

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

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DIKELUARKAN DWIBULANAN
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CATATAN GEOLOGI (GEOLOGICAL NOTES)

STRATIGRAPHY OF THE SOUTH MUKAH-BALINGIAN REGION, SARAWAK

Sriyane De Silva, Dept. of Geology, St. Peter's College, Oxford
OX1 2DL, England

Abstrak

Stratigrafi kawasan Mukah Selatan-Balingian di Sarawak berdiri daripada Ahli Metah Formasi Belaga dibawah, Formasi Balingian dan Formasi 'Begrih-Liang' dengan aluvium dan peat diatas.

Perhubungan beritmik diantara litofasies dan sekitarian pegenapannya telah dikajikan.

Abstract

The stratigraphy of the South Mukah-Balingian region, Sarawak, is made up of the older Metah Member of the Belaga Formation, the Balingian Formation and the overlying 'Begrih-Liang' Formation with surficial alluvium and peat.

A rhythmic relationship between the lithofacies and their environment of deposition was observed.

The South Mukah-Balingian region (Fig. 1) is composed entirely of sedimentary rocks and surficial deposits. The surficial deposits comprise of Quaternary alluvial deposits as well as thick deposits of peat of coastal forest-swamps (Anderson, 1964). The sedimentological analysis of the area provides evidence of two different environments of deposition. the pronounce differences in the lithology of the sediments allow for this discrimination. Three separate sedimentary formations have been recognized based on sedimentological and stratigraphical analysis (Table 1).

The stratigraphically older Metah Member of the Belaga Formation (Liechti *et al.*, 1960) is recognized as a marine turbidite deposit. The dominant features of the Metah Member are the flysch-like rhythmically alternating thinly-bedded black mudstone and greywacke and the thickly-bedded amalgamated greywacke. The stratigraphic correlation of the individual lithofacies imply a submarine fan-type environment of deposition within a deep marine basin (Table 2).

The younger basin appears to lie unconformably on the Metah Member. This relationship is only expressed by the over-stepping of the Pliocene 'Begrih-Liang' Formation on the Metah Member. A basal conglomerate marks the angular unconformity between them. The base of the Balingian Formation is not exposed on land. Both formations share similar sedimentological features which describe a paralic/paludal environment of deposition. This interpretation has been further substantiated by the analysis of the coal found (de Silva, 1986).

A probable age of Late Miocene has been ascribed to the Balingian Formation (Liechti *et al.*, 1960). The unexposed base of the Balingian Formation poses a stratigraphic problem which can only be solved off-

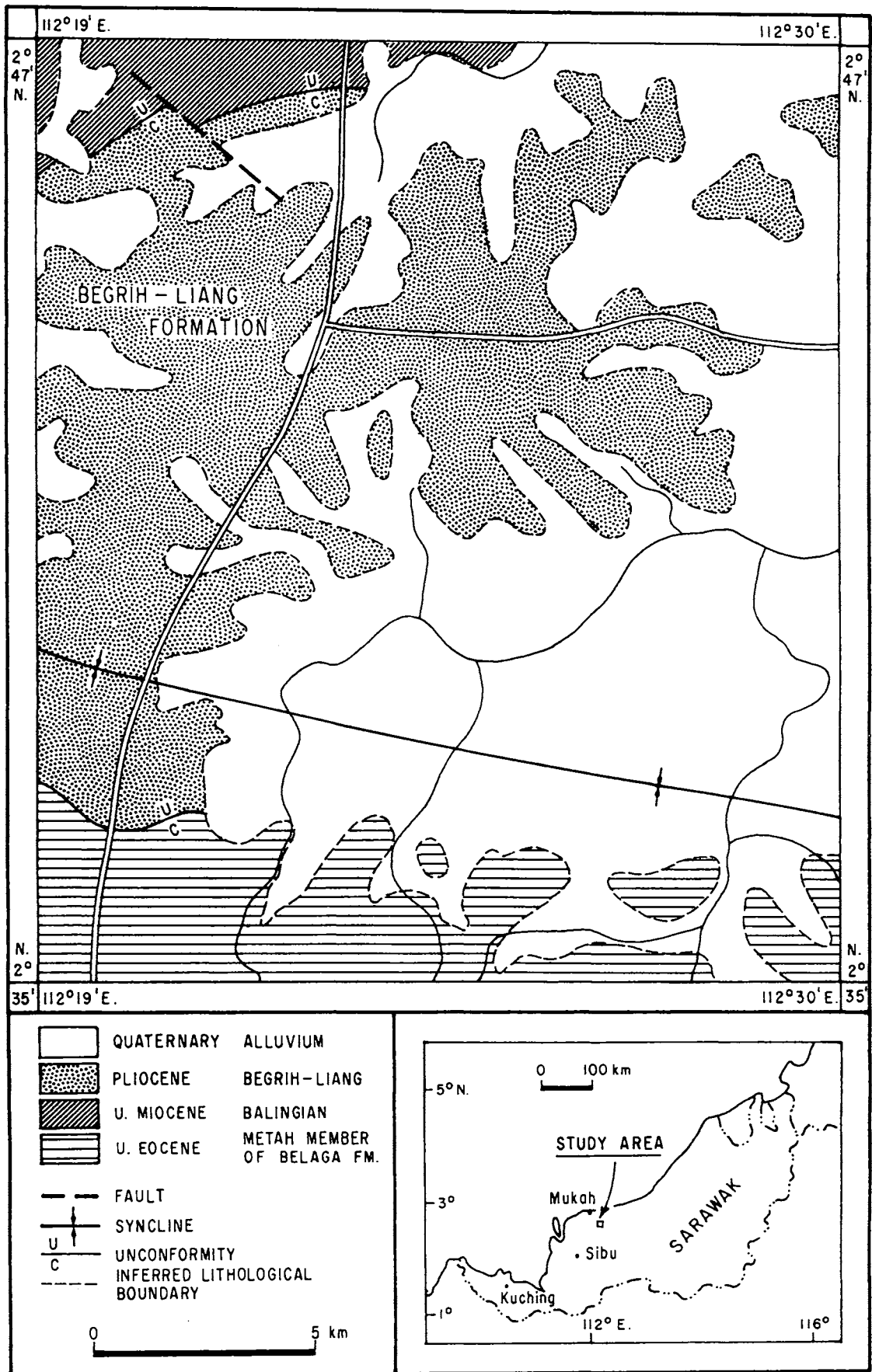


Fig. 1. Location map of the South Mukah-Balingian region.

shore. The three lithofacies formed argillaceous, arenaceous and organic can be further sub-divided (Table 3), namely,

The 'Begrih-Liang' Formation overlies the Balingian Formation unconformably. The angular unconformity is emphasized by the presence of a basal conglomerate. The previous stratigraphy by Liechti *et al.*, (1960) is revised by recognizing the existence of only one formation where two were previously delineated (i.e. the Begrih Formation and the Liang Formation). The entire length of the formation is exposed and the thickness is approximately 3000 metres. Five lithofacies were recognized which are the argillaceous, arenaceous, heterolithic, rudaceous and organic. These were further sub-divided (Table 3).

The more than ten autochthonous and allochthonous coal seams found provided evidence for rhythmic sedimentation within the 'Begrih-Liang' Formation. The consistency of lithofacies associations is indubitable and reflects upon relative and periodic diastrophism - a 'yo-yo' mechanism of sorts is envisaged (Figure 2 shows the rhythmic relationship between the lithofacies and environment of deposition).

Rhythmicity is used as an attempt to reconcile the history of deposition with field observation. Each cycle represents the start and finish of sedimentation within a given period of deposition. Westoll (1967) divided the mechanisms for cyclicity as follows:

- i. periodic relative movement of land and sea levels (diastrophism)
- ii. mechanisms involving climatic change
- iii. rhythmic steady change (including isostatic adjustment).

The continuous subsidence required for the formation of peat and the long-term crustal subsidence in the basin would be accompanied by a shift in the land or sea. While one mechanism may dominate, but all are probably involved.

The stratigraphy of the region is at the present, incomplete as there is no evidence to substantiate the period between Late Eocene and Late Miocene. Until that is resolved, the tectonic evolution of the region will remain conjectural.

Acknowledgements

This has been taken in part from my B.Sc. thesis and I would like to thank Dr. Azhar Hj. Hussin and Dr. G.H. Teh for all the help and encouragement. I would also like to thank Carigali for the sponsorship.

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- Walker, R.G., 1979. *Facies Models*. Geol. Assoc. Canada, Toronto, p. 91-104.
- Westoll, T.S., 1967. Sedimentary rhythms in coal-bearing strata. In *Coal and coal-bearing strata*, Murchison, D., & Westoll, T.S. (eds), Oliver and Boyd Ltd., London, p. 71-104.

Table 1. Stratigraphy of the Mukah-Balingian region

System	Epoch	Age (Ma)	Stratigraphic Units	Remarks
Quaternary		2.0	surficial deposits	Unfolded & unconformable
	Pliocene	5.1	'Begrih-Liang' Formation	Gently folded, unconformable on Balingian & Belaga Formations.
	(Late)	(11.3)	Balingian Formation	Gently folded. Base unexposed.
Tertiary	Miocene	24.6		
	Oligocene	38.0	(Unknown)	
	(Late)	(42.0)	Metah Member of the Belaga Formation	Intensely folded. Low grade dynamic metamorphism
	Eocene			

Table 2. Interpretation of lithofacies of the Metah Member of the Belaga Formation

Lithofacies	Interpretation (after Walker, 1979)
Argillaceous	Thinly bedded, alternating with greywackes representing Bouma E-type pelagic sedimentation, low density current turbidite deposition. Deposition mainly in lower fan lobe or as 'flood' deposits on upper fan.
Arenaceous	i) thinly bedded greywacke representing Bouma-C. Fine-grain of lower flow regime with ripples and convoluted lamina. Usually found together with Bouma-E in the same places.
	ii) thickly bedded, massive amalgamated beds representing Bouma-A of the upper flow regime and rapid deposition. Normally deposited in channels in the mid-fan or supra-fan lobes.

Table 3. Lithofacies and sub-facies of the Balingian and 'Begrih-Liang' Formations.

Formation	Lithofacies	Sub-Facies
Balingian	Argillaceous	Fossiliferous mudstone Rootlet mudstone (seat-earth)
	Arenaceous	Pebbly sandstone sandstone
	Organic	Coal Peat
	Argillaceous	Rootlet mudstone (seat-earth) 'Nodular bed' 'Lenticular bed'
	Heterolithic	'Flaser bed' 'Wavy bed' 'Layered sandstone-mudstone'
'Begrih-Liang'	Arenaceous	Laminated sandstone Fine sandstone
	Rudaceous	Orthoconglomeratic (polymictic & oligomictic) Sandy conglomeratic
	Organic	Coal Peat

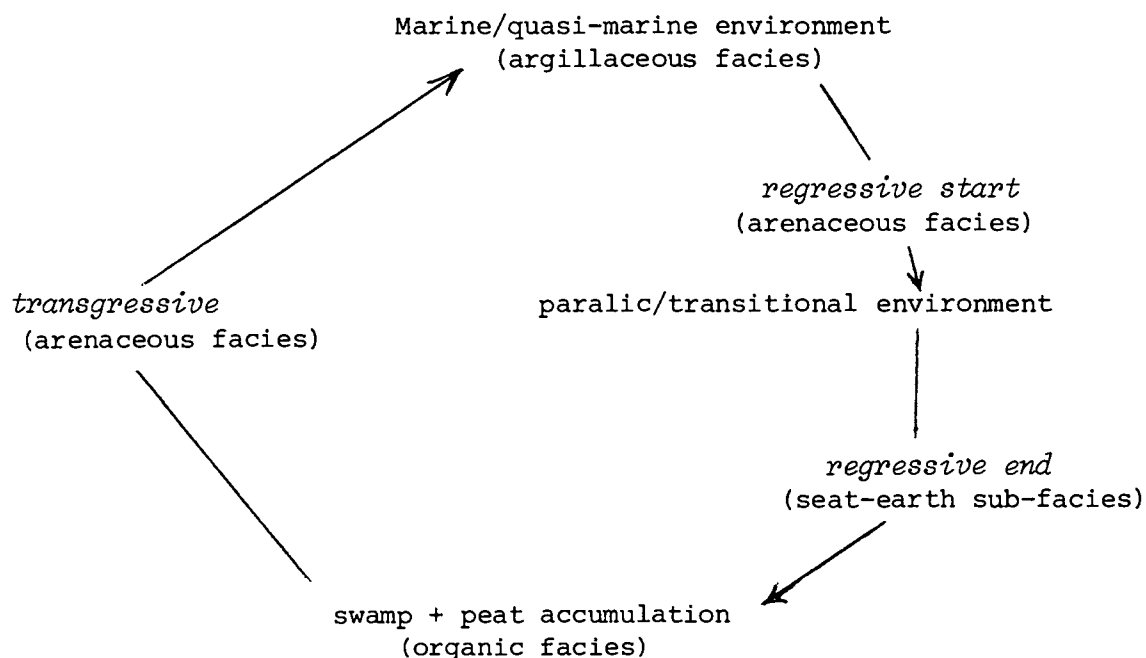
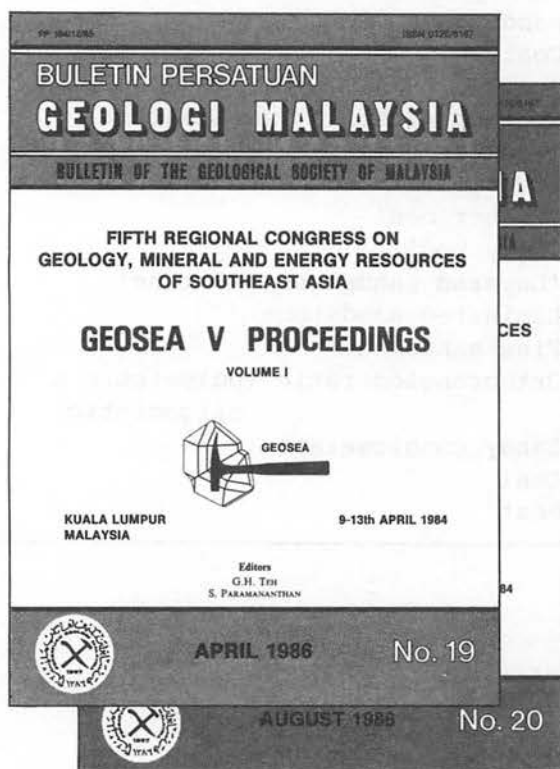


Figure 2. The rhythmic relationship between the lithofacies and sedimentation

GEOLOGICAL SOCIETY OF MALAYSIA

GEOSEA V PROCEEDINGS

VOLUMES I & II
(Bulletin Geological Society of Malaysia Nos. 19 & 20)



