

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

Jil. 8, No. 1 (Vol. 8, No. 1)

Jan—Feb 1982

KANDUNGAN (CONTENTS)

CATATAN GEOLOGI (GEOLOGICAL NOTES)

- J. L. Rau & P. Nutalaya: Placer gold discovery in Thailand 1
 B. H. Kiew: The exploitation and conservation of natural resources (viewpoint) 5

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

- S. Hancock: Some aspects of groundwater development 8
 W. S. Moore: Isotope dating of corals 8
 Malam Perluluhawaan (Weathering Evening) 10
 S. Paramanathan. Laterite soils of Peninsular Malaysia 12
 B. K. Tan. Cr-Ni bearing laterite, Malacca 12
 J. K. Raj: Residual soils over granite 12

BERITA PERSATUAN (NEWS OF THE SOCIETY)

- GSM Council 1982/83 election results 13
 GSM Geoscience Education Workshop 13
 Presidential Address 14
 GSM Annual General Meeting 1982 14
 GSM Annual Dinner 1982 14
 Editor's Note — advertising in Warta, delays 14
 Keahlian Profesional (Professional Membership) 16
 Keahlian (Membership) 16
 Pertukaran Alamat (Change of address) 18
 Pertambahan Baru Perpustakaan (New Library Additions) 18

BERITA-BERITA LAIN (OTHER NEWS)

- Course on 'The origin and evolution of sedimentary basin' 19
 Eleventh Annual Convention Indonesian Petroleum Association 20
 International Union for Quaternary Research XI Congress 21
 6th International Association on the Genesis of Ore Deposits 22
 Autumn course on geomagnetism, the ionosphere and magnetosphere 24
 SEATRAD Centre — Seminar on beneficiation of tin and associated minerals 25
 XIV International Mineral Processing Congress 26
 15th Pacific Science Congress 27
 Kalendar 27



DIKELUARKAN DWIBULANAN
 ISSUED BIMONTHLY

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

Majlis (Council) 1981/82

Pegawai-pegawai (Officers)

- Presiden
(President)** : Mohd. Ayob, Petronas, P.O. Box 2444,
Kuala Lumpur
- Naib-Presiden
(Vice-President)** : Khoo Teng Tiong, Jabatan Geologi,
Universiti Malaya, Kuala Lumpur
- Setiausaha Kehormat
(Hon. Secretary)** : Tan Boon Kong, Jabatan Geologi, Universiti
Kebangsaan Malaysia, Kuala Lumpur.
- Penolong Setiausaha
(Hon. Asst. Secretary)** : Mohd. Ali Hasan, Jabatan Geologi,
Universiti Malaya, Kuala Lumpur
- Bendahari
(Treasurer)** : Chin Lik Suan, Datuk Keramat Smelting,
Jln. Brickfields, Kuala Lumpur
- Pengarang
(Editor)** : Teh Guan Hoe, Jabatan Geologi,
Universiti Malaya, Kuala Lumpur
- Immediate Past President**: Tan Bock Kang, Jabatan Geologi,
Universiti Malaya, Kuala Lumpur
- Councillors (2-year)** : Abdul Malik Abdul Rani, Esso Production,
P.O. Box 857, Kuala Lumpur
- Ahmad Said, Petronas, P.O. Box 2444,
Kuala Lumpur
- M.K. Choo, Pemas Charter Management,
P.O. Box 936, Kuala Lumpur
- Gan Ah Sai, Jab. Peny. Kajibumi,
Bang. Ukor, Jalan Gurney, Kuala Lumpur
- (1-year)** Abdul Aziz Hussin, Jabatan Kejuruteraan
Petroleum, Universiti Teknologi Malaysia,
Kuala Lumpur
- Khoo Kay Khean, Pej. Peny. Kajibumi,
Kuala Kangsar, Perak
- Leong Khee Meng, Carigali-BP, P.O. Box
757, Kuala Lumpur
- Wong Yoke Fah, Valdun Consultants, P.O.
Box 242, Kuala Lumpur

Address of the Society: GEOLOGICAL SOCIETY OF MALAYSIA
c/o Dept. of Geology
University of Malaya
Kuala Lumpur 22-11, Malaysia.
Tel. 03-577036

CATATAN GEOLOGI (GEOLOGICAL NOTES)

PLACER GOLD DISCOVERY IN THAILAND

RAU, JON L., Department of Geological Sciences, The University of British Columbia, Vancouver, B.C., Canada.

NUTALAYA, PRINYA, Division of Geotechnical and Transportation Engineering, Asian Institute of Technology, Bangkok, Thailand.

Introduction

In March, 1981 the discovery of gold nuggets 155 kilometers north-east of Bangkok precipitated a full scale gold rush to the little-known village of Nong Doan in Prachin Buri's Kabin Buri District (Figs. 1 & 2). The discovery was made in the middle of a newly seeded paddy field just about 30 kilometers east of the district town. More than 500 miners swarm up and down a hundred paddy dykes each day under the intense sun of a typical hot and wet monsoon season. The gently sloping paddy field is located on a terrace about 30 meters above mean sea level. The paddy land is now pock-marked by thousands of holes with many hundreds more under construction. Each hole contains from one to three people all standing waist deep in warm, muddy water, and coated with dried red clay - a classic example of small scale mining at its worst. There is little control over where, how and the quantity of earth moved in search of gold nuggets less than one meter below the surface. Thai miners employ the typical "gophering" method of mining but their holes are very shallow and discontinuous.

Geology

Just about a meter below the surface is a layer of iron pisolites, that have been weathered from a hard lateritic soil. It is within this gravelly zone that large gold nuggets, some over two centimeters in length, have been recovered. The origin of the gravelly zone is thought to be the result of a Pleistocene or Tertiary age stream flowing over the underlying bedrock, present at a depth of less than 10-20 meters. The deposit lies in the shadow of the Khao Kam Pla Kang (Hill of Bony Gold Fish), an outlier of Phu Kradung Formation, a predominantly dark brown, grayish brown shale with interbedded siltstones and sandstones of Jurassic age.

Not far from the initial discovery outcrop Triassic granite and granodiorite. Underlying the deposit are rocks belonging to the Devonian Kanchanaburi Formation. This unit is primarily shale, sandstone and their metamorphic equivalents, phyllite, argillite, quartzite, and slate. Locally limestone is present. Although it is difficult to speculate on the source of the gold it probably originates in the quartz veins cutting the Kanchanaburi Formation. These veins may emanate from the plutonic rocks of Triassic age which crop out nearby.

History

There is no way of knowing how long the deposit will hold out but Thailand has placer deposits in 28 of its 72 provinces. Many of these placers have been operated by villagers for more than 100 years. Not far from this discovery, and on strike with it, a notable gold deposit occurs at Bo Thong to the southwest. The mine at Bo Thong was worked during King Rama V's reign and its workings are still clearly visible although it has not been operated since 1916. Several concrete structures, a large water-filled pit with the remains of a head-frame, several other concrete houses can be explored just 1 km south of the main highway between Prachin Buri and Kabin Buri. The gold in the Bo Thong area has been mined for years but in 1880 the Governor of Prachin Buri Province, Samang Amatayakul, was given the authority by the King to develop the mine as he had been trained as an engineer at the University of London. He employed about 300 men to dig down to bedrock (Kanchanaburi Formation) where a true bonanza of gold was found. The weekly yield was equivalent to the bulk of a coconut. Unfortunately, the governor conspired against King Rama V and as a result he was beheaded.

A second attempt to mine the gold at Bo Thong was made in 1906. For 10 years a French company operated it as a joint venture with a Thai company and used mechanical methods to recover the gold. The yield was not as good as expected and could not approach that recovered during the reign of King Rama V in 1880 when it was reported that about 48 kilogrammes of gold were mined each month. The operation was disbanded in 1916. Nevertheless, the geological structure between Bo Thong and Nong Doan is such that the entire area has promise. Moreover, the gold is so shallow that favourable results might be obtained using a metal detector.

Geophysical Data

In 1954, Hunting Geology and Geophysics Ltd. was contracted to perform an airborne magnetometer survey of the Chao Phraya Basin of central Thailand. The magnetometer utilized was a Gulf fluxgate magnetometer capable of measuring the relative total field - the datum being arbitrary. A part of the 35,000 square kilometer survey included the Kabin Buri area where the new placer gold discovery occurs. East of Kabin Buri to a point 8 kilometers west at Ban Bo Thong, the magnetic pattern clearly supports the east-west strike interpreted from geologic maps of the area. There is a suggestion of east-west faulting between Nong Doan and Bo Thong. Moreover, a north-south fault is interpreted from the magnetic data for an area about one kilometer west of Bo Thong. The magnetic data suggest that an igneous contact occurs about 2 kilometers south of Ban Bo Thong. East-west striking quartz veins occur in the old mine at Bo Thong and support the magnetic data indicating a dominant east-west shear zone with probable intersection by a north-south zone just west of Bo Thong (Fig. 2).

Conclusion

The gold at Nong Doan is probably weathered from the quartz veins cutting the Kanchanaburi Formation. Mineralization of the quartz veins emanates from buried igneous bodies to the south of Bo Thong. The original placer deposit probably formed in either the Tertiary or Pleistocene before it was incorporated in a laterite resulting from ground water discharge on the south side of the Khao Kam Pla Kang range.

