Potential alkali-silica reactivity of tuffaceous rocks in the Pengerang area, Johor
10. **Mohammed Hatta Abd. Karim**
Variations in some groundwater characteristics, Belawai water supply, Sarikei Division, Sarawak
11. **I. Metcalfe**
Triassic conodont biostratigraphy in the Malay Peninsula
12. **Michael O. Schwartz & A.K. Askury**
Granite magmatism and tin-tungsten metallogenesis in the Kuantan-Dun-gun area, Malaysia
13. **Michael O. Schwartz & Surjono**
Sungei Isahan – a new primary tin occurrence in Sumatra
14. **Aw Peck Chin**
Sepiolite from Kramat Pulai, Perak

GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

General Information

The Society publishes the *Buletin Geologi Malaysia* (Bulletin of the 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*.

Papers should be as concise as possible. However, there is no fixed limit as to the length and number of illustrations. Therefore, papers of monograph length are also welcome. Normally, the whole paper should not exceed 30 printed pages and it is advisable that authors of papers longer than 30 printed pages should obtain the consent of the Editor before submission of the papers.

The final decision of any paper submitted for publication rests with the Editor who is aided by an Editorial Advisory Board. The Editor may send any paper submitted for review by one or more reviewers. Scripts of papers found to be unsuitable for publication may not be returned to the authors but reasons for the rejection will be given. The authors of papers found to be unsuitable for publication may appeal only to the Editor for reconsideration if they do not agree with the reasons for rejection. The Editor will consider the appeal together with the Editorial Advisory Board.

Unless with the consent of the Editor, papers which have been published before should not be submitted for consideration.

Authors must agree not to publish elsewhere a paper submitted to and accepted by the Society.

Authors alone are responsible for the facts and opinions given in their papers and for the correctness of references etc.

Twenty-five reprints of each paper are free-of-charge. Contributors should notify the Editor of extra reprints (which are of non-profit costs) required.

All papers should be submitted to the Editor, Geological Society of Malaysia, c/o Department of Geology, University of Malaya, 59100 Kuala Lumpur, MALAYSIA

Script Requirements

Scripts must be written in Bahasa Malaysia (Malay) or English.

Two copies of the text and illustrations must be submitted. The scripts must be typewritten double-spaced on papers not exceeding 21 × 33 cm. One side of the page must only be typed on.

Figure captions must be typed on a separate sheet of paper. The captions must not be drafted on the figures.

Original maps and illustrations or as glossy prints should ideally be submitted with sufficiently bold and large lettering to permit reduction to 15 × 22 cm: fold-outs and large maps will be considered only under special circumstances.

Photographs should be of good quality, sharp and with contrast. For each photograph, submit two glossy prints, at least 8 × 12 cm and preferably larger. Use of metric system of measurements (ISU) is strongly urged wherever possible.

Reference cited in the text should be listed at the end of the paper and arranged in alphabetical order and typed double-spaced. The references should be quoted in the following manner:

Suntharalingam, T., 1968. Upper Palaeozoic stratigraphy of the area west of Kampar. Perak. *Geol. Soc. Malaysia Bull.*, 1, 1 – 15.

Hosking, K.F.G., 1973. Primary mineral deposits. In Gobbett, D.J. and Hutchison, C.S. (Eds). "Geology of the Malay Peninsula (West Malaysia and Singapore)". Wiley-Interscience, New York, 335 – 390.