Some of the articles appearing include:-

Massive sulphide deposits and their possible significance to other ores—R.W. Hutchinson; Palaeogeographic development of west Sarawak—Denis N.K. Tan; Geological evolution of the Southern Philippines—C.K. Burton; Southeast Asia as a part of an early Palaeozoic Australian Gondwanaland—C. Burrett & B. Stait; Tertiary basins of S.E. Asia—their disparate tectonic origins and eustatic stratigraphical similarities—C.S. Hutchison; Late Palaeozoic palaeogeography of Southeast Asia: some stratigraphical, palaeontological and palaeomagnetic constraints—I. Metcalfe; The REE geochemistry of Lingshan W-Sn-bearing granites and their applications to petrogenesis of the granites—Yuan Zhongxing *et al.*; Chromite deposits of Papua New Guinea—P.M. Afenya; Recent advances in exploration modelling for tin deposits and their application to the SE Asian environment—R.G. Taylor & P.J. Pollard; Some thoughts on the development of the alluvial tinfields of the Malay-Thai Peninsula—D. Taylor; Base metal exploration in Sabah—David T.C. Lee & H.S. Weber; The nature and potential of gold mineralisation in Kelantan—L.H. Chu & D. Santokh Singh; Quaternary deposits of Thailand—P. Dheeradolok & W. Kaewyana; Soil landscapes in Peninsular Malaysia—S. Paramanathan & S. Zaayah; Aspects of the geochemistry of Malaysian cassiterites—W. Fuad Hassan; Geological evolution of the Indonesian Archipelago—H.M.S. Hartono & S. Tjokrosapoetro; The nature, distribution and genesis of certain authigenic minerals in the stanniferous alluvial deposits of S.E. Asia—K.F.G. Hosking; Global tectonics and resources—W.S. Fyfe; Tin/tungsten-bearing granites in S. China and their metallogenetic relations—Xu Keqin & Zhu Jinchu; Hydrogeological activities in Peninsular Malaysia and Sarawak—F.S. Chong & Denis N.K. Tan; Status of uranium exploration in Peninsular Malaysia—L.H. Chu & F. Chand; Directions of geologic transport in Peninsular Malaysia—H.D. Tjia; Cathaysia, Gondwanaland and the Palaeotethys in the evolution of Continental S.E. Asia—Y.G. Gatinsky & C.S. Hutchison; Marginal sea formation by rifting of the Chinese and Australian Continental Margins and implications for Borneo—C.S. Hutchison; Mesozoic and Cenozoic regional tectonics and metallogenesis in Mainland S.E. Asia—A.H.G. Mitchell; Coal potential and exploration in Sarawak—S.P. Chen; The succession of vertebrate faunas in the continental Mesozoic of Thailand—E. Buffetaut & R. Ingavat; Regional controls of hydrothermal ore localization in northern Thailand—P. Asnachinda & S. Chantaramce; Late Palaeozoic glacial marine facies in S.E. Asia and its implications—P.H. Stauffer & C.P. Lee; Cretaceous melange in West Kalimantan and its tectonic implications—P.R. Williams *et al.*; Recent advances in the knowledge of geology, mineral and energy resources of Singapore since 1981—Ansafur Rahman & P.P. Wong; The integration of remote sensing, terrain evaluation and engineering geology in Southeast Asia—Beaumont, T.E. & Hunt, T.; Recent advances in the knowledge of geology and mineral resources of Vietnam since 1981—Le Thai Xinh & Nguyen Xuan An.

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A MIOCENE SHARK TOOTH FROM SARAWAK

M.B. Idris & D.S. Ngab, Geology Dept., University of Malaya, Kuala Lumpur

Abstrak

Sebatang gigi jerung Miosen telah di jumpai di Suai, Sarawak. Penilaian turutan batuan enapan menunjukkan yang tempat fosil di jumpai terletak dalam Formasi Setap Shale and selanjutnya perubahan sempadan stratigrafi di cadangkan.

Abstract

A Miocene shark tooth was found in the Suai area, Sarawak. Lithological assessments of the sedimentary sequence indicate that the fossil locality lies within Setap Shale and subsequent change in stratigraphical boundary is proposed.

Vertebrate fossils are rare in Malaysia. Recently, a shark-tooth was found by one of the authors (D.S.N.) in the Setap Shale, Suai, Sarawak. Lithologically, the rocks here consist of blue-grey shale, sandy shale and interbedded sandstone.

Fossil Locality

The specimen was obtained in a fossiliferous exposure of argillaceous grey sandstone along the Sarawak Development Road near its junction with the Miri-Bintulu Road at Mile 68 (Map 1). Other fossils present are brachiopods, bivalves, forams and trace fossils (these are currently being assessed). From field assessment of the lithological characteristics, it is distinct that this particular exposure is part of the Setap Shale. This particular exposure was earlier (Liechti, 1960; Haile, 1962) included in the Nyalau Formation.

Discussion

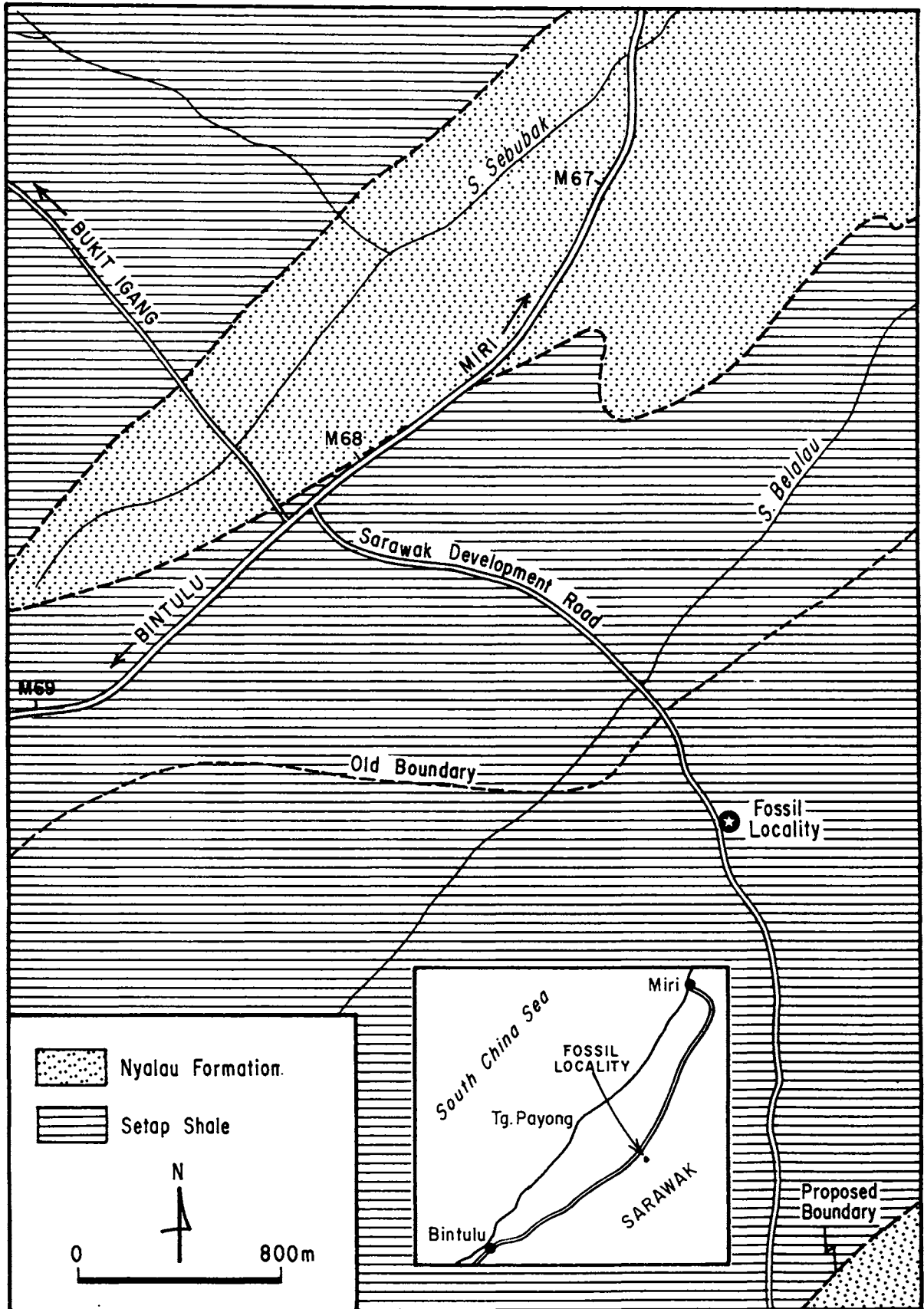
The Setap Shale in the Suai area has been assigned a Miocene age and is known to be of marine origin (Liechti, 1961). As the fossil recovered does not show any sign of reworking, it is clear that it is of similar age.

Although a single shark tooth cannot contribute much significance, it is the rareness of vertebrate fossils in Malaysia that enhance this finding and we now know for certain that sharks did roam in these waters during the Miocene times!

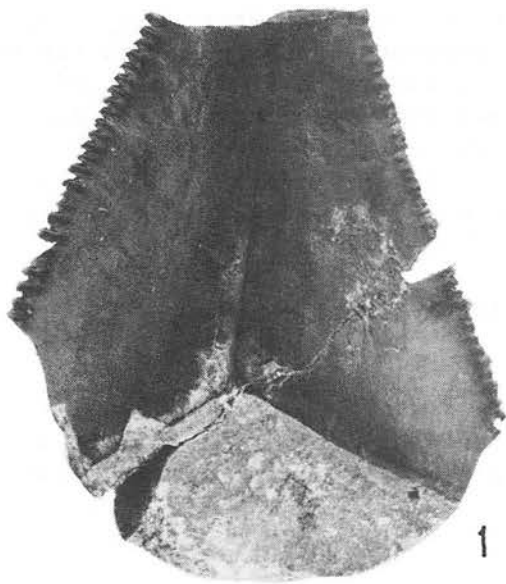
Systematic Paleontology

Phylum	Chordata
Class	Chondrichthyes
Order	Elasmobranchii
Genus	<i>Carcharodon</i>

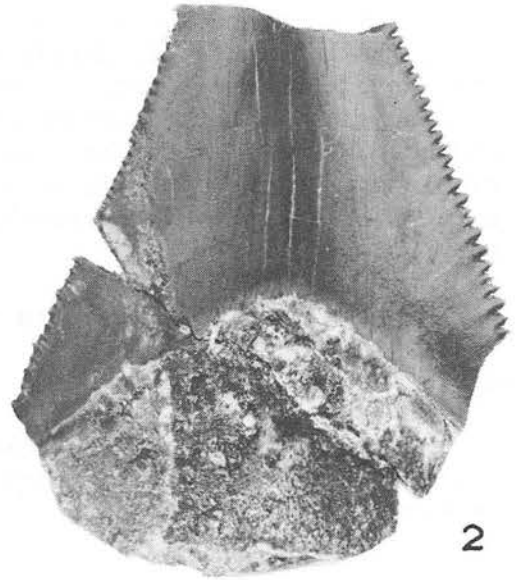
Carcharodon sp.
Figs. 1, 2, 3.



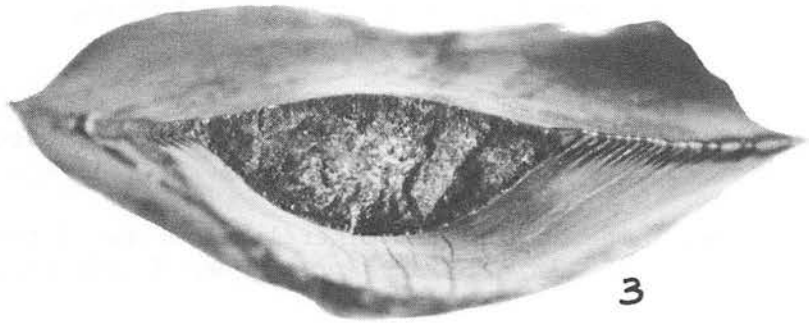
Map 1. Map showing fossil locality.



1



2



3

Figs. 1 - 3. *Carcharodon* sp.

- Fig. 1. Inner view (2.6X)
- 2. Outer view (2.6X)
- 3. Oral view (4.7X)

Description

The tooth is triangular in outline, measuring 2.5 cm at the base and the serrated lateral edges taper toward the tip. The serrations consist of fine denticles of 1.0 mm high and are covered with white matter up to half of their height. 10 denticles are present for every cm and the tips of the denticles are blunt. Transversely, the tooth is lensoid, of which one side is more pronouncedly curved than the other. This more pronouncedly curved side has a smooth surface which is adorned by striations. On the opposite surface, a distinct ridge runs medially for the whole height of the tooth. Both surfaces of the tooth exhibit a shiny black lustre.

The basal part of the tooth is filled by basal material.

Remarks

The tip of the tooth is broken but angular projection indicates a height of at least 4.0 cm. Denticles on one side of the serrated edge have broken tips.

Age

Miocene

Material

1 (UMV1)

Repository

Geology Dept., University of Malaya, Kuala Lumpur.

Reference

Liechti, P., 1960. The Geology of Sarawak, Brunei and Western part of N. Borneo. *Geol. Surv. Dept. Borneo Bull.* 3, Vol. 1 & 2, 360 p.

Haile, N.S., 1962. The geology and mineral resources of the Suai-Baram area, N. Sarawak. *Geol. Surv. Dept. Borneo Memoir* 13, 176 p.

Manuscript received 28 July 1986

PERTEMUAN PERSATUAN
(MEETINGS OF THE SOCIETY)

CERAMAH TEKNIKAL (TECHNICAL TALKS)

Neil Harbury: Evolution of a passive margin in Western Tethys

Abstrak (Abstract)

An investigation of a stratigraphical, sedimentological and structural study three Dodecanese islands (Rhodes, Symi and Karpathos) in the SE Aegean has been made. An account of the Mesozoic and lower Tertiary rocks of this region is given with consideration of depositional environments, age, lateral variations and palinspastic restoration. The geology of the region is interpreted in terms of continental margin evolution.

An Apollona Supergroup comprising both autochthonous and allochthonous units has been defined on the islands of Rhodes and Symi to incorporate four newly established Groups. Both the Embonas Group on Rhodes and the Kokkimidi Group on Symi consist almost entirely of carbonate sediments. The overlying Flysch Groups include a variety of redeposited and fine-grained sediments of uppermost Mesozoic and lower Tertiary age. Prior to thrusting the Apollona Supergroup showed a lateral transition from a carbonate platform in the W, through a carbonate slope to a pelagic basin in the E, all founded on Continental basement.