Later, possibly in early Holocene time, the laterite was weathered and the nuggets were freed again and mobilized by streams flowing south to the Prachin Buri River. A final episode of entrenchment lowered the water table and favoured the development of the brown loessial soil now found above the placer deposits. The entire area between Nong Doan and Bo Thong warrants further prospecting.

Manuscript received 5 October 1981

Scenes of the gold rush at Kabin Buri



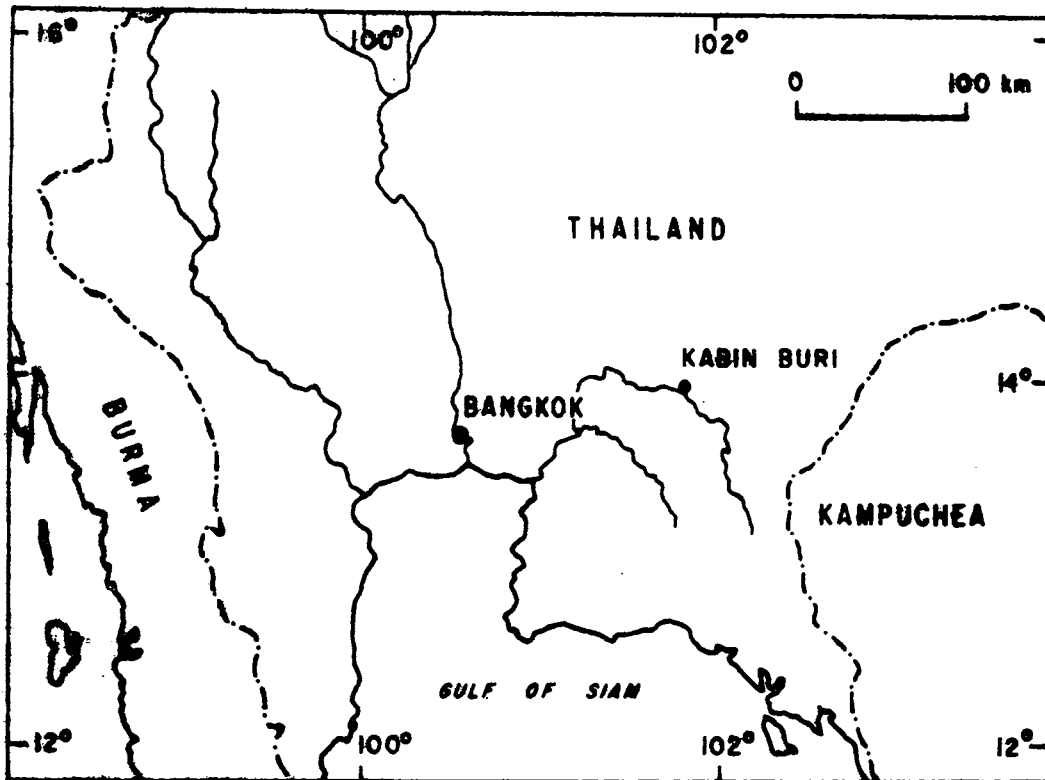


Fig.1. Map showing the location of Nong Doan area.

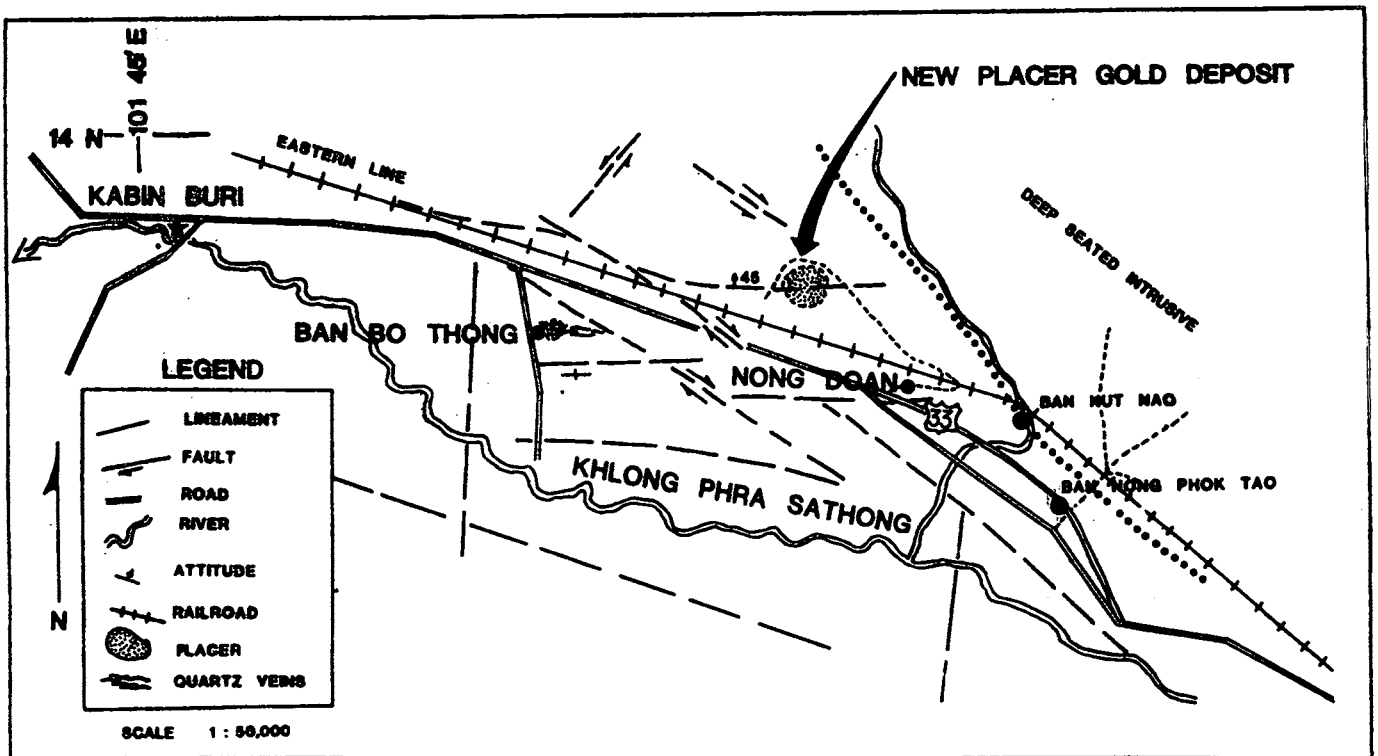


Fig.2. Map showing the geology and location of placer deposits in the Kabin Buri district, eastern Thailand.

VIEWPOINT: THE EXPLOITATION AND CONSERVATION OF NATURAL RESOURCES

KIEW BONG HEANG, Dept. of Zoology, Universiti Malaya

Abstract

The industrial minerals in Malaysia are finite. As non-renewable resources their total depletion in the future is inevitable. For their long term utilization in relation to national development a conservation policy is essential. To allow for growth at the optimum sustained output level a long term plan for the development of industrial minerals at the national level should be given more emphasis than the short term interests of the states. In conserving our industrial minerals, there should be a prevention of wastages, regulation of speed and ways of exploitation and the minimization of environmental damages to neighbouring renewable resources such as the top soil, water, forests, national parks, and wildlife and recreational areas. Pollution should be avoided where possible or minimized. Industrial minerals unexploited can only appreciate in value in this world of diminishing natural resources.

The exploitation of a natural resource is the turning to economic account of that resource whereas conservation is the aggregate of practices and customs of man that permit the perpetuation and sustained yield of renewable resources and the prevention of waste of non-renewable resources.

The world we live in is a finite entity and so is Malaysia as a country on it. The supply of natural resources including that of industrial minerals is limited. As industrial minerals are non-renewable resources their continuous exploitation could only result in total depletion in time. It is important that the exploitation of these industrial minerals be kept at an optimum level in pace with the country's over-all development plan in order that the country can benefit the most out of it for the longest period of time. With this in mind, the need for conservation is inevitable if the country would want to see a prolonged healthy period of economic growth.

The conservation of industrial mineral resources is best achieved through the prevention of wastage, regulation of pace of exploitation and appropriate utilisation of each mineral. In conjunction with this, there is a need to conserve the surrounding environment and existing neighbouring renewable resources such as top soil, forest, water, national parks, wildlife and recreational areas through minimization of damage done during the course of exploitation by way of mining.

The prevention of wastage can be ensured by the industries through the development of more efficient mining technology such as that observed in the re-mining of old mined land. The supporting industries that utilise the minerals mined can assist in using the minerals more economically. Cars can be built with thinner steel plates. Tins can be plated more thinly with tin. More efficient motor engines can be built

which are more economical on fossil fuels. In ensuring the prevention of wastage, the consumers would have the biggest role to play in seeing that wastage is discouraged and the proper minerals used in appropriate products through the creation of desirable market situations.