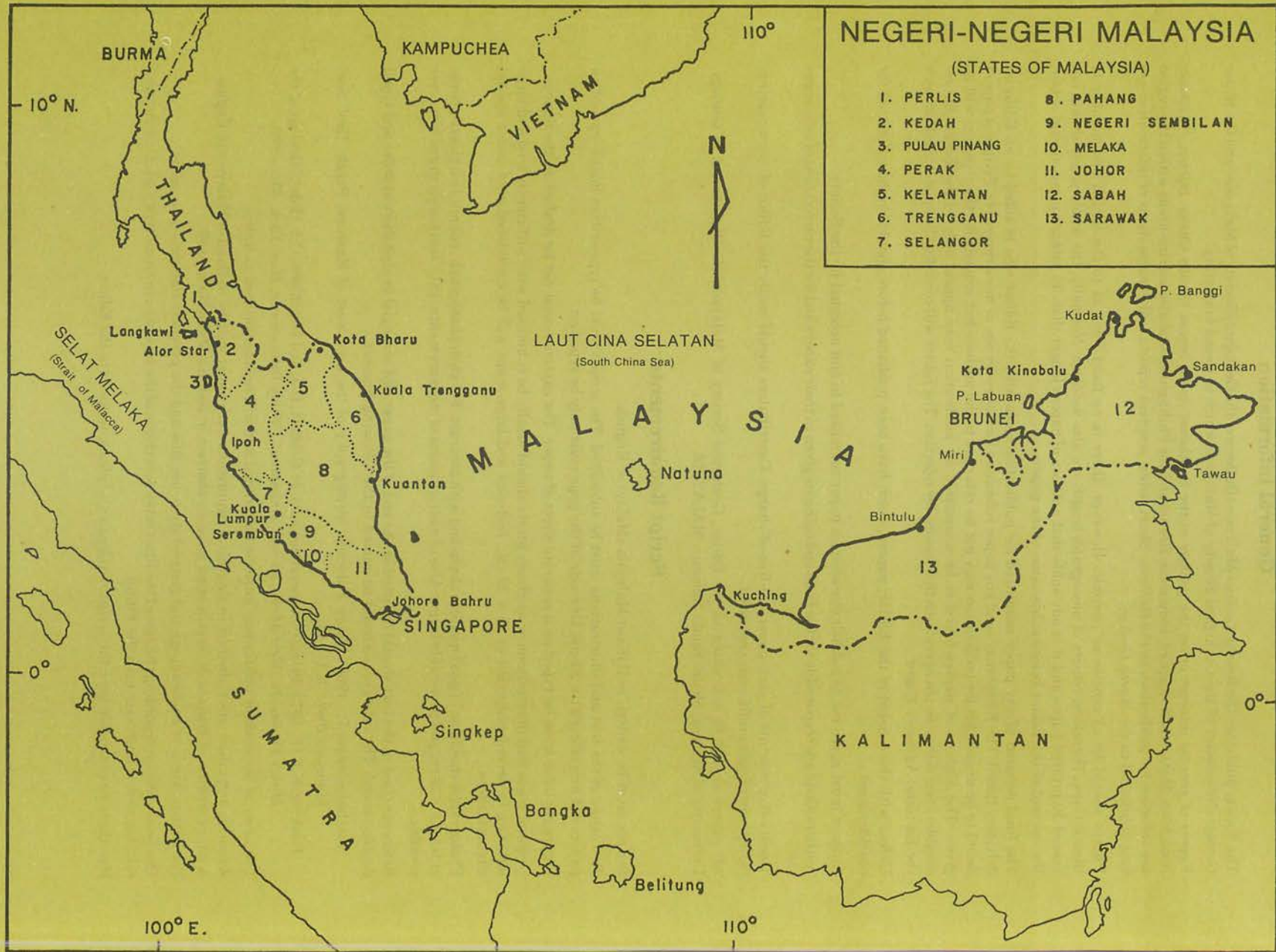
The name of the book or publication must be underlined and will be later printed in italics.

A concise and informative abstract in English is required for each paper written in Bahasa Malaysia or English. A paper written in Bahasa Malaysia must have an abstract in Bahasa Malaysia as well.

For format, kinds of subheadings and general style, use this and the previous *Bulletins* as a guide.

The final decision regarding the size of the illustrations, sections of the text to be in small type and other matters relating to printing rests with the Editor.

If authors have trouble over the script requirements, please write in to the Editor.



- ### 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. TRENGGANU | 13. SARAWAK |
| 7. SELANGOR | |