The evidence presented suggests that the SE Aegean was part of the eastern passive continental margin of Apulia. Mesozoic rifting, volcanism and crustal thinning record the extensional phase of the margin. Differential subsidence of the shallow-water carbonate regions gave rise to a seamount and basin topography that closely controlled the facies developments. Subsidence episodes can be recognised during the Late Triassic, late Lias and Aptian-Albian times when parts of the margin collapsed into deeper water.

Compressional events commenced in the latest Cretaceous in the basin and in lower Tertiary-middle Oligocene on the slope and platform. A migrating fore deep and peripheral bulge advancing ahead of the allochthon largely controlled the timing, character and evolution of the flysch sequences. Imbrication of the units and the formation of a tectonic melange accompanied nappe emplacement to the west.

Laporan (Report)

The above talk was given by Dr. Neil Harbury, Dept. of Geology, Birkbeck College, University of London, on the 9th of Sept. 1986 (Tuesday) at the Geology Lecture Hall, Geology Dept., University of Malaya.

Azhar Hussin

Peter C. van de Kamp: Diagenesis in Palaeogene sandstones, California

Abstrak (Abstract)

The stratigraphic and lateral distributions of authigenic minerals in feldspar-rich Palaeogene sandstones of the Santa Ynez Mountains, California, are important in determining their reservoir quality. The sandstones were deposited in an east-west elongate basin during two regressive episodes. Deep-water turbidites were overlain by shallow-water traction deposits and eventually by continental fluvial deposits as the basin was progressively filled from the east. Modal analyses document a common provenance for all the Palaeogene sandstones consisting primarily of acidic to intermediate plutonic rocks, with minor volcanic, metamorphic, and sedimentary components. The average detrital mode of 27 sandstones is $Q_{37}F_{54}L_9$, and the average partial mode including only the monocrystalline mineral grains is $Qm_{39}P_{40}K_{21}$.

Textural relationships and the stratigraphic distribution of diagenetic minerals delineate the paragenetic sequence: (1) syndepositional to very early pyrite; (2) early concretionary calcite cement; (3) incipient dissolution of detrital heavy minerals and feldspars; (4) clay pore linings and pore fillings; (5) formation of sphene and anatase; (6) incipient albitization of detrital plagioclase; (7) quartz, plagioclase, and K-feldspar overgrowths; (8) dissolution of feldspar creating secondary porosity; (9) local precipitation of pore-filling kaolinite; (10) laumontite cementation and replacement of plagioclase; (11) barite cementation and replacement of detrital grains; and (12) late-stage calcite replacement of detrital grains and earlier cements.

Organic metamorphism, as expressed by vitrinite reflectance (R_0), provides a means to correlate mineral diagenesis in the sandstones with the thermal history of the Santa Ynez basin. In the eastern end of the basin (Wheeler Gorge) incipient albitization is first recognized at 0.5% R_0 corresponding to a paleotemperature of 110°C (4572 m burial depth), with complete albitization first occurring at a reflectance of 0.90% R_0 corresponding to a paleotemperature of 165°C (5425 m burial depth). The first occurrence of laumontite is in the turbidite beds of the basal Matilija Formation (5669 m burial depth) at approximately 1.0% R_0 reflectance (173°C). Further to the west, at Point Conception (Gerber No. 1 well), the first occurrence of laumontite is at an estimated burial depth of only 2515 m, corresponding to approximately 0.5% R_0 and a paleotemperature of 110°C. In this well, incipient albitization begins at 0.35% R_0 (77°C), with complete albitization occurring at roughly the same burial depth (2515 m) and reflectance (0.5% R_0) as the first occurrence of laumontite.

The top of the laumontite zone occurs at greater burial depths and paleotemperatures in the eastern portion of the Santa Ynez basin than in the west. Laumontite distribution appears to be controlled by pore-fluid chemistry and post-compaction permeability variations, which are responsible for creating differences in fluid pressure between petrologically similar sandstones. 'Dynamic' overpressuring may have occurred in the turbidite facies of the Juncal and lower Matilija Formations, whereby pore fluids enriched in Na^+ from the dewatering of smectite-rich shales permeated into the turbidite sandstones at a faster rate than they were expelled. Under these conditions, a continuous supply of Na^+ would have been delivered to the sandstones to allow albitization of calcium-bearing plagioclase which in turn supplied Ca^{+2} necessary for the formation of laumontite.

The authigenic minerals in the lower Palaeogene sandstones of the Santa Ynez Mountains render them ineffective as reservoirs. Better reservoir prospects occur in the upper Palaeogene and Neogene sandstones, particularly in the western part of the basin where they have not been subjected to deep burial, and secondary porosity is well developed.

Laporan (Report)

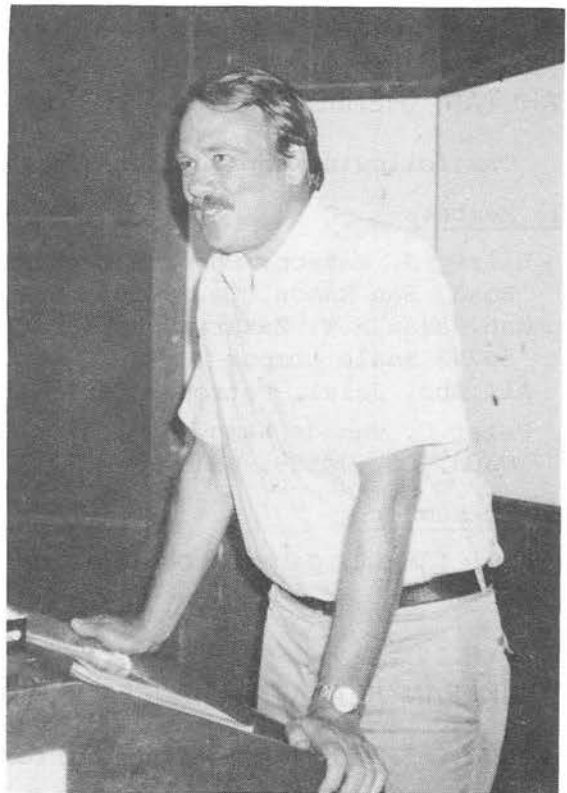
The above talk given by Dr. Peter C. van de Kamp attracted a large crowd of 55 at the Department of Geology, University of Malaya, on Tuesday, 9 September 1986. Dr. van de Kamp, who worked with Shell Oil Co. (USA) from 1967-1973 is presently a Petroleum Exploration consultant with GeoResources Associates, Napa, California. He also conducts research on sandstone petrology, geochemistry and diagenesis.

The paper which forms the basis of his talk is in AAPG Memoir 37, p. 239-276 (1984).

G.H. Teh



Neil Harbury



Peter C. van de Kamp

BERITA-BERITA PERSATUAN (NEWS OF THE SOCIETY)

NOMINATIONS COMMITTEE CHAIRMAN

The Council at its meeting on 12 September 1986, appointed Dr. John Kuna Raj as Chairman of the Nominations Committee. He can appoint 2 other members to the Committee. The committee must come up with the nominations list for the 1987/88 Council by October 31.

Meanwhile the Hon. Secretary informed the Council that the "Call for Nominations" has already been sent out but no replies have been received yet. Nominations closed on 30 September 1986.

APPOINTMENT OF NEW COUNCILLOR (2-YEAR)

The Hon. Secretary informed the Council Meeting on 3rd October 1986 that Tai Say Ann of Carigali has agreed to serve as Councillor.

KEAHLIAN (MEMBERSHIP)

The following applications for membership were approved:

Full Members

1. Hilrey J. Watson, Chevron Overseas Petroleum, 6001 Bollinger Canyon Road, San Ramon, Ca. 94583, USA
2. Wan Hasan H.W. Zakaria, Exploration Dept., Petronas, P.O. Box 12444, 50778 Kuala Lumpur
3. Ali Abd. Jalal, Petronas Carigali, P.O. Box 12407, 50776 Kuala Lumpur.
4. Peter C. van de Kamp, Geologist Cornelis Corp., 1237 Coombs St., Napa, Ca. 94559, USA

Student Member

1. Azmi Ismail, Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.

PERTUKARAN ALAMAT (CHANGE OF ADDRESS)

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

1. Maria G. Ambuvirayan, 33, Jalan 4/54, 46050, Petaling Jaya.
2. Ang Hock Seng, 44, Jalan Hujan Emas Dua, Taman Overseas Union, 58200 Kuala Lumpur.
3. Library, Universiti Pertanian Malaysia, Cawangan Sarawak, Kampus Bintulu, P.O. Box 396, 97008 Bintulu, Sarawak.
4. Rohaiyah Ismail, 19 Carnoustie Grove, Off Manor Road, Cottingley, NR. Bingley, BD16 1QF, U.K.
5. Eric S.C. Toh, 17 Cramer Crescent, Chatswood, NSW 2067, Australia.
6. Liew Yee Yow, c/o Minconsult Sdn. Bhd., Bangunan Urusetia Negeri, 4th Floor, Km 11.5, Labuk Road, Sandakan, Sabah.
7. Jasmi Ab. Talib, Pejabat Penyiasatan Kajibumi, J.K.R. 241, Jalan Bukit, 28700 Bentong, Pahang.
8. Robert B. Tate, GPO Box 3156, Hong Kong.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. Palaeontological abstracts, nos. 2 & 3, 1986
2. Bulletin of Nanjing Institute of geology and palaeontology, nos. 6 (1983) and 7 (1986)
3. Bulletin of the Institution of Mining and Metallurgy, nos. 959, 960 & 961, 1986
4. The Philippine Geologist, vol. XXXVIII, no. 3, 1984
5. Commonwealth Science Council, Newsletter, Sept-Oct & Nov-Dec 1986
6. Late Palaeozoic and Caenozoic continental sedimentation & magmatism in the southern part of G.D.R., 1985
7. Sedimentary and tectonic structures in the Saxothuringian and Rhenohercynian zones. 1984
8. Veröffentlichungen des Zentralinstituts für Physik der Erde, nos. 83 (1985) & 87 (1986)
9. Centro de investigación Científica y educación superior de Ensenada, vol. 4 (1979), vol. 5(1980)
10. Geophysical Research Bulletin vol. 24, nos. 3 & 4, 1986
11. Institution of Mining & Metallurgy, Transactions, Section A, vol. 95, Oct 1986
12. Annales Academiae Scientiarum Fennicae, nos. 141 & 142, 1986
13. Seatrad Bulletin vol. vii, nos. 2 & 3, 1986
14. Seatrad Centre, Annual Report 1985
15. Bulletin of the National Science Museum, vol. 12, nos. 2 & 3, 1986
16. Geological Survey of India News, vol. 17, no. 2, 1986
17. National Geophysical Research Institute, Annual Report, 1985-86
18. AAPG Explorer, Feb. 1987
19. Geological Correlation (IGCP), no. 14, 1986
20. Chronique de la recherche minière, no. 485, 1986
21. Records of the Geological Survey of New South Wales, vol. 22, pt. 1, 1986.

BERITA-BERITA LAIN (OTHER NEWS)

GEOSCIENTIFIC RESEARCH IN SABAH TROUGH AREA

A joint marine geoscientific research project between Petronas and Federal Institute of Geosciences and Natural Resources (BGR) of West Germany is currently being conducted in the Sabah Trough area (Fig. 1), some 200 kilometres offshore Sabah, where water depth ranges from 2,000 to 3,000 metres.

The research project, which is headed by Professor Dr. Karl Hinz of BGR, a government research organisation of Germany established to conduct land and marine geoscientific research, involves the acquisition of more than 3,000 kilometres of seismic, magnetic, gravity and bathymetry data. The data will be processed, interpreted and evaluated to confirm the hypothesis that the Sabah Trough was not formed by a subduction process but rather by isostatic adjustment. The hypothesis has an important bearing on the geological evaluation of offshore and onshore Sabah as well as implications on the hydrocarbon potential of the deep water areas. The data gathered from the research will assist Petronas in its plans and efforts for the exploration of deep water areas.

The three-week survey began on 19 July 1986. Two senior geophysicists from Petronas' Exploration Department, Encik Dimyati Mohamed and Encik Abdul Manaf Mohammad are also involved in the project.

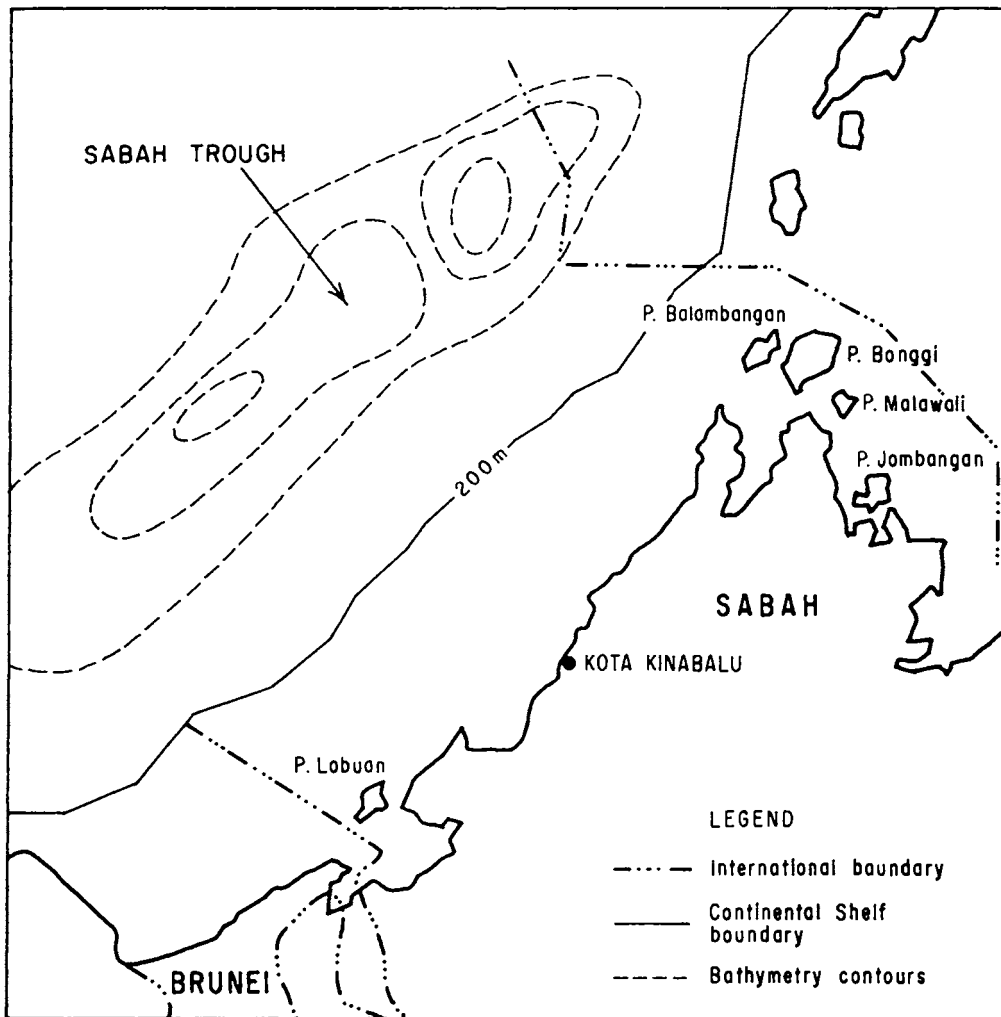
The German multi-purpose research and survey vessel, Explora docked at Kota Kinabalu Port on 11 August, just a little over three weeks after it had set sail to unravel the mysteries of the deep water Sabah Trough area, some 200 kilometres offshore Sabah.