The regulation of the pace of exploitation is essential because if exploitation is allowed to run free there is a general tendency of exponential growth which will result in slumps in the market, wastages and ultimately the exhaustion of the mineral resource. A national conservation policy is needed to facilitate a more coordinated and planned developmental growth of all our industrial minerals. The formation of Petronas for the petroleum industry included setting a conservative policy spelled out in the Third Malaysia Plan under Objective (v) which states that the objectives are to:- effect an optimal social and economic pace of exploration of the nation's endowment of exhaustible oil and natural gas resources, taking into account the need for conservation of these depletable assets and the protection of the environment. This is an example to be followed for other non-renewable resources exploitation. The country should not be over-eager for foreign exchange arising from the exploitation of its non-renewable resources when it has other means of obtaining foreign exchange such as through the sale of its rubber, palm oil and timber. Industrial minerals left unexploited can only increase in their value with time as we are living in a world of diminishing non-renewable resources. To enable better coordination at a national level, there is a need to invest more power over land matters in the Federal Authorities rather than leaving it with the states as defined in the National Land Code 1965.

In the course of utilising our industrial minerals, it is important that each mineral be put to appropriate use. Limestone should not be used for road surfacing or for the bulking of concrete; instead it should be used for cement manufacture, the making of quick-lime, as a source of calcium in animal feed and as ornamental stone in the case of marble. Good quality clay should be used for pottery rather than for bricks.

To maximize the use of our industrial minerals mined, they should at least be smelted in the country and better still finished products be made from them before they are exported. The smelting of tin in the country is the right thing to do, coupled with tin-plating or pewter work. The export of ore from the Mamut Copper Mine to Japan would be better dealt with in the manner of our tin ore.

The protection of the environment in the course of mining and exploiting our industrial minerals resources is equally important to the well being of the country. If damage to the environment is unavoidable it should be minimized. The pollution of padi fields in Sabah by the Mamut Copper Mine could have been avoided through the set up of anti-pollution devices as has now been done after damages was caused. Siltation of streams and rivers is still common in Peninsular Malaysia despite the Land Conservation Act which contains clauses against such activities. Needless to say thousands of acres of top soil valuable to agriculture are being washed away by tin mining activities. The Environmental Policy for the country spelled out in the Third Malaysia Plan is one of which we could be proud. The laws of the country have adequately covered most aspects needed in the conservation of the country. What is badly needed here in conservation is the will to follow the policies laid down and not to over-rule the need of conservation with the need of


development. Malaysia does need development with its increasing population but not at any cost. What is the use of increasing the standard of living alone with material well being if the quality of life at large has to be drastically lowered. Modern man does not live by money alone. He needs a sustaining ecosystem and a healthy environment to live in and not just exist in. These he is unfortunately capable of destroying.

In conclusion, Malaysia needs a national conservation policy for its industrial minerals which will allow for the prevention of wastage, regulation of exploitation and the protection of the environment and neighbouring renewable resources in the course of mineral exploitation. The Federal Authorities should be given more control over mining and mineral exploitation than they have at present under the National Land Code.

Paper presented at GSM Industrial Minerals Seminar 10th October 1980.

NOW.....THE WARTA GEOLOGI OFFERS VALUABLE ADVERTISING SPACE

KDN 0396/81		ISSN 0126/5539	
PERSATUAN GEOLOGI MALAYSIA			
WARTA GEOLOGI			
NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA			
Jl. 7, No. 6 (Vol. 7, No. 6)		Nov-Dec 1981	
KANDUNGAN (CONTENTS)			
CATITAN GEOLOGI (GEOLOGICAL NOTES)			
T.T. Khoo & B.K. Tan: Occurrence of a not unexpected dolerite in Central Kedah			187
H.D. Tjui: Tektonik keping dan tektonik lempeng			190
PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)			
Malam Barat Laut Semenanjung (Northwest Peninsula Evening)			195
T.T. Khoo: North-west extension of the Pasani Metamorphics terrane			195
C.P. Lee: Stratigraphy of the Machang and Tanau Formations			197
J.K. Raj: Lineaments in granite and the relationship to the distribution of alluvial tin deposits in NW Peninsular Malaysia			198
E.J. Cobbing & D.J.J. Mallick: Comparison of Peruvian and Malaysian granites			198
GSM Petroleum Geology Seminar '81 - report			199
GSM Petroleum Geology Seminar '81 - abstracts of papers			205
BERITA PERSATUAN (NEWS OF THE SOCIETY)			
Malam Kuarter (Quaternary Evening)			214
Buletin 14 - now available			215
GSM to host GEOSEA V in 1984			216
Young Geoscientist Award			218
Ahli Profesional (Professional Members)			218
Kesibhan (Memberships)			218
Advertising in WARTA GEOLOGI			219
Perubahan Alamat (Change of Address)			220
Pertambahan Baru Perpustakaan (New Library Additions)			220
BERITA-BERITA LAIN (OTHER NEWS)			
Technology from Finland			221
2nd International Tungsten Symposium			222
Circum-Pacific Energy and Mineral Resources Conference-update			224
International Symposium of Applied Geophysics in Tropical Regions			225
Third Tin Training Course			226
Tunnelling '82			227
Kalendar (Calendar)			229



DIKELUARKAN DWIBULANAN
ISSUED BIMONTHLY

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

TECHNICAL TALKS

STEPHEN HANCOCK: Groundwater Resources of the Malaysian Environment

"There has been quantitative evolution of groundwater investigations in Malaysia since the 60s." This introductory remark was made by Mr. Stephen Hancock, President, National Water Well Association of Australia, and Consultant to the Australian Groundwater Consultants Pty. Limited, in his talk given to members of the Society. The talk took place on Friday, 15th January 1982 at the Department of Geology, University of Malaya and attracted about 25 members.

The speaker commenced by comparing hydrological parameters of Australia and Malaysia, and proceeded to discuss the role of groundwater in the Malaysian environment. To the speaker, the role of groundwater in Malaysia is a function of water availability (especially surface water) and exploitation of groundwater depends a great deal on the economics and availability of groundwater. He then gave illustrative accounts on the requirements and locations for good groundwater resources, which are very dependent on recharge. Mr. Hancock also suggested a 'working philosophy' as a form of low chart for practicing groundwater engineers/hydrologists in groundwater investigations. Lastly, the problems and future of groundwater exploitation in Malaysia were discussed. Among the problems suggested were those with regard to expertise (manpower), good data bank, trained drillers and proper registration. He viewed that in future, computer models will be widely used and the environmental impact of tin mining activities will need to be considered in the exploitation of groundwater resources.

Mr. Stephen Hancock is back in Malaysia, after having successfully convened the International Groundwater Conference (Groundwater '81) held in Kuala Lumpur in June last year, to initiate a study into groundwater resources of the Klang Valley. This study is being funded jointly by the Australian and Malaysian Governments.

Mohamad Ali Hj. Hasan

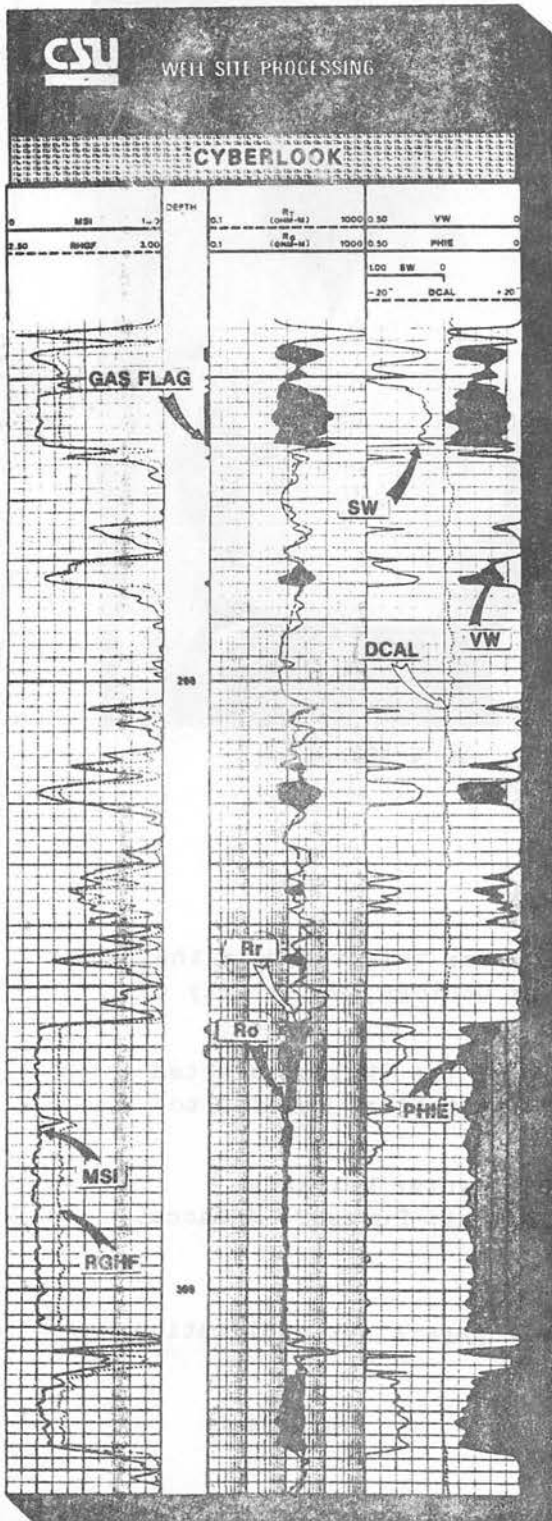
W.S. MOORE: Isotope dating of corals

Professor Moore lectured on absolute chronology based upon U-series isotopes and its application in establishing the sea level history of the past few hundred thousand years.