The Explora is equipped with advanced seismic recording instrumentation, 3,000 metres of seismic streamer sections and a 28 air-gun array. With members of the scientific team and the ship's crew working round the clock on a shift basis, 3,125 line kilometres of seismic, magnetic, gravity and bathymetry data were acquired in the Sabah Trough area and the vicinity during the three weeks. Progress of the survey was reported via regular telexes from Explora to Petronas' Exploration Department. Specially selected seismic data acquisition parameters have enabled recording of seismic data up to 12 seconds record length (or 12,000 metres depth) compared with normal oil exploration seismic data of 6 seconds record length (or 6,000 metres depth).

Preliminary on-board interpretation results revealed a flat-bottomed trough some 50 kilometres wide and over 3,000 metres deep. The seismic expression of the subsurface as observed in the preliminary seismic sections over the Sabah Trough revealed a moderately thick underlying sedimentary sequence of up to three kilometres thickness.

The data acquired by the Explora is recorded on digital tapes which will be sent to BGR's office at Hannover for processing, interpretation and evaluation. This is expected to take up the remainder of this year and early 1987.

Two Petronas geophysicists will also be involved in this exercise.



Map showing location of the Sabah Trough

The results of the research are planned to be published jointly by Petronas and BGR in international journals.

Thanks to the Explora expedition, the mysteries of the Sabah Trough may finally be unravelled. This marine geoscientific research project heralds Petronas' entry into deep water operations.

Condensed from NADA Petronas, Aug & Sep 1986

GRANITE WORKSHOP

The British Geological Survey (BGS) in collaboration with the Geology Department, University of Malaya, will be holding a workshop on Southeast Asian granites in Kuala Lumpur from the 14 - 27th June 1987.

The workshop will be given by E.J. Cobbing, P.I.J. Pitfield and D.P. F. Darbyshire of the BGS and will cover field and petrographic studies, geochemistry, and isotope geology. The facilities offered include lecture theatre, laboratory and microscopes. The material used will be that obtained from work in the region during the past five years and data from Malaysia, Indonesia and Thailand will be presented for discussion. The second week of the workshop will be devoted to field excursions in the vicinity of Kuala Lumpur.

The workshop is intended for post-graduate geologists in the Universities and Geological Surveys of the region and in order to achieve the maximum benefit in the time available it is desirable to restrict the workshop to about 30 participants. It is also possible that participants from the region could be provided with accommodation in a nearby hall of residence where the costs are minimal.

The University of Malaya wishes to be advised of participants as far in advance as possible and, accordingly, you are asked to communicate with the following so that necessary arrangements can be made:

Prof. C.S. Hutchison
Dr. K.R. Chakraborty or
Dr. G.H. Teh

c/o Geology Department, University of Malaya, 59100 Kuala Lumpur, Malaysia. Tel. 7555466 - 203. Telex. UNIMAL MA 37543.

ARAHAN PERTUKARAN PEGAWAI-PEGAWAI JABATAN PENYIASATAN KAJIBUMI (GEOLOGICAL SURVEY OF MALAYSIA - PROMOTIONS & TRANSFERS)

Following the retirement of the Acting Director-General Geological Survey of Malaysia, Mr. D. Santokh Singh, at the end of March 1986, the department experienced a number of promotions and transfers of its officers.

Mr. Yin Ee Heng took over as Acting Director-General from April 1986. He had served as the Acting Deputy Director-General under Mr. D. Santokh Singh and prior to that was Head of the Geological Survey Laboratories in Ipoh. Mr. Yin, who holds a B.A (Hons) degree in Natural Science (Geology) from Dublin University, joined the Geological Survey of Malaysia in January 1960.

Mr. Fateh Chand, who was heading the Geological Survey Laboratories assumed duties as Acting Deputy Director-General from May 1986. Replacing him as the Head in the Geological Survey Laboratories is Mr. Senathi Rajah.

Other transfers in the department are as follows:

Pegawai (Officer)	Tarikh (Date)	Ke (To)	Daripada (From)
1. Foo Khong Yee	1.7.86	K.L.	Ipoh
2. Khoo Kay Khean	1.8.86	Ipoh	K. Kangsar
3. Chow Weng Sum	1.8.86	K. Kangsar	K.L.
4. Ong Yeoh Han	4.8.86	Ipoh	K. Terengganu
5. Chong Foo Shin	15.8.86	K.L.	Ipoh
6. Kamal bin Daril	1.9.86	K.L.	Ipoh
7. Mahisham bin Ibrahim	1.9.86	JKR K.L.	Ipoh

S.S. Almashoor & G.H. Teh

**PERSATUAN GEOLOGI MALAYSIA
DAN
JABATAN GEOLOGI,
UNIVERSITI KEBANGSAAN MALAYSIA**

**PERSIDANGAN TAHUNAN GEOLOGI 1987
(Geological Annual Conference 1987)**



**Tempat
(Venue)
JABATAN GEOLOGI
UNIVERSITI KEBANGSAAN MALAYSIA**

16 - 17 Mac, 1987

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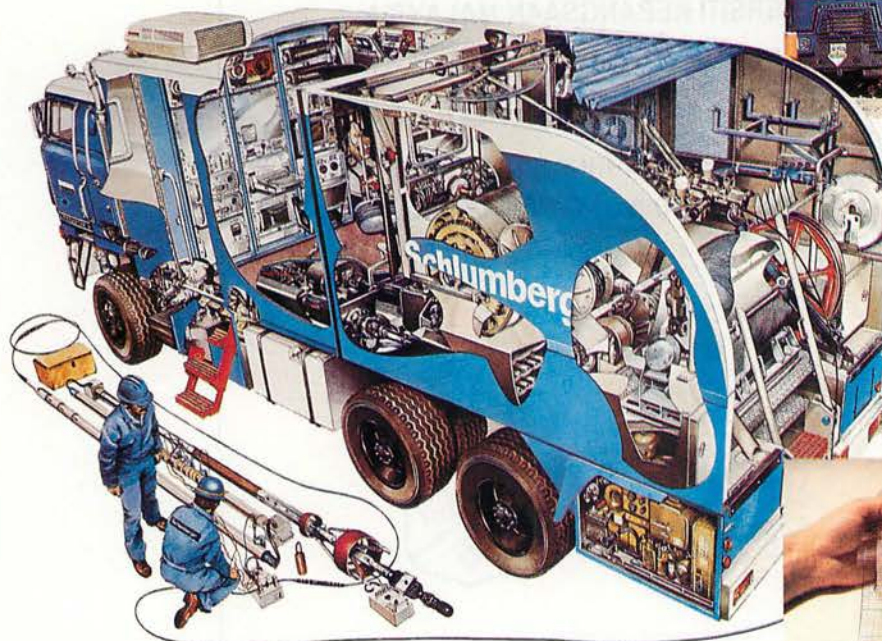
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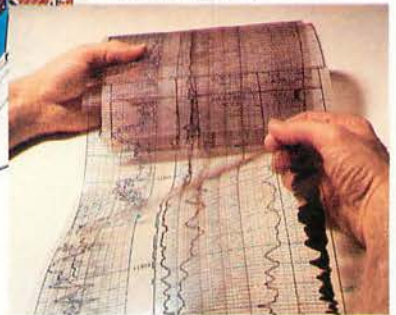
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Cyber Service Unit on location.



Schlumberger crew checking a logging tool.



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GEOSEA VI - JAKARTA

**SIXTH REGIONAL CONGRESS ON GEOLOGY,
MINERAL AND HYDROCARBON RESOURCES
OF SOUTHEAST ASIA
GEOSEA VI**



ORGANIZED BY :
IKATAN AHLI GEOLOGI INDONESIA (I.A.G.I)
(Association of Indonesian Geologists)



Venue
Horison Hotel, Ancol
Jakarta - Indonesia
Date: July 6 - 12, 1987

GEOSEA MEMBERS :
Persatuan Geologi Malaysia
Geological Society of Philippines
Geological Society of Thailand
Ikatan Ahli Geologi Indonesia

GEOSEA VI CONGRESS COMMITTEE

CHAIRMAN : A.M. Naim (PERTAMINA)
VICE CHAIR-
MEN : Mulyoto (ANEKA
TAMBANG)
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INSTITUTE OF
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SECRETARY : A. E. Harsa (STANVAC)

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A.E. Harsa
PT Stanvac Indonesia
Ratu Plaza Building, Phone : 711.354
Jl. Jenderal Sudirman
or PO BOX 464
Jakarta 10002

Registration Fee

Workshop : US\$ 50
Convention : US\$ 100

GOLF TOURNAMENT

Saturday, July 11, 1987

OTHER ACTIVITIES

- Wednesday July 8, 1987 : Ice Breaker Party
- Friday July 10, 1986 : Dinner & Cultural Event
- Family Program : For spouses and children who are accompanying members, we have arranged a special family program in Ancol (Jakarta's Recreation Centre) for the whole week. See accompanying pamphlets.

FIELD TRIPS

Saturday, July 11 and Sunday, July 12, 1987

- Pulau Seribu ; to see Recent carbonate build-ups in Jakarta Bay
- Rajamandala ; to visit ancient (Miocene) Reefs in West Java
- Kamojang ; to tour a Geothermal Project on the Kamojang Volcano, West Java

CALL FOR PAPERS

The Lecture Committee Chairman of the Sixth Geosea Congress, announced that the Convention will be held in Jakarta on July 9 and 10, 1987. An Emphasis will be placed upon achieving a high quality technical program. The committee hereby invites authors to submit papers suitable for presentation and publication at the Congress. In order to have a successful Congress, you are kindly requested to publicize this invitation throughout your organization.

Everyone involved in the field of Oil, Coal, Geothermal and Mineral Exploration, Geology, etc. is encouraged to participate by submitting an abstract for the committee's consideration. In particular, we invite young promising geoscientists to offer papers. Authors are expected to fill out an abstract form and return it to the Lecture Committee. An abstract form is attached.

The time schedule (deadlines) for selecting the papers for publication is as follows :

- Returning Authors Abstract Form : March 1, 1987
- Notifying of Selected Papers : April 1, 1987
- Submittance of Final Manuscript : July 1, 1987

For further information, please contact Lecture Committee Chairman :

Rudy Phoa
 Trend Energy Phone : 7990059
 Five Pillars Office Park
 PO BOX 209
 Jl. M T. Haryono No. 58
 Jakarta
 Indonesia

ACCOMODATION

The Congress will be held at the Horison Hotel which is set in the heart of one of Jakarta's major tourist attractions along the beautiful Ancol coast. A large variety of recreational activities for the entire family are available within walking distance of the hotel.

We recommend the Horison for your accommodation. A discount rate is being negotiated for Congress participants and we suggest you register through the Committee.

GEOSEA VI CONGRESS

The Sixth Geosea Congress will be held on Monday, July 6 to Sunday, July 12, 1987. This Congress consist of workshops, a convention and field-trips. The venue will be the Horison Hotel, Ancol, Jakarta, Indonesia.

Workshops on Tectonics and Environmental Geology will be held prior to the Congress. The opening ceremony of the convention will be held on Thursday, July 9, 1987 and will be followed by technical sessions.

A series of interesting field-trips will follow the convention. A golf tournament will be held in association with the Congress.

PROGRAM

Monday	July 6, 1987	09.00 - 17.00 :	Reigstration
Tuesday	July 7, 1987	08.00 - 16.00 :	Workshops on Tectonics and Environmental Geology
Wednesday	July 8, 1987	08.00 - 16.00 :	Continuation of Workshop
Thursday	July 9, 1987	08.00 - 09.30	Opening Ce- remony
		10.00 - 16.00 :	Technical Session
Friday	July 10, 1987	08.00 - 16.00 :	Technical Session

doc. 1742X

1978 AAPG ANNUAL MEETING

Mark your calendars now for June 7-10, 1987, for the 72nd annual meeting of the American Association of Petroleum Geologists in Los Angeles, California. This meeting will also include the 60th annual meeting of the Society of Economic Paleontologists and Mineralogists; the 18th annual meeting of the Division of Professional Affairs; and the 10th annual meeting of the Energy Minerals Division. The technical and poster sessions and the exhibition will be held downtown at the Los Angeles Convention Center. Convention announcements will be mailed in January 1987.

Call for Papers

The 1987 program will include research symposia, oral and poster technical sessions, workshops, short courses, and field trips.

Symposia

The following symposia consist of invited papers only.

- * AAPG Research Symposium: Analysis of Naturally Fractured Reservoirs
- * SEPM Research Symposium: Controls on Carbonate Platform and Basin Development
- * AAPG Marine Geology Committee: Antarctic Symposium

AAPG Proposed Sessions

- * Oil Field Case Histories and Exploration Frontiers - Lessons Learned
 - Convergent-Transform Margins
 - Los Angeles Basin
 - Rocky Mountains - Mid-Continent
 - Passive Margins
 - Circum-Pacific
 - Gulf of Mexico
- * Recent Advances in Development Geology
- * Computer Applications in Geology
- * Advances in Subsurface Techniques - Electrical, Geochemical, Seismic
- * Structural Concepts - Compression, Extension, Wrench Tectonics, Modeling
- * Geologic Factors, Economic Trends, and Their Impact on Exploration
- * Basin Analysis - Tectonic Framework, Sedimentation, Geohistory
- * Hydrocarbon Generation, Migration, and Accumulation
- * Applications of Organic Geochemistry in Exploration
- * Neogene Reconstruction of California
- * Geochemical Trace-Element Stratigraphy
- * AAPG Student Chapter Session
- * Results from Ocean Drilling Program

SEPM Proposed Sessions

- * Sedimentation - Modern and Ancient
- * Depositional Models - Alluvial, Paralic, Shelf, Slope, Basin Plain
- * Petrofacies, Provenance Studies, and Petrology
- * Diagenesis of Coarse-Grained Sediments
- * Diagenesis of Fine-Grained Sediments
- * Fractured Reservoirs - Carbonate, Fine- and Coarse-Grained Clastics, Igneous
- * Carbonate Depositional and Diagenetic Systems - Modern and Ancient
- * Deep Burial Diagenesis in Sandstones and Carbonates

- * Carbonate Reservoirs - Primary and Secondary
- * Carbonates of the Pacific
- * Applications of Paleoenvironmental Studies to Exploration

SEG

Best papers from the 1986 Annual Convention.

EMD Proposed Sessions

- * General Session - Oil Shale, Tar Sands, Coal, Uranium
- * Remote Sensing.

For further information

1987 AAPG Abstracts, AAPG Convention Dept., P.O. Box 979, Tulsa, Okla. 74101-0979, USA.

INTERNATIONAL GROUNDWATER CONFERENCE: 'GROUNDWATER AND THE ENVIRONMENT', 22-26 June 1987, Kuala Lumpur, Malaysia.

Organized by: Faculty of Engineering, Faculty of Physical & Applied Science, Universiti Kebangsaan Malaysia (National University of Malaysia)

Co-sponsored by: IWRA.

Background

Groundwater has always been closely associated with human development physically and culturally. The development of groundwater has brought together scientists from various disciplines and engineers to solve common problems. In many parts of the world the increasing demand for water supply has lead to excessive withdrawal of groundwater. This has created, in some cases, serious environment problems such as ground subsidence and saltwater intrusion. Various preventive measures has to be considered in order to curb these problems.

Objective

It is the aim of this conference to highlight all groundwater related problems and to discuss the various techniques of remedial measure of solving these problems. The meeting will also foster close relationship among scientists and engineers who are involve in investigation and management and utilization of groundwater resources.

Conference Topics

Papers are invited in the following topics:

1. Groundwater investigation and assessment:
 - * new technique in groundwater investigation and evaluation
 - * remote sensing
2. Groundwater and the environment
 - * Groundwater pollution
 - * Groundwater management
 - * Groundwater treatment

- * Groundwater recharge and other environmental effects
- * Quality of groundwater
- 3. Groundwater and development
 - * Groundwater developments for water supply
 - * Groundwater rights
 - * Groundwater utilization in the arid and semi-arid zone
- 4. Water well construction.

For further information

Secretary, Groundwater Conference 1987, c/o Department of Geology,
Faculty of Physical and Applied Science, Universiti Kebangsaan Malaysia,
43600 Bangi, Selangor, Malaysia. Tel. 03-8250001 Ext. 3410

or

Dr. S. Awadalla, Dept. of Civil & Structural Eng., Faculty of Engineering,
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia. Tel.
03-8250001 Ext. 2932. Telex UNIKEB MA 31496.

XVI PACIFIC SCIENCE CONGRESS

Seoul, Korea, August 20-30, 1987

All those interested in the objectives of the Pacific Science Association are cordially invited to attend its Sixteenth Congress to be held at Hotel Lotte, Seoul, Korea. The Congress is sponsored by the National Academy of Sciences, Republic of Korea.

The main theme of the Sixteenth Congress is:

New Dimensions of Science, Manpower and Resources in the Pacific

This broad topic will be developed through three General Symposia:

- GSI Development of Science and Technology in the Pacific Countries
- GSII Population and Food in the Pacific Basin
- GSIII Prospect on the Major Resources of the Pacific Region.

Registration Fee

The Congress fee covers administrative costs and entitles members to attend official banquets including the welcome reception, the farewell party and light refreshments, to take part in the scientific programmes and to receive official Congress publications.

PSA Members	US\$225
Ordinary Members	250
Associate Members	120
Student Members	120

Section B: Solid Earth Sciences

- 1. Plate Tectonics in the Pacific Basin
 - a. Plate Movements, Volcanisms and Earthquakes in the Pacific Regions
 - b. Metamorphism in the Circum-Pacific Regions

- c. Ophiolites and their Relations with Continental Margins and Island Arcs
- d. Developments of Marginal Basins
- 2. Basements of the Circum-Pacific Belts
 - a. Plutonism in Continental Margins
 - b. Precambrian Geology of the Pacific Rims
- 3. Sedimentology and Paleontology of the Phanerozoic eon in the Pacific Regions
- 4. Energy Resources in the Pacific Regions
- 5. Petrochemistry of Volcanic Rocks in the Pacific Regions
- 6. Metallogeny in the Pacific Regions
 - a. Metallogeny related to Plate Tectonics
 - b. Ore Deposits related to Mafic Magmas
 - c. Ore Deposits related to Felsic Magmas
 - d. Ore Deposits of Sedimentary Origin
 - e. Weathering and Residual Deposits
- 7. Solid Earth Geophysics in the Pacific Regions
- 8. Environmental Hazards related to Geological Processes

SPECIALIZED TOURS

Section B - Solid Earth Sciences

- Route B-1 Neogene Geology in P'ohang Basin
(Mid-Congress: 3 days/Aug. 27-29)
(Seoul-Kyongju-Oil-P'ohang-Yonghae-Pukp'yong-Kangnung-Seoul by bus)
Observation of stratigraphy of the Miocene sequences in the P'ohang Basin and collection of fossils.
- Route B-2 Chejudo Island
(Mid-Congress: 4 days/Aug. 27-30)
(Seoul-Cheju-Songsan-Sogwip'o-Seoul by plane and bus)
Investigation of typical volcanic topography, laval tunnel, volcanic cones and alkali volcanic rocks.
- Route B-3 Precambrian Geology in the Vicinity of Seoul
(Mid-Congress: 1 day/Aug. 23)
(Seoul-Kap'yong-Seoul by bus)
Investigation of Precambrian metamorphic complex of the Kyonggi Massif from Seoul to Kap'yong to the east.
- Route B-4 Palaeozoic Stratigraphy in Kangwon Province
(Mid-Congress: 4 days/Aug. 27-30)
(Seoul-Taebak-Tongjom-Kangnung-Seoul by bus)
Investigation of Precambrian-Cambrian boundary, Cambro-Ordovician and Permo-Carboniferous stratigraphy and collection of fossils (Trilobite, etc.)
- Route B-5 Mesozoic Kyongsang Basin
(Mid-Congress: 3 days/Aug. 27-29)
(Seoul-Chinju-Taegu-Yongch'on-Kyongju-Seoul by bus)
Observation of fluvio-lacustrine Cretaceous strata in the Kyongsang Basin southeast Korea.

- Route B-6 Skarn-type W, Cu, Ph-Zn Deposits in the Hambaek Basin
(Mid-Congress: 4 days/Aug. 27-30)
(Seoul-Sangdong-Taebaek-Yonhwa-Taebaek-Seoul by bus)
- Route B-7 Okch'on Metamorphic Belt
(Mid-Congress: 3 days/Aug. 27-29)
(Seoul-Ch'ungju-Hwanggangri-Suanbo-Poun-Okch'on-Taejon-Seoul by bus)
- Route B-8 Granitic Rock in Korea
(Mid-Congress: 3 days/Aug. 27-29)
(Seoul-Suanbo-Tanyang-Yongdok-P'ohang-Kyongju-Onyang-Seoul by bus)
Study of granitoid rock of various ages (Mesozoic and Cenozoic) distributed between Seoul and Onyang
- Route B-9 Volcaniclastic and Chemical Sedimentary Facies
(Mid-Congress: 3 days/Aug. 27-29)
Seoul-Kwangju-Uhangri-Seoul by bus)
Observation of pyroclastic, bedded cherts, black shales and carbonates in late Cretaceous Foreland Basin (alluvial fan, floodplain, braid plane, the lacustrine basin margin) in southwestern Korea, where excellent sedimentary structures and tracks of shore birds can be observed.

For further informations: Prof. Choon Ho Park, Secretary-General, Organizing Committee, XVI Pacific Science Congress, Seoul, 1987, K.P.O. Box 1008, Seoul 110, Korea. Telex: ILSKOR 23881. Phone (2) 733-4478.

LEOBENER BERGMANNSTAG 1987 (Leoben Mining Conference 1987)

22 - 26 September

The Conference will take place from Tuesday, September 22nd to Saturday, September 26th, 1987 in Leoben and Graz.

Meeting places are the Montanuniversitat Leoben (University of Mining and Metallurgy of Leoben) and the Congress Hall in Graz.

The Leobener Bergmannstag 1987 follows earlier mining conferences of this kind which have taken place every 25 years. They were held in Vienna in 1912 and in Leoben in 1937 and 1962.

The theme of the conference is 'Mining: structural changes in the requirements of economics, environment and technology - tendencies in research, development and operation'.

The conference activities include:

1. Exhibitions from 22 to 26 September 1987
 - Austrian Mining Exhibition
 - Exhibition of the Library of the Montanuniversitat Leoben: specialized mining literature from international publishers
2. Main Conference with scientific and social activities from 22 to 26 September 1987

Planned lecture groups:

Section I: Mining of solid mineral raw materials

- Prospection and exploration of deposits
- Deposit evaluation and mineral economics
- Rock mechanics and technology for opening and development
- Basic processes in mining technology and mining machinery
- Underground mining technology
- Open-pit mining technology
- Mineral processing
- Mine surveying
- Mining and environment
- Mining and the economy

Section II: Mining of hydrocarbons

- Petroleum and natural gas exploitation

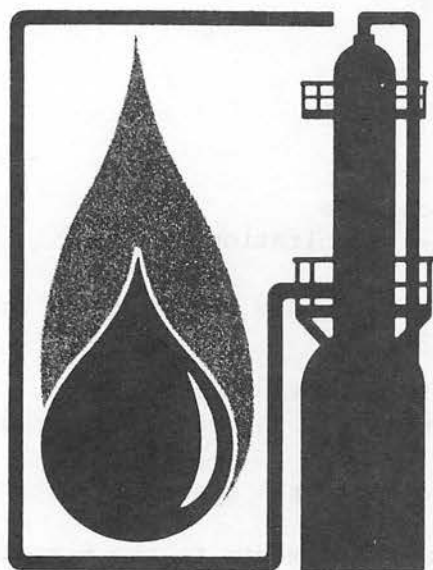
3. Excursions in Austria. Pre-conference excursion to the 'Styrian Erzberg' on 21 September 1987

Main excursions from 28 to 30 September 1987

- Excursions to mines for ores, brown coal, salt, magnesite and industrial minerals
- Excursions to petroleum and natural gas exploitation plants.

Please refer all questions and comments to the Sekretariat des Leobener Bergmannstag 1987, Montanuniversitat Leoben, Franz-Josef-Strasse 18, A-8700 Leoben. Tel. (0 38 42) 45279. Telex. 33322.

Back Again...



The 2nd Malaysian Oil, Gas & Petrochemical Engineering Exhibition

**Putra World Trade Centre
Kuala Lumpur 8-11 June 1987**

Here are the hard facts:

- The 1st show in 1985 attracted
 - 159 participating companies from 15 countries
 - official national groups from France, Norway & the UK
 - over 6,000 trade visitors
 - 860 conference delegates
- The 1987 event already has the support of the US, UK, Australia & France for national groups.
- The 1987 show is organised by Malaysian Exhibition Services in cooperation with the organisers of Offshore South East Asia in Singapore and Middle East Oil Show in Bahrain.

For full details of the 1987 event, call or write to:

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Malaysian Exhibition Services
2nd floor Wisma Socfin
Jalan Semantan
50490 Kuala Lumpur Malaysia
Tel: 2551717 Tlx: 31861 MEXSER
Fax: (03) 2559659

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1987

January 1987 - April 1987

DIGITAL IMAGE PROCESSING (Enschede, The Netherlands). Certificate courses on techniques for national resources surveys, organized annually by the International Institute of Aerial Surveys and Earth Sciences (ITC). Sponsored by Unesco. Language: English. For information: ITC Student Affairs Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

February 1987

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 1987 - March 1987

GEOCHEMICAL PROSPECTING TECHNIQUES (Tervuren, Belgium). Annual course sponsored by the Royal Museum of Central Africa and UNDP. Language: French. For information: Musee royal de PAFrique centrale, Steenveg op Leuven, 13, B-1980 Tervuren, Belgium).

February 1987 - June 1987

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

March 1987 - November 1987

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.

March 1987 - April 1987

MINERAL EXPLORATION (Paris, France). A 4-week annual course organized annually by the Ecole Nationale Superieure des Mines and sponsored by Unesco. Language: French. For information: Prof. H. Pelissonnier, Ecole des Mines, 60 Bd Saint Michel, 75272 Paris, Cedex 06, France.

Spring 1987

LOCAL BUILDING MATERIALS (Cameroun). One-week seminar for African practicing geologists to show the value of local construction materials. For information: International Center for Training and Exchanges in Geosciences, 103 rue de Lille, 75007 Paris, France.

April 1987 - July 1987

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

April 1987 - July 1987

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

May 1987 - November 1987

GENERAL HYDROLOGY with emphasis on groundwater (Argentina). Post-graduate course organized every other year and sponsored by Unesco. Language: Spanish. For information: Comite Nacional para el Programa Hidrologico Internacional de la Republica Argentina, Av 9 de Julio 1925 - 15^o piso, 1332 Buenos Aires, Argentina.

May 1987 - June 1987

GEOPHYSICS APPLIED TO GEOTHERMAL PROSPECTION (Manizales, Colombia). Annual course organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For information: Organizacion Latinoamericana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

June 1987

MARINE GEOLOGY (Moss Landing, California, USA). 24-week course organized by the U.S. Geological Survey. For information: Training Section, Office of International Geology, U.S. Geological Survey, 917 National Center, Reston, VA 22092, USA.

June 1987 - August 1987

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

July 1987

GEOLOGICAL COMPARISON OF WEST AFRICA AND BRAZIL (Bahia, Brazil). Course organized by the Geological Society of Brazil for African and Brazilian investigators of the correlations and mineralizations of the two continents. For information: International Center for Training and Exchanges in Geosciences, 103 rue de Lille, 75007 Paris, France.

July 1987 - August 1987

SUMMER COURSE ON EARTH SCIENCES: 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: Prof. T. Monseur, Departamento de Geologia y Geoquimica, Facultad de Ciencias, Universidad Autonoma de Madrid, Canto Blanco, Madrid 34, Spain.

July 1987 - September 1987

VOLCANOLOGY (Quito, Ecuador). Annual 10-week course organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For information: Organizacion Latinoamericana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

August 1987 - June 1989

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

August 1987 - October 1987

REMOTE SENSING AND DIGITAL IMAGE ANALYSIS, International Workshop. (Sioux Falls, South Dakota, USA). Program of training workshops organized by the U.S. Geological Survey for non-U.S. scientists, engineers, and resources managers. For information: Training Section, Office of International Geology, U.S. Geological Survey, 917 National Center, Reston, VA 22092, USA.

August 1987 - October 1987

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, Malostranske nam. 19, 11821 Prague 1, Czechoslovakia.