The audience was introduced to various aspects of this dating method that almost exclusively uses aragonitic coralline material. This method coupled with oxygen isotope stratigraphy of deep-sea sediments and the Milankovitch insolation curves have been used to extrapolate the behaviour of sea-level into the Late Pleistocene. The established sea-level curve is based on many samples from the western Pacific and from the Caribbean region with certain data from other regions and suggests that the two latest seas stand higher than the present datum occurred 120,000 and 135,000 years ago.

CYBERLOOK*

brings Schlumberger computing power to the well site for decision makers



CYBERLOOK is a Dual-Water Computer model, easy to use, requiring a minimum of parameter selection and applicable to a wide range of formations. It is fast to run with outputs of grain size, porosity, fluid saturation and shale index, all answers you require from logs at the wellsite for making decisions on testing and completion of your well.

CYBERLOOK provides wellsite answers.

*Mark of Schlumberger.

CSU

Schlumberger

Many questions arose from the floor, which consisted of 15 members. The meeting was held on 3rd February 1982, at the Department of Geology, University of Malaya.

Professor Moore is presently the Chairman of the Department of Geology, University of South Carolina, USA.

H.D. Tjia



S. Hancock



W. S. Moore

MALAM PERLULUHAWAAN (WEATHERING EVENING)

There was again a large turnout, about 30, for this third in the series of geologic evenings at the Department of Geology, University of Malaya, Kuala Lumpur, on 11 Feb. 1982.

Tea was served at 7.00 p.m. and at 7.30 p.m. the 'Malam' started off, featuring three speakers delivering talks on matters related to weathering:

- 1) Dr. S. Paramanathan: Lateritic soils of Peninsular Malaysia
- 2) Dr. B.K. Tan: A chromium-nickel laterite in Bukit Punggor, Malacca, Peninsular Malaysia
- 3) Mr. J.K. Raj: Residual soils over granite.

The speakers have promised to submit their papers for publication in the near future.

G.H. Teh

**MALAM
PERLULUHAWAAN
11 Jan 1982**

S. Paramanathan



B. K. Tan



J. K. Raj



MALAM PERLULUHAWAAN - ABSTRACTS OF PAPERS

S. PARAMANANTHAN: Lateritic soils of Peninsular Malaysia

The term 'laterite' was first introduced by Buchanan in 1807 to describe a variegated material which occurred in South India. This material when exposed hardens irreversibly. Today, however, the terms 'laterite' and 'lateritic soils', have very varied definitions. In fact any red coloured material rich in iron-oxides has been described as 'laterite', resulting in a lot of confusion in the literature. In order to overcome this, new terms such as plinthite, petroplinthite, pallid zone and iron-coated materials are defined as used by Soil Scientists.

Two types of 'lateritic soils' are found in Malaysia. Iron-coated materials are formed by the intense weathering, leaching and accumulation of iron further down the weathering profile. Such ferruginous materials are often red-coloured and retain their original rock structure - at least in part. The second type of 'lateritic soils' found in Peninsular Malaysia consists of rounded ferruginous gravels overlying the weathered saprolite, often unconformably. These types of soils often form cappings on hills. The erosion of these materials and dissection of the landscape result in two distinct catenal relationships between the materials and erosion products. There is some disagreement among soil scientists as to the processes which gave rise to the resultant landscapes.

It is believed that, intensive tropical weathering during the Tertiary resulted in the formation of the reddish-coloured soils with their iron-coated materials and their underlying plinthite (or laterite as defined by Buchanan). Subsequent dissection and erosion of the iron-coated materials gave rise to three geomorphic surfaces. These surfaces are probably related to the changes in sea-levels during the Pleistocene.

B.K. TAN: A chromium-nickel laterite in Bukit Punggor, Malacca, Peninsular Malaysia

Analysed geochemical samples of the lateritic soil from Bukit Punggor showed the presence of chromium and nickel, giving a good indication of the ultramafic nature of the parent material. This might also infer the possible concentration of a leached nickeliferous deposit under the thick soil cover.

This discovery of laterite originating from an ultramafic source rock throws new light on some aspects of the geology of the region concerned and calls for closer examination of laterites elsewhere before indicating the nature of the parent material.

J.K. RAJ: Residual soils over granite

Residual soils over granitic rocks in Peninsular Malaysia are characterized by a vertical morphological zonation of weathered material that allows recognition of an upper Zone I of pedochemically and geochemically weathered bedrock and a lower Zone II of in situ geochemically

weathered bedrock. Zone II weathered material preserves to varying degrees, the original bedrock minerals, textures and structures, while Zone I material preserves few of these features. These zones of weathered material overlie the bedrock Zone III which entirely requires the use of explosives for its economical excavation. The material of Zones I and II can, however, be excavated without the use of explosives excepting for the longer core boulders (found in the lower part of Zone II) that sometimes require the use of explosives for their economical excavation.

BERITA PERSATUAN (NEWS OF THE SOCIETY)

GSM COUNCIL 1982/83 ELECTION - RESULTS

The following have been elected to serve as the four 2-year Councillors in the 1982/83 Council:

Abdul Aziz Hussein (Universiti Teknologi Malaysia)
Khoo Kay Khean (Geological Survey Malaysia)
Michael Leong (Petronas)
Yeoh Gaik Chooi (Esso Production Malaysia).

The result of the election was announced on 7th Jan. 1982 by Dr. S. Paramanathan, the Election Officer, with J.K. Raj and S. Chandra Kumar as Scrutineers.

On the other hand, the other members of the 1982/83 Council have been returned unopposed at the close of nominations.

G.H. Teh

GEOSCIENCE EDUCATION WORKSHOP

The Geoscience Education Workshop will be held on 27 April 1982 in conjunction with the Annual General Meeting at the same venue (Abbey Room 1, Hotel Merlin, Kuala Lumpur).

Tentative Programme

8.30 - 9.00	:	Registration
9.00 - 9.20	:	Welcoming address and opening speech by the President
9.20 - 9.40	:	Tea
9.40 - 11.00	:	Geoscience curriculum (paper presentation)
11.00 - 12.00	:	Cooperation between local university and other sectors + types of graduates (Forum)
12.00 - 1.30	:	Lunch
1.30 - 2.30	:	Role of local geoscience societies and institutes (Forum)
2.30 - 3.30	:	Geoscience education in secondary schools (Pre-University level) + in-service training (open discussion)
3.30 - 3.40	:	Closing remarks.

Further information on the Workshop is obtainable from:
Mr. Mohd. Ali Hasan, Organising Chairman, Geoscience Education Workshop,
Geological Society of Malaysia, c/o Dept. of Geology, University of
Malaya, Kuala Lumpur 22-11, Malaysia.

PRESIDENTIAL ADDRESS

The Presidential Address by Dr. Mohd. Ayob will be on Petroleum
Exploration in Malaysia, and will be delivered from 3.45 - 4.45 p.m. on
27th April 1982 in Abbey Room 1, Hotel Merlin, Kuala Lumpur.

ANNUAL GENERAL MEETING

All members are reminded that the Annual General Meeting will be
held at 5.00 p.m. on 27th April 1982 at Abbey Room 1, Hotel Merlin,
Kuala Lumpur.

Agenda

1. Confirmation of minutes of last Annual General Meeting
2. Matters arising
3. President's Report
4. Hon. Secretary's Report
5. Hon. Asst. Secretary's Report
6. Editor's Report
7. Hon. Treasurer's Report & Auditor's Report
8. Election of Hon. Auditor
9. Other business.

Members who have matters for discussion to be included in the
AGENDA should inform the Hon. Secretary in writing not later than 7
days before the AGM.

Tan Boon Kong

ANNUAL DINNER

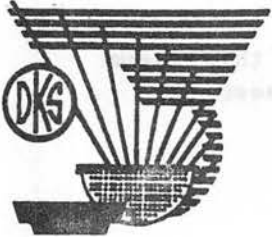
The Annual Dinner of the Society will be held at the Lotus Room,
Hotel Merlin, Kuala Lumpur, commencing 7.00 p.m. on 27th April 1982,
following the AGM.

Cost for dinner is M\$25.00 per person. The dinner is open to all
members and their spouses, friends, etc.

Please confirm your attendance by sending in the appropriate payment
to: The Treasurer, Geological Society of Malaysia, c/o Dept. of Geology,
University of Malaya, Kuala Lumpur 22-11, Malaysia.

EDITOR'S NOTE - ADVERTISING IN WARTA, DELAY OF WARTA

As part of the Society's effort to raise funds for its publications
and the opportunity for companies to advertise to the wide earth science
fraternity reached by GSM publications, the Geological Society of Malaysia



With Best Compliments from

DATUK KERAMAT SMELTING SENDIRIAN BERHAD

A WHOLLY-OWNED SUBSIDIARY OF DATUK KERAMAT HOLDINGS BERHAD

Buyers of
TIN CONCENTRATES and LEAD SCRAP MATERIALS

Producers of
**E. S. COY. LTD. STRAITS REFINED TIN,
TYPEMETAL, PURE LEAD, ANTIMONIAL LEAD,
SOLDER and LEAD/TIN ALLOYS**

REGISTERED OFFICE:
73 Jalan Datuk Keramat,
Pulau Pinang, Malaysia
Telephone: 63702/7
Cable: Smelter, Penang
Telex: MA40037
Answer Back ESMELT MA40037)

SMELTING WORKS:
85 Jalan Datuk Keramat,
Pulau Pinang, Malaysia

LONDON CORRESPONDENTS:
Amalgamated Metal Corporation Ltd.
Adelaide House,
London Bridge, London EC4R 9DT
Telephone: 01-626 4521

BRANCHES IN MALAYSIA:
Kuala Lumpur:
No. 1 Railway Goods Yard Godown,
Jalan Brickfields,
P.O. Box 29, Kuala Lumpur 01-02
Telephone: 441404/5, 441048,
441160 and 441854

Ipoh:
75-77 Jalan Connolly,
P.O. Box 58, Ipoh
Telephone: 2681/2 and 71624

Kampar:
99-101 Jalan Gopeng,
P.O. Box 10, Kampar
Telephone: 651431, 651433 and 651384

Pusing:
22 Jalan Batu Gajah,
Pusing
Telephone: 983330

will be offering valuable advertising space in the WARTA GEOLOGI as from January 1982.