September 1987 - October 1987

GROUNDWATER TRACING TECHNIQUES (Graz, Austria). Five-week course organized every other year by the Institute of Technical Geology, Petrography and Mineralogy and sponsored by Unesco. Language: English. For information: Institute of Technical Geology, Petrography and Mineralogy of the University of Technology, A-8010 Graz, Austria.

September 1987 - November 1987

DRILLING OF GEOTHERMAL WELLS (Mexicali, Mexico). Annual 12-week seminar organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For information: Organizacion Latinoamericana de Energia (OLADE), P.O. Box 199, Quito, Ecuador.

September 1987 - November 1987

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

September 1987 - November 1987

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

September 1987 - June 1988

REMOTE SENSING TRAINING (Toulouse, France). A diploma course with options for geoscientists sponsored by the French Aerospace Remote Sensing Development Organization (GDTA), BRGM, IFP and other French institutions. Language: French. For information: GDTA-Formation, 18 Avenue Edouard-Belin, 31055 Toulouse Cedex, France.

September 1987 - July 1988

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

September 1987 - August 1988

MINING EXPLORATION AND EXPLORATION GEOPHYSICS (Delft, The Netherlands). Annual diploma courses organized by the International Institute for Aerial Survey and Earth Sciences and sponsored by Unesco. Language: English. For information: ITC (ME), P.O. Box 6, 7500 AA Enschede, The Netherlands.

October 1987 - November 1987

TECTONICS, SEISMOLOGY AND SEISMIC RISK ASSESSMENTS (Potsdam, East Germany). One-month training course organized annually by East German Academy of Sciences in collaboration with Unesco. Language: English. For information: Prof. Dr. H. Kautzleben, Director, Central Earth's Physics Institute, Academy of Sciences of the German Democratic Republic, Telegraphenberg, DDR 1500 Potsdam, German Democratic Republic.

October 1987 - July 1988

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

October 1987 - September 1988

WATER AND WASTE ENGINEERING FOR DEVELOPING COUNTRIES (Loughborough, England, UK). Twelve-month M.Sc. programme organized annually for engineers and scientists from developing countries by WEDC. For information: John Pickford, WEDC Group Leader, University of Technology, Loughborough, Leics. LE11 3TU, UK.

October 1987 - September 1988

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

October 1987 - September 1989

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

KALENDAR (CALENDAR)

1987

January 5 - 9, 1987

METEORITES AND THE EARLY SOLAR SYSTEM (Conference), Tucson, Arizona, USA. (Dr. J. Kerridge, Institute of Geophysics, University of California, Los Angeles, Ca. 90024, USA).

January 6 - 8, 1987

WATER FOR MANKIND (International Symposium), Cairo, Egypt. (MURS - France, 127 boulevard Saint-Michel, 75005 Paris, France).

January 7 - 23, 1987

GEOCHEMISTRY OF HYDROTHERMAL ORE-FORMING PROCESSES (NATO Advanced Study Institute), Madrid and Salamanca, Spain. (H.L. Barnes, 235 Deike Building, Pennsylvania State Univ., University Park, PA 16802, USA).

January 8 - 10, 1987

MAGMATISM IN THE OCEAN BASINS (Meeting), Leicester, U.K. (A.D. Saunders, Dept. of Geology, The University, Leicester LE1 7RH, U.K.).

January 9 - 14, 1987

THE PALAEOENVIRONMENT OF EAST ASIA (2nd International Conference), Hong Kong. (Dr. E.K.Y. Chen/Dr. R.O. Whyte, Centre of Asian Studies, Univ. of Hong Kong, Hong Kong).

January 19 - 23, 1987

HOW VOLCANOES WORK (Hawaii Symposium), Hilo, Hawaii. (Robert Decker, U.S. Geological Survey, MS-910, 345 Middlefield Road, Menlo Park, CA 94025, U.S.A.).

January 21 - 31, 1987

GRANITES AND ASSOCIATED MINERALIZATIONS (International Symposium), Salvador, Bahai, Brazil. Languages: English, French and Portuguese. (ISGAM, Augusto J. Pedreira, SMECPM: Rua Ceara, 3-Pituba, 40,000, Salvador, Bahai Brazil)

January 27 - 30, 1987

CANADIAN REEF RESEARCH (Symposium), Banff, Alberta, Canada. (Canadian Reef Research Symposium, The University of Calgary, Conference Office, Faculty of Continuing Education, 2500 University Drive NW, Calgary, Alberta, Canada T2N 1N4)

February 2 - 4, 1987

PACIFIC RIM COAL (2nd International Conference), Hong Kong. (H. Baisden, Pasha Publications, 1401 Wilson Boulevard, Suite 910, Arlington, Va. 22207, USA).

February 2 - 6, 1987

DEFORMATION OF CRUSTAL ROCKS (International Conference), Mt. Buffalo, NE Victoria, Australia. (Dr. D. Gray, Department of Earth Sciences, Monash University, Clayton, Victoria 3168, Australia).

February 2 - 6, 1987

ASH: A NEW RESOURCE, (Symposium), Pretoria, South Africa. (Dr. R.A. Kruger, CSIR-Frd, POB 395, Pretoria 0001, South Africa)

February 9 - 11, 1987

SINKHOLES AND THE ENVIRONMENTAL IMPACTS OF KARST (2nd Multidisciplinary Conference and Field Trip), Orlando, Florida, USA. (Dr. B.F. Beck, Florida Sinkhole Research Institute, University of Central Florida, Orlando, Fl. 32816, USA).

February 9 - 13, 1987

COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD (CGMW Plenary Assembly), Paris, France. (Secretary General, GGMW, 77 rue Claude-Bernard 75005 Paris, France).

February 13 - 21, 1987

LOESS (3rd International Symposium), New Zealand. (Dr. D.N. Eden, N.Z. Soil Bureau, DSIR, Private Bag, Lower Hutt, New Zealand).

February 16 - 20, 1987

INTERACTION BETWEEN SEDIMENTS AND WATER (4th International Symposium), Melbourne, Australia. (Dr. B.T. Hart, Water Sciences Center, Chisholm Institute of Technology, P.O. Box 197, Caulfield East, Victoria 3145, Australia).

February 23 - 26, 1987

URBAN HYDROGEOLOGY AND CONTAMINATION OF AQUIFERS (Latin American Conference), Cochabamba, Bolivia. Languages: Spanish and Portuguese, but papers in French and English accepted. (Secretaria de la Conferencia, c/o V. Ricaldi, Casilla 183, Cochabamba, Bolivia).

February 24 - 26, 1987

GEOSYNTHETICS '87 (Conference), New Orleans, Louisiana, USA. (IFAI, 345 Cedar Building, Suite 450, St. Paul, MN 55101, USA).

February 26 - 27, 1987

EROSION CONTROL ASSOCIATION (18th Annual Conference), Sparks, Nevada, USA. (International Erosion Control Association, P.O. Box 195, Pinole, Ca. 94564-0195, USA).

March 3 - 4, 1987

INVERSION TECTONICS (Meeting), London, U.K. (M. Cooper, British Petroleum, Britannic House, Moor Lane, London EC2Y 9BU, UK).

March 4 - 7, 1987

DETACHMENT AND SHEAR (77th Annual Meeting of the Geologische Vereinigung), Hasel, Switzerland. Sponsored by International Lithosphere Program. (Prof. D. Bernoulli, Geologisches Institut, Univ. Basel, Bernoullistrasse 32, CH-4056 Basel, Switzerland).

March 7 - 15, 1987

ESTIMATION OF NATURAL RECHARGE OF GROUNDWATER (International Workshop), Antalya, Turkey. (Co-sponsored by IAH. Language: English. (Dr. I.E. Seyhan, Free University of Amsterdam, Department of Earth Sciences, P.O. Box 7161, 1007 MC Amsterdam, The Netherlands).

March 10 - 14, 1987

ORIGIN AND EVOLUTION OF PLANETARY AND SATELLITE ATMOSPHERES (Conference), Tucson, Arizona, USA. (S.K. Atreya, University of Michigan, Space Research Building, Ann Arbor, MI 48109-2143, USA).

March 11 - 12, 1987

MINERAL RESOURCES RESEARCH IN THE USGS (3rd Annual McKelvey Forum), Denver, Colorado, USA. (Buhler and Abraham, Inc., 10102 McKinney Avenue, Silver Springs, Maryland 20902, USA)

March 16 - 20, 1987

GEOCHEMISTRY OF WATERS IN DEEP SEDIMENTARY BASINS (GSA Penrose Conference), Oxnard, California, USA. (L. Elms, Western Experience, 2369 Carriage Circle, Oceanissee, CA 2056, USA).

March 16 - 20, 1987

LUNAR AND PLANETARY SCIENCE (18th Conference) Houston, Texas, USA. (Lunar and Planetary Institute, 3303 NASA Road 1, Houston, Tx. 77052, USA).

March 18 - 19, 1987

EARLY TERTIARY VOLCANISM AND THE OPENING OF THE NE ATLANTIC (Meeting), London, U.K. (A.C. Morton, British Geological Society, Keyworth, Notts. NG12 5GG, UK).

March 23 - 24, 1987

EXTRACTIVE INDUSTRY GEOLOGY '87 (Meeting), Keele, Staffordshire, U.K. (Conference Office, IMM, 44 Portland Place, London W1N 4BR, UK).

March 23 - 26, 1987

SMALL MINE ECONOMICS AND DEVELOPMENT (Conference) London, U.K. (Small mine economics and development conference, International Mining, Cii House, 31 Theobalds Road, London WC1, UK).

March 23 - 28, 1987

GROUNDWATER MONITORING AND MANAGEMENT (International Symposium), Desden, G.D.R. Languages: English and Russian. (Dr. P. Losel, Institut fur Wasserwirtschaft, Schnellerstrasse 140, DDR-1190 Berlin, German Democratic Republic).

March 26 - 27, 1987

THE PHYLOGENY AND CLASSIFICATION OF THE TETRAPODS (Special Meeting), London, U.K. (M. Benton, Department of Geology, The Queen's University of Belfast, Belfast, BT7 1NN, Northern Ireland).

March 29 - April 3, 1987

EROSION AND DEPOSITION WITH EMPHASIS ON SEMIARID AND ARID ENVIRONMENTS (Meeting), Jerusalem, Beersheba, Elat, Israel. Co-sponsored by INQUA. (Prof. A. Yair, Department of Physical Geography, Institute of Earth Sciences, Hebrew University, 91904 Jerusalem, Israel).

April 1987

GEOCHEMISTRY AND MONITORING IN REPRESENTATIVE BASINS (International Meeting), Prague, Czechoslovakia. (Dr. B. Holden, Geological Survey, Malostranskera 19, 11821 Prague 1, Czechoslovakia).

April 1 - 3, 1987

SEDIMENTOLOGY (8th IAH Regional Meeting), Tunis, Tunisia. (Pr. Ali M'Rabet, Faculte des Sciences de Tunis, Departement des Sciences de la Terre, Campus Universitaire, 1060 Tunis, Tunisia).

April 1 - 10, 1987

GEOTECHNICAL ENGINEERING AND HAZARD ASSESSMENT IN NEOTECTONIC TERRAINS (Sino-British Conference), Taiwan. (Dr. J. Rowbotham, Department of Geological Sciences, University College, Gower Skreet, London WC1E 6BT, UK).

April 2 - 3, 1987

MICROPALAEONTOLOGY, PALYNOLOGY AND PETROLEUM EXPLORATION, ON- AND OFFSHORE EUROPE (Meeting), Aberdeen, Scotland, U.K. (Geological Society, Burlington House, Piccadilly, London W1V 0JU, UK).

April 6 - 12, 1987

LATE QUATERNARY SEA LEVEL: THE MARINE AND TERRESTRIAL RECORD (GSA Penrose Conference), Ferry Reach, Bermuda. (J.L. Carew, Department of Geology, College of Charleston, Charleston, SC. 29424, USA).

April 6 - 10, 1987

HYDROLOGY IN PERSPECTIVE (International Symposium), Rome, Italy. Co-sponsored by Unesco, WHO, and IAHS. (International Association of Hydrological Sciences, GIBI s.a.s. Studio Congressi, Via Marco Besso, 40, 00111 Rome, Italy)

April 7 - 8, 1987

PHANEROZOIC IRONSTONES AND RELATED DEPOSITS (International Symposium), Sheffield, U.K. (Dr. G. Taylor, Dept. Science, Luton, CHE, Park Square, Luton LU1 3JU, UK).

April 7 - 10, 1987

DRILLEX 87 (International Exhibition and Conference on Drilling), Stoneleigh, Warwickshire, UK. (The Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, UK).

April 10 - 11, 1987

RECONSTRUCTION AND CORRELATION OF THE PHANEROZOIC LACUSTRINE RECORD (IGCP-219 Workshop), Lake Luzern, Switzerland. (Dr. K. Keits, EAWAG-Geology, CH-8600 Dubendorf ZH, Switzerland).

- April 13 - 16, 1987
EUROPEAN UNION OF GEOSCIENCES (IV Biennial Conference), Strasbourg, France. (Prof. Dr. W. Lowrie, Inst. fur Geophysik, HPP P 5, ETH Honggerberg 8093 Zurich, Switzerland)
- April 13 - 16, 1987
ENVIRONMENTAL RECORDS FROM LACUSTRINE BASINS (IGCP-219 Symposium at EGU) Strasbourg, France. (Dr. K. Kelts, EAWAG-Geology, CH-8600 Dubendorf ZH, Switzerland).
- April 21 - 22, 1987
DELTA: SITES AND TRAPS FOR FOSSIL FUELS (Geological Society Meeting), London, U.K. (Geological Society, Burlington House, Piccadilly, London W1V 0JU, UK).
- April 22 - 24, 1987
GEOLOGICAL KINEMATICS AND DYNAMICS, FROM MOLECULES TO MANTLE (International Meeting), Uppsala, Sweden. (The GKD Committee, Institute of Geology, Uppsala University, Box 555, S-751 22 Uppsala, Sweden).
- April 23 - 26, 1987
INTERNATIONAL GEOCHEMICAL EXPLORATION (12th Symposium) and METHODS OF GEOCHEMICAL PROSPECTING (4th Symposium), Orleans La Source, France. (The Organizing Committee, 12th IGES - 4th SMGP, BRGM, B.P. 6009, 45060 Orleans Cedex, France)
- April 26 - May 1, 1987
WORLD PETROLEUM CONGRESS (12th) Houston, Texas, USA. (12th WPC Association, c/o American Petroleum Institute, 1220 L Street NW, Washington, DC 20005, USA).
- April 27 - May 1, 1987
DRILLEX '87 (International Conference and Exhibition on Drilling - The Minerals Industry and Geotechnical Engineering), Stoneleigh, Warwickshire, U.K. (IMM, 44 Portland Place, London W1N 4BR, U.K.)
- April 27 - 29, 1987
LATE CENOZOIC PALEOENVIRONMENTS AND GEOLOGY OF THE ARTIC (Workshop), Spidsbergseter Fjellstue, Norway. (Dr. A. Elverhoi, Norwegian Polar Research Institute, P.O. Box 158, 1330 Oslo Lufthavn, Norway).
- April 28 - May 7, 1987
ZECHSTEIN: STRATIGRAPHY-PALEO GEOGRAPHY-GEOCHEMISTRY (International Symposium), Hannover/Kassel, F.R.G. (J. Lepper, Niedersachsisches Landesamt fur Bodenforschung, P.O. Box 51 01 53, D-3000 Hannover 51, F.R.G.)
- May 1987
EXPOSED CROSS SECTIONS OF THE CONTINENTAL CRUST (GSA Penrose Conference), southeastern Ontario, Canada. (D.M. Fountain, Dept. of Geology and Geophysics, University of Wyoming, Laramie, WY 82071, USA).
- May 3 - 8, 1987
THE CONSTRUCTION OF GEOLOGICAL CROSS SECTIONS: TECHNIQUES, ASSUMPTIONS AND METHODS (GSA Penrose Conference), New Paltz, New York, USA. (P.A. Geiser, Dept. of Geology and Geophysics, University of Connecticut, Storrs, CT 06268, USA).
- May 3 - 7, 1987
ENGINEERING GEOLOGICAL ENVIRONMENT IN MOUNTAINOUS AREAS (International Symposium), Beijing, P.R. China. (Geological Society of China, Ministry of Geology, Pai Wan Chung, Fuchengmenwai, Beijing, P.R. China)
- May 12 - 14, 1987
COASTAL SEDIMENTS '87 (Conference), New Orleans, Louisiana, USA. (Dr. N.C. Kraus, USAE Waterways Experiment Station, P.O. Box 631, Attn: WESCE-P, Vicksburg, MS 39180-0631, USA).
- May 15 - 17, 1987
HYDROLOGY, SEDIMENTOLOGY AND GEOMORPHOLOGICAL IMPLICATIONS OF FLOODS (Conference), Lancaster, U.K. (P.A. Carling, Freshwater Biological Association, The Ferry House, Far Sawrey, Ambleside, Cumbria LA22 0LP, UK).
- May 16 - 24, 1987
PALAEOECOLOGICAL - PALAEOHYDROLOGICAL STUDIES BASED ON STRATIGRAPHICAL RESEARCH IN LAKES AND MIRES AND FLUVIAL ENVIRONMENTS (IGCP-158 Symposium), Sweden. (B.E. Berglund, Dept. of Quaternary Geology, Tornav. 13, S-223 63 Lund, Sweden).
- May 18 - 22, 1987
GEOMATHEMATICS AND GEOSTATISTICS APPLIED TO SPACE- AND TIME-DEPENDENT DATA (International Conference and Course), Wroclaw, Poland. Sponsored by CODATA, IAMG, IUGS, and Unesco. (Dr. J.J. Royer, C.R.P.G., B.P. 20, 15 rue Nd des Pauvres, 54501 Vandoeuvres-les-Nancy Cedex, France).
- May 18 - 22, 1987
AMERICAN GEOPHYSICAL UNION (Spring Meeting), Baltimore, Maryland, U.S.A. (AGU Meetings, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.)
- May 21 - June 5, 1987
WORLD MINING CONGRESS (13th), Stockholm, Sweden. (Organizing Secretary, 13th World Mining Congress, University of Lulea, S-951 87 Lulea, Sweden)
- May 25 - 27, 1987
COASTAL LOWLANDS: GEOLOGY AND GEOTECHNOLOGY (International Symposium), The Hague, The Netherlands. (Dr. H.J.W.G. Schalke, P.O. Box 85947, 2508 CP The Hague, The Netherlands)
- May 25 - 27, 1987
GEOLOGICAL, MINERALOGICAL ASSOCIATIONS OF CANADA (Joint Annual Meeting), Saskatoon, Canada. (Dr. W.O. Kupsch, Department of Geological Sciences, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0)

May 27 - 28, 1987

ALPINE TECTONICS (Geological Society, The Fermor Lecture Meeting), London, U.K. (Prof. M.P. Coward, Dept. of Geology, Royal School of Mines, Imperial College, Prince Consort Road, London SW7 2BP, UK).

May 28 - 30, 1987

PERMANENT SEISMOGRAPHIC OBSERVATORIES AND NETWORKS (Centennial Anniversary Symposium), Berkeley, California, U.S.A. (Prof. B.A. Bolt, Seismographic Stations, University of California, Berkeley, CA 94720, U.S.A.)

May 31 - June 5, 1987

WORLD MINING CONGRESS (13th), Stockholm, Sweden. (Organizing Secretary, 13th World Mining Congress, University of Lulea, S-951 87 Lulea, Sweden).

June 1987

INTERNATIONAL MINING AND EXPLORATION EXHIBITION '87 (Meeting), Sydney, Australia. (Thomson Exhibitions, 47 Chippen Street, Chippendale, NSW 2008, Australia)

June 2 - 6, 1987

PROTEROZOIC GEOCHEMISTRY (International Symposium), Lund, Sweden. Sponsored by IGCP-217. (Prof. R. Gorbatshev, Geological Institute, Lund University Solvegatan 13, S-223 62 Lund, Sweden).

June 7 - 10, 1987

AAPG and SEPM (Annual Meeting), Los Angeles, Calif., U.S.A. (AAPG Headquarters, Box 979, Tulsa, OK 74101, U.S.A.)

June 9 - 12, 1987

EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (49th Annual Meeting and Technical Exhibition), Belgrade, Yugoslavia. (EAEG, Wassenaarseweg 22, 2596 CH The Hague, The Netherlands).

June 11 - 12, 1987

FAN-DELTA: SEDIMENTOLOGY AND TECTONIC SETTINGS (International Symposium), Bergen, Norway. Sponsored by Norsk Hydro, Univ. of Bergen and Norwegian Petroleum Society. (R.J. Steel, Norsk Hydro Research Centre, P.O. Box 4314, 5013 Bergen, Norway).

June 21 - 25, 1987

HYDROGEOLOGY (4th Canadian/American Conference), Banff, Alberta, Canada. (Dr. B. Hitchon, Alberta Research Council, P.O. Box 8330, Station F, Edmonton, Alberta, Canada T6H 5X2).

June 30 - July 6, 1987

CHEMISTRY OF THE EARTH AND THE UNIVERSE (IAGC 20th Anniversary Congress), Paris, France. (Dr. B. Hitchon, Alberta Research Council, P.O. Box 8330, Station F, Edmonton, Alberta, Canada T6H 5X2).

July 6 - 10, 1987

CRYPTOEXPLOSIONS AND CATASTROPHES IN THE GEOLOGICAL RECORD (International Workshop), Parys, South Africa. Co-sponsored by IUGS. (L.O. Nicolaysen, Geophysics Department, Witwatersrand University, Johannesburg, South Africa 2001).

July 6 - 11, 1987

CONTINENTAL AND OCEANIC LITHOSPHERE: SIMILARITIES AND DIFFERENCES (Workshop), London, U.K. (M.A. Menzies, Dept. of Geology, University of London, RHBNC, Egham, Surrey TW20 OEX, UK).

July 6 - 11, 1987

FOSSIL ALGAE (4th International Symposium), Cardiff, Wales, UK. (Dr. R. Riding, Dept. of Geology, University College, Cardiff CF1 1XL, Wales, UK).

July 6 - 12, 1987

SIXTH REGIONAL CONGRESS ON GEOLOGY, MINERAL AND HYDROCARBON RESOURCES OF SOUTHEAST ASIA (GEOSEA VI), Jakarta, Indonesia. (Rudy Phoa, Trend Energy, Five Pillars Office Park, P.O. Box 209, Jl. M.T. Haryono No. 58, Jakarta, Indonesia).

July 7 - 10, 1987

APPLIED MINERALOGY (3rd International Congress), Orleans, France. (P. Alain, ICAM 87, Laboratoire de Mineralogie Appliquee, Ecole Sup. de PEnergie et des Materiaux, Domaine Universitaire de la Source, B.P. 6749, 45067 Orleans, Cedex 2, France).

July 23 - 25, 1987

SOUTH ATLANTIC EVOLUTION (2nd Symposium), Rio de Janeiro, Brazil. (D. Dias-Brito, PETROBRAS/CENPES, Ilha do Fundaq, Quadra 7, Rio de Janeiro 21.910, Brazil).

July 29 - 31, 1987

PACIFIC NEOGENE STRATIGRAPHY (4th International Congress of Regional Committee and Meeting of IGCP 246), Berkeley, Calif., USA. (Dr. C. Brunner Dept of Paleontology, University of California, Berkeley, Ca. 94720, USA).

July 31 - August 9, 1987

INTERNATIONAL UNION FOR QUATERNARY RESEARCH (12th Congress), Ottawa, Ontario, Canada. (Dr. Alan V. Morgan, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1)

August 1987

PACIFIC NEOGENE PALAEOCEANOGRAPHIC AND BIOSTRATIGRAPHIC EVENTS (Meeting), Berkeley, Calif., U.S.A. (Dr. C. Brunner Department of Paleontology, University of California, Berkeley, CA 94720, U.S.A.)

August 1 - 12, 1987

LANDSLIDES (5th International Conference/Workshop), Australia and New Zealand. (5th ICFL-Anzslide '87, P.O. Box 56, Rosny Park, Tasmania 7018, Australia).

August 3 - 7, 1987

EROSION AND SEDIMENT TRANSPORT IN PACIFIC RIM MOUNTAINOUS LANDS (International Symposium and IAHS/IUGG Meeting), Corvallis, Oregon, USA. (Conference Coordinator, College of Forestry, Oregon State University, Corvallis, OR 97331, USA).

August 3 - 13, 1987

MAGMATIC SULPHIDES (5th International Sulphides Conference), Harare, Zimbabwe. (Secretary, 5th International Sulphides Conference, Box 1795, Harare, Zimbabwe).

August 9 - 11, 1987

TRACE FOSSILS, SMALL SHELLY FOSSILS, AND THE PRECAMBRIAN-CAMBRIAN BOUNDARY, ST. JOHN'S, NEWFOUNDLAND (IUGS Commission on Stratigraphy Conference and Fieldtrip), eastern Newfoundland. (Dr. G.M. Narbonne, Dept. of Geological Sciences, Queen's University, Kingston, Ontario, Canada K7L 3N6).

August 9 - 18, 1987

PRECAMBRIAN-CAMBRIAN BOUNDARY WORKING GROUP (Meeting), St. John's, Newfoundland, Canada (Dr. G. Narbonne, Dept. of Geological Sciences, Queen's University, Kingston, Ont., Canada K7L 3N6).

August 9 - 22, 1987

IUGG (XIX General Assembly), Vancouver, Canada. (R.D. Russell, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, B.C., Canada V6T 1W5)

August 12 - 20, 1987

INTERNATIONAL UNION OF CRYSTALLOGRAPHY (Congress), Perth, Western Australia. (E.N. Masien, Crystallography Centre, University of Western Australia, Nedlands, 6009, Australia)

August 12 - 13, 1987

GEOTECHNICAL ENGINEERING ON SOFT SOILS (International Symposium), Mexico City. (M. Mendoza, Chairman, Organizing Committee, Instituto de Ingeniera - UNAM, Apdo. Postal 70-472, 04510 Mexico, D.F., Mexico).

August 17 - 21, 1987

BASEMENT TECTONICS (7th International Conference), Kingston, Ontario, Canada. (Bob Mason, c/o Events Management Inc., 4 Catarqui Street, Suite 209, Kingston, Ontario, Canada K7K 1Z7).

August 17 - 20, 1987

DEVONIAN SYSTEM (CSPG 2nd International Symposium), Calgary, Alberta, Canada. (Devonian Symposium, Canadian Society of Petroleum Geologists, 505-206 7th Avenue SW, Calgary, Alberta, Canada T2P 0W7)

August 18 - 22, 1987

AFRICAN GEOLOGY (14th Colloquium), Berlin (West). (G. Mathels, Technical University of Berlin, SRP/69, Ackerstrasse 71-76, D-1000 Berlin 65, F.R.G.).

August 20 - 22, 1987

X-RAY POWDER DIFFRACTOMETRY (Meeting with 14th Congress of the International Union of Crystallography), Perth, Western Australia. (Dr. E.H. Nickel, Division of Minerals & Geochemistry, CSIRO, Private Bag P.O., Wembley, W.A. Australia 6014).

August 20 - 30, 1987

PACIFIC SCIENCE ASSOCIATION (16th Congress), Seoul, South Korea. Section B: Solid Earth Sciences (Prof. Bong Kyun Kim, Department of Geological Sciences, College of Natural Sciences, Seoul National Univ., Seoul, South Korea)

August 21 - 22, 1987

DEVONIAN SUBCOMMISSION (Open Meeting), Calgary, Alberta, Canada. (Dr. W.A. Oliver, Jr., U.S. Geological Survey, E-305 Natural History Building, Smithsonian Institution, Washington, DC. 20560, USA).

August 24 - 28, 1987

ANTARCTIC EARTH SCIENCES (5th International Symposium), Cambridge, U.K. (Dr. M.R.A. Thomson, British Antarctic Survey, High Cross, Madingley Road, Cambridge, U.K. CB3 0ET)

August 26 - 29, 1987

PACIFIC RIM CONGRESS 87 (International Congress), Gold Coast, Southern Queensland, Australia. (Aus. IMM Congress Secretariat, P.O. Box 731 Toowong, 4066 Queensland, Australia).

August 26 - September 7, 1987

CRETACEOUS SYMPOSIUM (3rd International Symposium), Tübingen, F.R.G. (Prof. Dr. J. Wiedmann, Institut und Museum für Geologie und Paläontologie, Sigwartstrasse 10, 7400 Tübingen 1, Federal Republic of Germany).

August 30 - September 4, 1987

INTERNATIONAL SOCIETY FOR ROCK MECHANICS (6th International Congress), Montreal, Canada. (Prof. B. Ladanyi, Dept. Civil Engineering, Ecole Polytechnique, Box 6079, Stn. A, Montreal, Canada H3C 3A7)

August 31 - September 3, 1987

SOIL MECHANICS AND FOUNDATION ENGINEERING (9th European Conference), Dublin, Ireland. Languages: English and French. (Dr. Trevor Orr, Civil Engineering Department, Trinity College, Dublin 2, Ireland)

August 31 - September 2, 1987

AFRICAN MINING (International Conference), Harare, Zimbabwe. (The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, UK).