To start off this new feature in our Newsletter we are indeed grateful to Schlumberger Overseas S.A. for their valuable contribution of \$1,600 and Datuk Keramat Smelting for \$200. We look forward eagerly to further contributions from other companies and organisations who are unaware of the offer and those who have yet to make up their minds. An advertising space order form is available on page 17.

We apologise for the slight delay in the Nov-Dec 1981 and this issue of the WARTA due to the change in printer, KDN number and unforeseen circumstances beyond our control.

G.H. Teh

KEAHLIAN PROFESIONAL (PROFESSIONAL MEMBERSHIP)

The following have been elected as Professional Members of the Society:

- (1) Mr. Chong Nai Hooi
- (2) Mr. Lye Yue Hong
- (3) Dr. Glenn L. Shepherd.

KEAHLIAN (MEMBERSHIP)

The following persons have join the Society:

Full Membership

1. Ho Kheng Hong, P.O. Box 30, Mukah, Sarawak
2. Hans G. Oesterle, P. O. Box 2283, MCC, Makati Metro Manila, Philippines.
3. J. Garrett Minke, P.O. Box 27/JKWK, Jakarta, Indonesia
4. G.V. Bowler, Keplinger and Associates Intern., 29 Goldhill Plaza (Podium Block), Singapore 1130.
5. Osamu Sato, Teikoku Oil Co., Technical Research Center, 9-23-30, Kita-karasuyama Setagayaku, Tokyo, Japan.
6. Jan E. Evensen, Sarawak Shell Bhd., Lutong, Sarawak.
7. Sabar b. Bauk, 210, P.P. Sains Fizik, USM, Penang
8. Gomes-Silva, Michel, SNEA (P), 26 Avenue des Lilas, 64018 Pau Cedex, France
9. Mohd. Redzuan bin Mohd. Ramli, Tronoh Mines (M) Bhd., Ayer Kuning, Kampar, Perak,
10. Indarjit Singh, EPMI, P.O. Box 857, Kuala Lumpur.

Associate Membership

1. John McGhee, Promet Energy Ltd., c/o 21 Pandan Road, Jurong Industrial Estate, Singapore 2260

Student Membership

1. Poh Seng Kui, IKM Kampus Sabah, Beg Berkunci no. 62, Kota Kinabalu, Sabah.
2. Mohd. Ashri bin Muda, 20P Tingkat 14, Flat Kg. Kerinchi, Kuala Lumpur.
3. Ho Soon Nan, UKM Kampus Sabah, Beg Berkunci 62, Kota Kinabalu, Sabah.
4. Ahmad Anwar Adnan, Geology Dept., University of Malaya, Kuala Lumpur.

PERSATUAN GEOLOGI MALAYSIA

Geological Society of Malaysia



ADVERTISING SPACE ORDER FORM

I/we would like to take up advertising space in the following issues of WARTA GEOLOGI.

Please tick as appropriate:

- WARTA GEOLOGI, Vol. 8, No. 1 (Jan-Feb 1982)
- WARTA GEOLOGI, Vol. 8, No. 2 (Mar-Apr 1982)
- WARTA GEOLOGI, Vol. 8, No. 3 (May-Jun 1982)
- WARTA GEOLOGI, Vol. 8, No. 4 (Jul-Aug 1982)
- WARTA GEOLOGI, Vol. 8, No. 5 (Sep-Oct 1982)
- WARTA GEOLOGI, Vol. 8, No. 6 (Nov-Dec 1982)

Other issues (specify year and month)

.....

.....

Charges for black and white:

Full inside page M\$300 per issue or M\$1,600 for 6 issues

Half inside page M\$200 per issue or M\$1,000 for 6 issues

Charges for colour:

Full inside page M\$600 per issue or M\$3,500 for 6 issues

Half inside page M\$500 per issue or M\$3,000 for 6 issues

Name of Company

Designation

Enclosed cheque/money order/bank draft No..... for M\$

.....
(Signature)

Please send this completed order form together with remittance to:

The Editor
Geological Society of Malaysia
c/o Dept. of Geology
University of Malaya
Kuala Lumpur 22-11
Malaysia.

PERTUKARAN ALAMAT (CHANGE OF ADDRESS)

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

1. S.A.A. Grodynski, Gearhart Geodata Services Ltd., Unit 904, 9th Floor, Orchard Towers, 400 Orchard Road, Singapore 0923.
2. D.G. Newton, --- ditto -----.
3. Nik Nasruddin Mahmood, Fundamental Research Division, MARDI, UPM P.O. Box 202, Serdang, Selangor.
4. Yongyut Trangcotchasan, Mineral Fuelds Division, Dept. of Mineral Resources, Phraram 6 Road, Bangkok 4, Thailand.
5. Rudy A. Vooy, c/- AGIP Australia, P.O. Box 1805, Darwin, NT. 5794, Australia.
6. Wong Pak Kheong, 43 Woodmont Drive S.W., Calgary, Canada T2W 4L3.
7. A.L. Scholtens, c/o Shell Co. of Thailand, 140 Wireless Road, Bangkok, P.O. B. 345, Thailand.
8. Brian C. Batchelor, 57 Cremin Street, Upper Mt. Gravatt, Brisbane, Australia 4122.
9. P.C. Cranfield, Endeavour Resources Ltd., GPO Box 524 J, Melbourne, Australia 3001.
10. Bruce Reed, U.S. Geological Survey, Gould Hall - APU Campus, University Drive, Anchorage, Alaska 99504, USA.
11. Dale F. Wetherbee, MAPCO Production Co., Inc., 705 South Elgin, P.O. Box 2115, Tulsa, Oklahoma 74101, USA.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The following publications were added to the Library:

1. Journal of Geosciences, Osaka City University, vol. 24, 1981.
2. Bulletin du Bureau de Recherches Geologiques et Minieres, Sect. IV, no. 3 & 4, 1980/81.
3. National Library of Singapore, adult reference collections, accessions list, Nov. & Dec. 1981.
4. IMM Bulletin nos. 900 & 901, 1981 and 902 - 904, 1982.
5. Geophysical Research Bulletin, vol. 19, no. 2-4, 1981.
6. Seatrad Centre, Annual Report 1980.
7. Seatrad bulletin, vol. II, nos. 3 & 4, 1981.
8. Seatrad library, acquisition list, July-Dec., 1981.
9. IMM Transactions, Sect. A, vol. 91, 1982.
10. Bulletin of the National Science Museum, vol. 7, no. 4, 1981.
11. Palaeontologia sinica, new series no. 96, 1981.
12. Journal of stratigraphy, vol. 5, nos 2-4, 1981.
13. Acta Palaeontologica sinica, vol. 20, nos. 5 & 6, 1981.
14. Mem. Nanjing Inst. of Geol. & Palaeont. Acad. Sinica, no. 15, 1981.
15. Geological literature of USSR, Bibliographical yearbook for 1975 year, vols. I & II, 1980 (in Russian).
16. AGID News, no. 29, 1981.
17. Annales Academiae Scientiarum Fennicae, no. 32, 1981.
18. University of Kansas, Paleontological contributions, Paper 105 & 106, 1981.
19. Five years of the Mexican Petroleum industry, 1977-1981.
20. AAPG Explorer, Jan. & March 1982.
21. Records of the Geological Survey of NSW, vol. 20, part 2, 1981.
22. A review of industrial minerals and rocks in New South Wales, Bulletin 30, 1982.
23. Southeast Asia Geosciences Newsletter, vol. 4, no. 2, 1981.

24. Journal of the Faculty of Science, The University of Tokyo, vol. 20, no. 3, 1981.
25. International subcommission on stratigraphic classification of IUGS commission on stratigraphy, circular no. 62, 1982.
26. Science Reports, Dept. of Geology, Kyushu University, vol. 14, no. 2, 1981.
27. Memoirs of the Faculty of Science, Kyushu Univ., vol. xxiv, no. 4, 1981.
28. Memoirs of the Ehime University, vol. ix, no. 2, 1981.
29. Scripta geologica, nos. 60, 62 & 63, 1981.
30. Bulletin Nanjing Inst. Geol. & Pal., Acad. Sinica, no. 2, 1981.
31. The academic career and scientific work of Professor Emeritus Teiichi Kobayashi. Prepared on the occasion of his eightieth birthday Aug. 1981.
32. Institute of petroleum exploration year book 1980-1981.
33. Status of the Circum-Pacific Map project 1980.
34. Geosurvey newsletter, vol. 12 (no. 6), 1980 and vol. 13 (nos. 9 & 10), 1981.
35. Principles of aerophoto methods (in Russian).
36. X-ray spectral analysis of rocks (in Russian).
37. Intrusive magmatism of the Pacific fold belt bibliographies - 1968-1978 (2439 entries) (in Russian).
38. Metasomatism of hydrothermal deposits by Yu V. Kazitsin, 1972 (in Russian).
39. Ore formations and processes of ore formation (with examples from Transbaikaliya) by V.S. Kormilitsin, 1973 (in Russian).
40. Metallogenies and the new global tectonics, 1973 (in Russian).
41. Studies of the weathering crust by large scale geological survey by V.S. Pevzner (in Russian).
42. Precambrian geology and mineral resources, 1975 (in Russian).
43. Metallogeny of eastern part of Baltic shield (1 text + 7 maps) (in Russian).

BERITA - BERITA LAIN (OTHER NEWS)

COURSE ON 'THE ORIGIN AND EVOLUTION OF SEDIMENTARY BASINS'

Date: June 1-3, 1982; 9.00 a.m. - 5.00 p.m.

Location: Royal Lancaster Hotel, Lancaster Terrace, London W2 (262-6737)

Lecturers: John F. Dewey, Walter C. Pitman III

Fee: £425 includes a detailed set of note, diagrams and references, all course materials, lunch, coffee and tea.

Summary: An intensive advanced short course for those with a background in exploration geology and/or geophysics, designed to provide a fundamental in-depth understanding of the frontier areas in current thinking in the physics and geology of sedimentary basins in a plate tectonic framework and the role of plate tectonics as an exploration framework and critical tool in basin analysis for the petroleum industry and those concerned with regional tectonic/structural analysis. Emphasis will be placed throughout on the mechanical/thermal evolution and hydrocarbon maturation and migration.

The topics covered will be:

1. Mechanical and thermal properties of the lithosphere
2. Finite plate motion and plate kinematics
3. Eustasy, continental margins and stratigraphy
4. The evolution of rift systems with particular reference to Atlantic borderlands
5. Subduction systems with particular reference to Southeast Asia
6. Collisional systems with special reference to the Alpine-Himalayan System.

For further information please contact:

John F. Dewey
University College
The Castle
Durham DH1 3RW, England.

Walter C. Pitman III
Lamont-Doherty Geological Observatory
of Columbia University
Palisades, N.Y. 10964, USA.

Please note that the course will also be given in Denver, Colorado, USA during November, 1982 and in Houston, Texas, USA during February, 1983.

ELEVENTH ANNUAL CONVENTION. INDONESIA PETROLEUM ASSOCIATION

The Indonesian Petroleum Association will hold its 11th Annual Convention on June 8 and 9, 1982. The Convention will be held at the Jakarta Borobudur Intercontinental Hotel. An interesting variety of technical and social events is planned. Technical sessions will be held on June 8 and 9. In addition, there will be a golf tournament on June 7. Details of the technical and social programs are as follows:

Opening ceremonies

The Opening Day Ceremonies will be held on Tuesday, June 8, 1982. All participants are kindly requested to wear a coat and tie at these ceremonies. Sport shirts without tie are acceptable for attending regular technical sessions.

Technical Program

The Technical Program will follow the opening day ceremonies and continue through to the closing ceremony on the second day of the Convention.

Representatives of government and industry will present their views on the petroleum industry. The various lecture sessions will provide a wide range of topics covering techniques and tools used in the exploration, production, refining, transportation and marketing of hydrocarbons. Each participant will be entitled to receive a copy of the Convention Proceedings.

A booklet containing a schedule of the lecture presentations for the technical program will be issued prior to the Convention.

Copies of technical papers presented during the Convention will also be available at cost.

Sport and Social Events

IPA-Gold Tournament: Monday, June 7, 1982: The 1982 IPA Gold Tournament will be held on Monday, June 7, 1982, at the PONDOK INDAH Gold Course. Golfers will be divided into AM and PM groups, with tee off times (Short Gun Start) at 7.00 a.m. and 12.00 noon. Maximum allowable handicap is 24 for men and 28 for ladies.

Pertamina Ice Breaker Cocktail Party: Monday, June 7, 1982: A cocktail party, hosted by the President Director of Pertamina and Mrs. Joedo Sumbono, for all registrants and wives will be held on Monday evening June 7, 1982 at the Indonesia Petroleum Club, between 8.00 p.m. and 10.00 p.m. Dress: Batik/Lounge suit.

Dinner/Dance: Wednesday, June 9, 1982: The IPA Convention Dinner/Dance will be held in the Jakarta Borobudur Intercontinental Hotel at 8.00 p.m. on Wednesday, June 9, 1982. Dress: Batik/Lounge suit.

Ladies Program: 2 days: June 8-9, 1982: A tour of Pasar Seni - Ancol to observe the manufacture of traditional Indonesian handicrafts, after which a luncheon will be held at the Horison Hotel. Prior to lunch there will be Batik and Silver craft demonstration and during lunch there will be a Batik Show from the well known designer, Iwan Tirta.

On the second day, a guided tour to Bogor will take place, visiting the Presidential Palace where lunch will be served along with a performance of cultural dances from West Java, Batavia, Aceh and Bali.

Registration: Registration will be at the Jakarta Borobudur Intercontinental Hotel from 10.00 a.m. to 4.00 p.m. on Sunday, June 6, 1982 and from 8.00 am to 4.00 p.m. on Monday, June 7, 1982.

Companies having a large number of participants are requested to pre-register and to pick up their Convention Folders on Friday, June 4, 1982 at the IPA Secretariat Office. All are urged to pre-register if at all possible. Pre-registration forms are obtainable from the IPA Secretariat Jl. Menteng Raya 3, Jakarta.

XI INTERNATIONAL UNION FOR QUATERNARY RESEARCH (INQUA)

The XI INQUA Congress will open on Sunday, August 1, 1982 and close on Monday, August 9, 1982. Activities of the Congress will include sessions of the INQUA General Assembly, meetings of the INQUA International Council, plenary scientific sessions, section scientific meetings, business and scientific meetings of INQUA Commissions and Subcommissions and relevant IGCP project groups, symposia, and local one-day excursions which will be organized on Sunday, August 8, 1982. Field scientific excursions will be organized before (July 23 to 31) and after the Congress (August 10 to 19).

The official languages of the Congress are English, French, German, Russian, and Spanish.

Scientific Program

The scientific program of the Congress will be designed to encourage the exchange of new information and ideas and to further international interdisciplinary contacts. Papers are suggested to be discussed in 33 sections united in six groups.

Group 1. Quaternary stratigraphy

1. Volume of the Quaternary and principles of its subdivision
2. Pliocene to Quaternary stratigraphy of offshore and deep-sea sediments.
3. Regional bio- and climatostratigraphy
4. Interregional, intercontinental, and global correlation
5. Methods of geochronology and geochronological correlation (isotopic geochronology, paleomagnetism, tephrochronology, dendrochronology, etc.).

Group II. Lithology and genesis of Quaternary deposits

6. Quaternary sedimentation in oceans
7. Accumulation processes and constitution of glacial, glaciofluvial, and glaciomarine deposits; glacial geomorphology
8. Lithogenesis of the cryogenic zone
9. Quaternary sedimentation in periglacial environment
10. Arid lithogenesis in the Quaternary
11. Alluvial sediments of various geomorphological environments and zones
12. Quaternary volcanism and continental and marine sedimentation
13. Problems of geochemistry of Quaternary formation

Group III. Quaternary fauna and flora

14. Paleontology of vertebrates and invertebrates and their stratigraphic significance
15. Paleobotany including palynology
16. Paleoecology

Group IV. Quaternary Paleogeography

17. Regularities and causes of changes of natural environments in the late Cenozoic
18. Neotectonics and geomorphology
19. Shorelines
20. Paleoglaciology
21. Paleopedology
22. Paleolimnology
23. Paleobiogeography
24. Periglacial phenomena and permafrost history
25. Quaternary history of major river valleys
26. Complex paleogeographic reconstruction
27. General regularities of the evolution of the biosphere in the Quaternary

Group V. Prehistoric Man and his material culture

28. Problems of the anthropogenesis
29. Archaeology of the Stone Age

Group VI. Natural resources of Quaternary deposits and their utilization; protection of the natural environment

30. Quaternary mineral deposits
31. Remote sensing
32. Problems of engineering geology
33. Protection of the natural environment.

All correspondence and requests for information concerning the Congress should be addressed to:

Dr. Ismail P. Kartashov
Secretary-General of the XI INQUA Congress
Geological Institute of the U.S.S.R. Academy of Sciences
Pyzhevsky 7
Moscow 109017, USSR.

**6TH INTERNATIONAL ASSOCIATION ON THE GENESIS OF ORE DEPOSITS
(IAGOD) QUADRENNIAL SYMPOSIUM**

The International Association on the Genesis of Ore Deposits announces the holding of its Sixth Quadrennial Symposium in Tbilisi in the Georgian SSR of the USSR on September 7 - 12, 1982.