August 31 - September 4, 1987

CARBONIFEROUS STRATIGRAPHY AND GEOLOGY (11th International Congress), Beijing, P.R. China. Languages: Chinese and English. (Prof. Yang Jing-zhi, Nanjing Institute of Geology and Palaeontology, 39 East Beijing Road, Chi-Ming-Ssu, Nanjing, P.R. China).

August 31 - September 5, 1987

YELLOWKNIFE '87 (GAC Field Meeting), Yellowknife, NWT, Canada. (W.A. Padgham, Geological Surveys, Bag 9100, Yellowknife, NWT, Canada X1A 2R3).

September 1 - 5, 1987

AFRICAN GEOLOGY (14th Colloquium), Berlin, (West), F.R.G. (Dr. G. Matheis, Technical University of Berlin, SFB 69, Ackerstrasse 71, D-1000 Berlin 65, F.R.G.)

September 6 - 12, 1987

EASIN ANALYSIS (GOGEODATA Workshop), Budapest, Hungary. (Dr. G. Gabert, Federal Institute for Geosciences and Natural Resources, P.O. Box 51 01 53, D-3000 Hannover 51, Federal Republic of Germany).

September 7 - 9, 1987

DEFORMATION AND PLATE TECTONICS (International Conference), Oviedo, Spain. Language: English. (A. Perez-Estaun, Dpto de Geologia, Universidad de Oviedo, 33005 Oviedo, Spain).

September 7 - 11, 1987

CARBONIFEROUS STRATIGRAPHY AND GEOLOGY (11th International Congress), Beijing, P.R. China. (Prof. Yang Jingzhi, Nanjing Institute of Geology and Palaeontology, Chi-Ming-Ssu, Nanjing, P.R. China)

September 7 - 12, 1987

ANTARCTIC GLACIOLOGY (4th International SCAR Symposium), Bremerhaven, F.R.G. (Heinz Kohnen, Alfred Wegener Institute for Polar Research, Columbus Center, D-2850 Bremerhaven, F.R.G.)

September 7 - 12, 1987

COMPUTERIZED BASIN ANALYSIS (GOGEODATA International Workshop), Szeged, Hungary. Language: English. (Dr. L. Somos, Geological Survey of Hungary, Ph. 106, H-1442, Budapest, Hungary).

September 8 - 14, 1987

TERMINAL PRECAMBRIAN AND CAMBRIAN GEOLOGY (International Symposium), Yichang, China. Languages: Chinese and English. (Dr. Wang Xiao-feng, Terminal Precambrian and Cambrian Geology, Yichang Institute of Geology and Mineral Resources, P.O. Box 502, Yichang City, Hubei Province, People's Republic of China).

September 11 - 14, 1987

SEPM (4th Annual Midyear Meeting), Austin, Texas. (SEPM, P.O. Box 4756, Tulsa, OK 74159, U.S.A.)

September 11 - 17, 1987

PALEOENVIRONMENTAL INTERPRETATION OF PALEOZOOLS (GSA Penrose Conference), Warm Spring Indian Reservation, Oregon, USA. (G.J. Retallack, Dept. of Geology, Univ. of Oregon, Eugene, OR 97403, USA).

September 12 - 23, 1987

COMPUTER APPLICATIONS AND MANAGEMENT OF PETROLOGICAL DATA BASES (Workshop), Kuwait. Co-sponsors include IUGS and IGCP-239. (Dr. Ali T. Al-Mishwt, Geology Dept. Kuwait University, P.O. Box 5969, Safat, Kuwait).

September 14 - 16, 1987

THE ORIGIN OF GRANITES (Symposium), Edinburgh, Scotland, U.K. (The Meetings Secretary, The Royal Society of Edinburgh, 22-24 George Street, Edinburgh EH2 2PQ, Scotland, UK).

September 14 - 18, 1987

ANDEAN VOLCANISM SYMPOSIUM (10th Argentine Geological Congress), San Salvador de Jujuy, Argentina. Co-sponsors include IAVCEI and IGCP-249. (Dr. B. Coira, CONICET-Univ. Nac de Jujuy, Casilla de Correo No. 258, 4600 San Salvador de Jujuy, Argentina).

September 14 - 18, 1987

CIRCUM-PACIFIC PHANEROZOIC GRANITES (International Symposium), Tucuman, Argentina. Jointly with 10th Argentine Geological Congress. Languages: English and Spanish. (Dr. Carlos W. Rapela, Centro de Investigaciones Geologicas, Universidad Nacional de La Plata, Calle 1 no 644, 1900 La Plata, Argentina)

September 14 - 18, 1987

NEOTECTONICS AND SEISMICITY OF THE ANDES (Regional Symposium) San Miguel de Tucuman, Argentina. (Dr. V. Ramos, Dept. of Geology, University of Buenos Aires, Pabellon 2 - City University 1428, Nunez, Buenos Aires, Argentina).

September 14 - 18, 1987

HYDROGEOLOGY OF COAL BASINS (IUGS/IAH Symposium), Katowice, Poland. (Dr. A. Rozkowski, Geological Institute, Bialego 1, 41-200 Sosnowiec, Poland).

September 17 - 27, 1987

EVOLUTION OF METAMORPHIC BELTS (Geological Society and IGCP-235 Joint Meeting), Dublin, Ireland. (J.S. Daly, Dept. of Geology, University College, Belfield Campus, Dublin 4, Ireland).

September 21 - 25, 1987

NATURAL GLASSES (Meeting), Prague, Czechoslovakia. Language: English. (V. Bouska, Faculty of Science, Charles University, Albertov 6, 128 43 Prague 2, Czechoslovakia).

September 21 - 25, 1987

METALS AND METALLOIDS IN THE HYDROSPHERE: IMPACT THROUGH MINING AND INDUSTRY AND PREVENTION TECHNOLOGY (Unesco/IHP International Workshop), Bochum, F.R.G. (IHP/OHP Sekretariat, c/o Bundesanstalt fur Gewasserkunde, Postfach 309, D-5400 Koblenz, F.R.G.).

September 24 - October 1, 1987

FOSSILS, ROCKS AND HISTORY (13th INHIGEO Symposium), Pisa, Italy. (Prof. G. Giglia, Dip. Scienze della Terra, Via S. Maria 53, 56100 Pisa, Italy).

September 25 - 27, 1987

CATASTROPHIC FLOODING (18th Annual Geomorphology Symposium), Oxford, Ohio, USA. (Dr. Larry Mayer, Dept. of Geology, Miami University, Oxford, Ohio 45056, USA).

September 27 - October 1, 1987

EXPLORATION '87 (3rd Decennial) Conference on Geophysical and Geochemical Exploration for Minerals and Groundwater (3rd Decennial Conference), Toronto, Canada. (Exploration '87, c/o 222 Snidercroft Road, Conford, Ontario L4K 1B5, Canada).

October 6 - 9, 1987

OROGENY, MAGMATISM AND METALLOGENY IN EUROPE (European Geological Societies 5th Meeting), Dubrovnik, Yugoslavia. Languages: English and French. (European Centre for Peace and Development, Secretariat MEGS 5, Sava-Centre, P.O. Box 5, 11000 Beograd, Yugoslavia).

October 11 - 15, 1987

SOCIETY OF EXPLORATION GEOPHYSICISTS (57th Annual Meeting), New Orleans, La., U.S.A. (Marvin R. Hewitt, Amoco Production Co., Box 591, Tulsa, OK 74102, U.S.A.)

October 12 - 16, 1987

MATHEMATICAL METHODS IN GEOLOGY (16th Annual Geochautauqua), Pribram, Czechoslovakia. Co-sponsored by IAMG. (A. Ryel, The Mining Pribram, Box 41, 261 02 Pribram, Czechoslovakia).

October 19 - 23, 1987

APPLICATION OF COMPUTERS AND MATHEMATICS IN THE MINERAL INDUSTRIES (20th International Symposium), Johannesburg, South Africa. (The Conference Secretary (C.31), Mintek, Private Bag X3015, Randburg, 2125 South Africa).

October 26 - 29, 1987

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Phoenix, Arizona, U.S.A. (Meetings Department, GSA Headquarters, Box 9140, Boulder, CO 80301, U.S.A.)

December 7 - 11, 1987

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

December 7 - 10, 1987

TECTONOTHERMAL EVOLUTION OF WEST AFRICAN OROGENS (IGCP-233 International Conference), Nouakchott, Mauritania. (R.D. Dallmeyer, Dept. of Geology, University of Georgia, Athens, Georgia 30602, USA).

December 7 - 11, 1987

SOUTHEAST ASIAN GEOTECHNICAL CONFERENCE (9th) Bangkok, Thailand. Language: English. (The Hon. Secretary, 9th SEAGC, c/o Division of Geotechnical & Transportation Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok 10501, Thailand).

1988

January 31 - February 5, 1988

ACHIEVEMENTS IN AUSTRALIAN GEOSCIENCE (9th Australian Geological Convention), Brisbane, Australia. (Dr. G.W. Hoffmann, Geological Survey of Queensland, GPO Box 194, Brisbane, Queensland 4001, Australia).

March 8 - 11, 1988

ASIAN MINING 88 (3rd International Conference and Exhibition), Kuala Lumpur, Malaysia. (The Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, U.K.)

March 20 - 23, 1988

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

May 16 - 20, 1988

BICENTENNIAL GOLD 88 (Conference), Melbourne, Australia. Cosponsored by Society of Economic Geologists. (Dr. R.R. Keays, Department of Geology, University of Melbourne, Parkville Vic 3052, Australia)

May 16 - 20, 1988

AMERICAN GEOPHYSICAL UNION (Spring Meeting), Baltimore, Maryland, U.S.A. (AGU Meetings, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.)

May 16 - 20, 1988

HYDROLOGICAL PROCESSES AND WATER MANAGEMENT IN URBAN AREAS (IAHS/IUGG-IAH/IUGS-Unesco Meeting), Duisburg, F.R.G. (Dr. E. Romijn, Provincial Waterboard of Gelderland, Marktstraat 1, P.O. Box 9090, 6800 GX Arnhem, The Netherlands).

May 22 - 25, 1988

GAC/MAC/CSFG (Annual Meeting), St. John's, Newfoundland, Canada. (J.M. Fleming, Department of Mines and Energy, P.O. Box 4750, St. John's, Newfoundland, Canada A1C 5T7).

May 29 - June 3, 1988

WATER FOR WORLD DEVELOPMENT (6th IWRA World Congress), Ottawa, Ontario, Canada. (P.J. Reynolds, President, Canadian Committee - International Water Resources Association, 3 Valley View Road, Ottawa, Ontario, Canada K2H 5Y6).

July 1988

APPLIED GEOCHEMISTRY OF THE CONTINENTAL CRUST (IAGC Conference), Sao Paulo, Brazil. (Dr. A.J. Melfi, Institute of Astronomy and Geophysics, University of Sao Paulo, C.P. 30627, Sao Paulo 01000, Brazil).

July 1988

THERMODYNAMICS OF NATURAL PROCESSES (International Symposium), Strasbourg, France. Co-sponsored by IAGC, IGCP, IMA, CODATA. (Dr. B. Fritz, Centre de Sedimentologie et de Geochimie de la Surface, 1 rue Blessig, F-67084 Strasbourg Cedex, France).

July - August 1988

OSTRACODA AND GLOBAL EVENTS (10th International Symposium), Aberystwyth, Wales, U.K. Supported by IPA. (Dr. R.C. Whatley, Dept. of Geology, University College of Wales, Aberystwyth, Dyfed SY23 3DE, Wales).

July 1 - 8, 1988

SEISMIC PROBING OF THE CONTINENTS AND THEIR MARGINS (Symposium), Canberra, Australia. (Dr. J. Leven, BMR, P.O. Box 378, Canberra, ACT 2601, Australia).

June 7 - 10, 1988

EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (50th Congress), Den Haag, The Netherlands. (E. van der Gaag, European Association of Exploration Geophysicists, P.O. Box 162, NL-2501 AN The Hague, The Netherlands)

June 20 - July 9, 1988

SEISMIC PROBING OF THE CONTINENTS AND THEIR MARGINS (Meeting), Canberra, Australia. (Dr. J.H. Leven, BMR, Box 378, Canberra, ACT 2601, Australia)

July 25 - 29, 1988

FOSSIL CNIDARIA (5th International Symposium), Brisbane, Australia. (Dr. J.S. Jell, Department of Geology and Mineralogy, University of Queensland, St. Lucia, Queensland 4067, Australia).

August 14 - 21, 1988

PEAT (8th International Congress), Leningrad, U.S.S.R. (Peat Congress, Ministry of Fuel Industry of the RSFSR, Sadovaya-Chernogryazskaya 8, Moscow 107813, U.S.S.R.).

August 20 - 27, 1988

INTERNATIONAL PALAEOBOTANICAL CONGRESS (3rd) Melbourne, Australia. (Secretary, 3rd IOP Conference, Conventions Department, P.O. Box 1901R, GPO Melbourne 3001, Australia).

August 22 - 26, 1988

GEOGRAPHICAL CONGRESS (IGU 26th International), Sydney, Australia. (Prof. B. Thom, Department of Geography, Institute Building, University of Sydney, Sydney, Australia 2006).

August 28 - September 2, 1988

INTERNATIONAL PALYNOLOGICAL CONGRESS (7th), Brisbane, Australia. (Dr. John Rigby, Conventions Department, P.O. Box 489, G.P.O., Sydney NSW 2001, Australia).

September 1988

ENGINEERING GEOLOGY AS RELATED TO THE STUDY, PRESERVATION OF ANCIENT WORKS, MONUMENTS AND HISTORICAL SITES (IAEG International Symposium), Athens, Greece. (Dr. L. Primel, IAEG, Lab. Central des Ponts et Chaussees, 58 Boulevard Lefebvre, 75732 Paris Cedex 15, France).

October 1988

COAL RESEARCH (International Conference), Tokyo, Japan. (Dr. W.G. Jensen, International Committee for Coal Research, Bte 11, B-1150 Brussels, Belgium)

October 30 - November 1988

SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Meeting), Anaheim, California, U.S.A. (Convention Assistant, Society of Exploration Geophysicists, P.O. Box 3098, Tulsa, OK 74101, U.S.A.)

October 31 - November 3, 1988

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Denver, Colorado, U.S.A. (Meetings Department, Geological Society of America, P.O. Box 9140, Boulder, CO 80301, U.S.A.)

December 5 - 9, 1988

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

1989

July 9 - 19, 1989

INTERNATIONAL GEOLOGICAL CONGRESS (28th), Washington, D.C., U.S.A. (International Geological Congress, P.O. Box 1001, Herndon, VA 22070, U.S.A.)

October 29 - November 2, 1989

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

November 9 - 12, 1989

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