The topics of the Symposium will be: (1) ore-bearing hydrothermal systems (sources of ore material, conditions of migration and deposition, and geo-chemical parameters of the ore-forming process); (2) the relationship between ore formation and granite magmatism; and (3) mathematical methods of analysis of geological information in the study of ore deposits.

Abstracts of papers for presentation at the Symposium should be written in either English or Russian and should be forwarded to: Dr. A.G. Tvalchrelidze, Scientific Secretary of the Organizing Committee at the Caucasian Institute of Mineral Resources, 85 Paliashvili St., 380030 Tbilisi, USSR. Abstracts should be postmarked prior to July 1, and should be sent by air.

The text of any abstract should not exceed two typewritten pages and should be enclosed within a frame 16.5 cm by 23 cm; lines of text should be 1.5 spaces apart. The title of the report should be in capital letters at the top of the first page. The name of the author(s), preceded by initials of his (their) given names should be centered under the title and separated from it by a double space. After another double space should be the complete name of the author(s) organization(s), and the city and country in which it (they) is (are) located. Each new paragraph in the abstract should be indented five spaces. Two copies of each abstract should be sent to Tbilisi.

The Symposium will be preceded and followed by field excursions. Those before the Symposium will be: A-1 that will visit ore deposits in the Greater Caucasus (6 days); A-II deposits in the Transcaucasus (5 days); and A-III geological museums in Moscow and Leningrad (5 days). All excursions will begin in Moscow and end in Tbilisi. The excursions after the Symposium will be C-1 that will visit ore deposits in the Ukraine (6 days); C-II deposits in Uzbekistan (5 days); and C-III deposits in Kirghizia (5 days). All C excursions will begin in Tbilisi on September 13, and all will end in Moscow.

The registration fee for the Symposium will be \$US45, and this sum should be sent to the Scientific Secretary in Tbilisi not later than May 15, 1982.

Registration in Tbilisi will be accomplished on Sunday, September 5, 1982 from 0800 to 2400 and on Monday, September 6 from 0800 to 1300.

Anyone attending the Symposium is urged to make their travel arrangements through INTOURIST or have their travel agency, if it has connections with INTOURIST, do so for them. Travel in the USSR is greatly facilitated for non-Russian speakers by so doing. Visas also may be obtained through INTOURIST. (Tourist firm cooperating with INTOURIST: Harpers Travel, 38 Jalan Ampang, P.O. Box 247, Kuala Lumpur). Single rooms, with bath and meals, will cost about 40 roubles (some US\$60) per day. These sums also include transport to and from all airports and certain sightseeing tours. Programs will be organized for accompanying members. Be sure that all money changed in the USSR is done according to rules clearly stated on your entering customs declaration.

Registration forms can be obtained by writing to: Dr. G.B. Leech, Associate Secretary General, IAGOD, Geological Survey of Canada, 601 Booth St., Ottawa, Ontario, K1A 0E8, Canada. Anyone requesting the registration form will be sent the Second Circular.

AUTUMN COURSE ON GEOMAGNETISM, THE IONOSPHERE AND MAGNETOSPHERE

21 September - 12 November 1982

The International Centre for Theoretical Physics, Trieste, Italy, will organize a Course on the theory of the Earth's magnetic field, the ionosphere and the magnetosphere, and radio propagation in the surroundings of the Earth, together with a Workshop on radio propagation in the topics, from 21 September to 12 November 1982. The programme is sponsored by the Italian Dipartimento per la Cooperazione allo Sviluppo, the International Union of Geodesy and Geophysics, the International Union for Scientific Radio and the Kuwait Foundation for the Advancement of Sciences.

Purpose and Nature

The Course is intended to develop the mathematical and physical basis of the phenomena of the geomagnetic field and the plasmas around the Earth, and participants should have completed several years of study and research after a first degree.

The Workshop is intended for those particularly interested in the special problems of radio propagation in the tropics, and familiarity with the material of the preceding courses will be assumed.

The Course and Workshop are open to scholars from all countries of the world that are members of the United Nations, IAEA or UNESCO. While it is the main purpose of the Centre to help scientists from developing countries, graduate students and postdoctoral scientists from other countries are welcome to attend the Course and Workshop. Preference will be given to candidates involved in teaching, research or service activity in a university or research institute.

The programme will be conducted in English and every participant must have a working knowledge of that language. Each participant will have his own desk at the Centre, which is situated a few kilometres from the city of Trieste, and arrangements will be made for discussions, study groups and tutorials outside the formal programme.

Tentative Programme

Weeks 1-6 (21 September - 29 October)

- Courses on - Geomagnetism (description analysis of the Earth's field, dynamo theory, electromagnetic induction)
- Ionosphere (nature, origin and control of the ionosphere, plasma physics, radio propagation)
 - Magnetosphere (nature, origin, electrodynamics, magnetic storms)
 - Interactions between the solar wind, terrestrial plasmas and neutral atmosphere
 - Radio propagation in the regions around the Earth.

Weeks 7 - 8 (2 - 12 November)

WORKSHOP on radio propagation in the tropics.

Throughout the Autumn Course there will be a Resident Director in charge.

Participation

Candidates can request for participation forms from:
International Centre for Theoretical Physics
P.O. Box 586
I-34100 Trieste
Italy.

As a rule, travel costs to and from Trieste, as well as subsistence expenses of the participants, are borne by the home institutions. However, funds are available which will permit the Centre to grant an allowance to a limited number of participants from developing countries who will be selected by the Organizing Committee. In exceptional cases this allowance will also cover travel expenses, but preference will be given to those candidates who can obtain their fare (or half fare) from their home country. Such financial support is available only to those attending the entire Course.

Deadlines for the receipt of request for participation forms:

Candidates requesting financial support from ICTP : 31 March 1982

Candidates not requesting financial support from ICTP: 30 June 1982.

The decision of the Organizing Committee will be communicated to all candidates as soon as possible after the selection.

Visas

Participants requiring a visa to enter Italy to attend the Course should apply to the nearest Italian Consular Office and present the letter they will receive from the Centre informing them of their acceptance.

SEMINAR ON BENEFICIATION OF TIN AND ASSOCIATED MINERALS BANGKOK, OCTOBER 1982

The Southeast Asia Tin Research and Development (SEATRAD) Centre in cooperation with the Department of Mineral Resources, Thailand, is organising a seminar entitled "Beneficiation of Tin and Associated Minerals". The Seminar will be held in October 1982 in Bangkok, Thailand.

The objective of the Seminar is to provide a forum for discussion on the beneficiation of tin and associated minerals, with the view towards promoting exchange of information and collection of data on the practices in different tin-producing countries of the region and the world. It is hoped that the Seminar will cover not only the existing technologies but also the new technologies as well as to identify areas where further research need to be done.

A two-day field trip to visit the mines, treatment plants and smelter at Phuket, Thailand, will be organised following the Seminar.

The Seminar is open to participants from all countries.

For further information, please contact:

The Director
SEATRAD Centre
14 Tiger Lane
Ipoh, Malaysia.

Telephone: 05-517124 & 517833

Cable : TINCENTRE, IPOH.

XIV INTERNATIONAL MINERAL PROCESSING CONGRESS

The XIV International Mineral Processing Congress will be held in Toronto, Canada, from 10 to 16 October, 1982. The theme of the congress will be 'Worldwide industrial application of mineral processing technology'. The programme will include technical sessions and numerous field trips to the different mining areas of Canada. The preliminary programme includes sessions on:

- (1) Flotation - plant practice, equipment, design, simulation, control and economics
- (2) Comminution - plant practice, equipment, design, simulation, control, wear, energy consideration and economics
- (3) Round table seminar on large grinding mills
- (4) Round table seminar on modern and future plant design
- (5) Mineral processes to recover precious metals
- (6) Mineral processes to recover energy minerals (coal, uranium)
- (7) Mineral processes to recover industrial minerals
- (8) Round table seminar on environment and ecology and how different countries cope with associated problems
- (9) Materials handling, with emphasis on agglomeration techniques, pre-concentration methods, solid-liquid separation
- (10) Open session to deal with topic emerging from general demand.

Prospective authors are invited to submit abstracts of fewer than 500 words before June, 1982, to Mr. Roland Le Houillier, Technical Program Chairman, 2700, Rue Einsten, Ste-Foy, Quebec, Canada, G1P 3W8 or Mr. L.L. Sirois, Ore Processing Lab CANMET, 552 Booth Street, Ottawa, Ontario, Canada K1A 0EA.

15TH PACIFIC SCIENCE CONGRESS

Dunedin, New Zealand, February 1-11, 1983

Theme: Conservation, development and utilization of the Resources of the Pacific

- General symposia:
- 1) Energy in Agriculture
 - 2) High latitude resources: their assessment and development
 - 3) Resources, science and the law of the sea
 - 4) Pacific Island potentials.

Sections

- A Ecology, conservation and environmental protection. To include: ecological inventories; population ecology; analysis of natural and man-induced changes; methodology; conservation and management.
- B Solid Earth Sciences. To include: plate movements; arc volcanism; subduction and ophiolites; crust and upper mantle structure; temperature gradients, metamorphism, and uplift rates; paleobiogeography and stratigraphic correlation; loess and tephra soils; seismic and volcanic risk; slope stability and other geological hazards; ore deposition; energy and mineral resources; and Third International Meeting of Pacific Neogene Stratigraphy.
- C Geography. To include: land use change and conservation of the environment; population policies; management of coastal environments; problems of higher latitude lands; urbanization.
- D Museums in Pacific Research. To include: role of museums in Pacific region; survey of anthropological collections; discussion session.

- E Marine sciences. To include: resources of Southern Ocean; aquaculture; marine productivity and trace element cycles; remote sensing; effects of river inputs; forecasting and monitoring; plankton studies; living marine resources; oceanic fronts; marine parks and reserves; diseases and parasites; species interactions; mangrove ecosystems.
- F Coral reefs.
- G Botany. To include: flora of New Zealand; plant adaptation to oceanic climates; history of botany; ecological inventories; exploitation of marine algae; plant diseases.
- H Forestry. To include: tropical and temperate natural forest management; plantation forestry; interaction between forest and food productions in tropical regions.
- I Fresh-water sciences. To include: lake and river ecosystems; macrophytes; organic detritus and bacteria; phytoplankton productivity; chemical studies; fisheries; zooplankton systematics and biology.
- J Entomology. To include: insect vectors of human and animal diseases; insect pests in agriculture and forestry; evolution and distribution of insects; pest management systems.
- K Social sciences and humanities. To include: historical analysis of Pacific communities; anthropological approaches to traditional societies; contemporary problems in changing societies.
- L Public health and medical sciences. To include: ecology of influenza viruses; natural focus diseases; metabolic diseases; human ecology; environmental carcinogens, mutagens and teratogens.
- M Nutrition. To include: food resources of the Pacific; nutrition of children; trace elements; metabolic diseases.
- N Science education and communication. To include: education and cultural diversity; telecommunications; communication networks; technology transfer; future trends; communication in agriculture.

Various national and international scientific societies and organizations will meet in Dunedin as part of the Congress. Pre- and post-Congress tours are being provided.

Papers are invited. Further information can be obtained from:

Secretary-General
15th Pacific Science Congress
P.O. Box 6063
Dunedin, New Zealand.

KALENDAR (CALENDAR)

A bracketed date, e.g. (Mar-Apr 1981) denotes entry in that issue carried additional information.

1982

- Apr 1 - 3 : First international symposium on Soil, Geology and Landforms - impact on land use planning in developing countries, Bangkok. Contact: Dr. Prinya Nutalaya, Symposium Secretary, LANDPLAN 1, Div. of Geotechnical & Transportation Eng., AIT., P.O. Box 2754, Bangkok, Thailand (Jul-Aug 1981).
- Apr 19 - 23 : First International Mine Water Congress, Budapest, Hungary. Languages: English, Hungarian, German, Russian, French, Spanish. (Hungarian Mining and

- Metallurgical Society, H-1061 Budapest, Anker Koz 1-3, Hungary).
- Apr 19 - 23 : 17th Annual International Symposium on Computer Applications in the Minerals Industry, Colorado. Details from Colorado School of Mines, Golden, Colorado 80401, USA.
- Apr 21 - 23 : Low temperature Pb, Zn, F, Ba, vein type deposits, from the European and North African Variscan provinces, (Symposium), Orleans, France. Languages: French and English. (M. Jebrak, BRGM, Departement Gites Mineraux, B.P. 6009, 45060 Orleans Cedex, France).
- Apr 25 - 28 : Fifth "Industrial Minerals" International Congress, Melia Castilla Hotel, Madrid, Spain. Contact: Peter Harben, Industrial Minerals, 708 3rd Avenue, New York, N.Y., 10017, USA. (Sep-Oct 1981).
- May 5 - 7 : International Congress on the Environment and Geocancerology, Brussels, Belgium. (E.G. Peeters, Services Generaux de l'Institut European d'Ecologie et de Cancerologie, rue des Fripiers 24 bis, B-1000 Brussels, Belgium).
- May 7 - 20 : Recent crustal movements and phenomena associated with earthquakes and volcanism. (Symposium no. 3 at IAG meeting), Tokyo, Japan. (P. Vyskocil, ICRCM, CS-250 66 Zdiby, 98, Czechoslovakia).
- May 11 - 12 : Geochronology and the Geological Record, (Symposium), London, U.K. (Dr. A.L. Harris, c/o Geological Society, Burlington House, Piccadilly, London W1V 0JU, U.K.).
- May 11 - 14 : Geothermal Energy, (International Conference), Florence, Italy. (Conference Organizer, Geothermal Energy, BHRA Fluid Engineering, Cranfield, Bedford MK43 OAJ, England, U.K.).
- May 12 - 14 : 9th International Geochemical Exploration Symposium, Saskatoon, Canada. (V.J. Sopuck, Organizing Committee, 9th IGES, Box 432, Sub. P.O. 6, Saskatoon, Saskatchewan, Canada S7N 0W0).
- May 13 - 14 : Sedimentary and Diagenetic Processes in Precambrian Metallogenesis, (Meetings), London, U.K. (Dr. H. Clemmy, Dept. of Earth Science, The University, Leeds, LS2 9JT, U.K.).
- May 14 - 16 : Granitic Pegmatites - MAC Short Course. Contact: Dr. P. Cerny, Department of Earth Sciences, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2. (Sep-Oct 1981).
- May 17 - 22 : Remote Sensing and Mineral Exploration, (COSPAR Meeting - Symposium no. 1, IGCP Project 143), Ottawa, Canada. (W.D. Carter, U.S. Geological Survey, 1925 Newton Square East, Reston, Virginia 22090, USA).
- May 24 - 28 : Gold '82 Symposium, University of Zimbabwe. Dr. R.P. Foster, Organising Secretary, GOLD '82, Institute of

- Mining Research, P.O. Box MP 167, Mount Pleasant, Salisbury, Zimbabwe.
- May 24 - 28 : Geological Information, (2nd International Conference), Golden, Colorado, USA. Co-sponsored by IUGS and AGID. (C.C. Ward, University of Illinois at Urbana-Champaign, 232 Natural History Bldg., Urbana, Illinois 61801, USA/A.P. Harvey, Dept. of Library Services, British Museum (Natural History), Cromwell Road, London SW7 5BD, U.K.).
- May 27 - 28 : Hydrothermal phenomena associated with granitic rocks of Europe. (Joint Meeting of the Mineralogical Society, London, and Societe Francaise de Mineralogie et de Cristallographie), London, U.K. (A.H. Rankin, Dept. of Geology, Imperial College, London SW7 2BP, U.K., A. Weisbrod, ENSG, 94 Avenue de Lattre de Tassigny, 5400 Nancy, France).
- May 31 - Jun 4 : World Mining (11th International Congress), Belgrade, Yugoslavia, Pre- and post-congress tours. (Organizing Committee, 11th World Mining Congress, Sava Centar, 11070 Belgrade, Yugoslavia).
- Jun 1 - 3 : Course on "The Origin and Evolution of Sedimentary Basins", June 1-3, 1982, Royal Lancaster Hotel, Lancaster Terrace, London W2. Contact: J.F. Dewey, University College, The Castle, Durham DH1 3RW, England, U.K. (Jan-Feb 1982).
- Jun 1 - 5 : 2nd International Tungsten Symposium, San Francisco. Details from M. Maby, Peat Marwick Mitchell & Co., 7 Ludgate Broadway, London EC4 V6DX, U.K. (Nov-Dec 1981).
- Jun 7 - 11 : Tunnelling '82, (International Symposium and Exhibition), Brighton, U.K. Post conference tours, (Secretary, IMM, 44 Portland Place, London W1N 4BR, U.K.). (Nov-Dec 1981).
- Jun 8 - 9 : Eleventh Annual Convention Indonesian Petroleum Association, June 8-9, 1982, Jakarta, Borobudur Intercontinental Hotel. Contact: IPA Secretariat Office, Jalan Menteng Raya 3, Jakarta, Indonesia. (Jan-Feb 1982).
- Jun 7 - Jul 2 : Geochronology, Cosmochronology and Isotope Geology (Conference), Nikko National Park, Japan. (K. Shibata, Geological Survey of Japan, Higashi 1-1-3, Yatabe, Ibaraki 305, Japan).
- Jul 5 - 27 : IBRAM - Third Tin Training Course, July 5-27, 1982, University of Brasilia, Brasilia, Brazil. Contact: Mr. W.S. Fontanelli, IBRAM, Av. Cristovao Colombo, 550 - Sala 501, Belo Horizonte, Brazil. (Nov-Dec 1981).
- Jul 4 - 12 : Lateritization Processes (2nd International Seminar, IGCP Project 129), Sao Paulo, Brazil. Originally scheduled for September 3-13, 1981: tentatively postponed to July 1982. (A. Carvalho, 2nd International Seminar on Lateritization).
- Aug 1 - 9 : XIth INQUA Congress, Moscow, U.S.S.R. Fiftieth anniversary of founding of INQUA in Leningrad. Pre-

and Post-Congress excursions. (I.P. Kartashov, Secretary General, XI INQUA Congress, Geological Institute, USSR, Academy of Sciences, Pyzhevsky 7, Moscow 109017, USSR). (Jan-Feb 1982).

- Aug 15 - 22 : Generation of major basalt types (International Meeting, co-sponsored by IAGC). Reykjavik, Iceland, (G.E. Sigvaldason, Nordic Volcanological Institute, 101 Reykjavik, Iceland).
- Aug 20 - 23 : IV International Symposium on the Ordovician System, Oslo, Norway. One pre-meeting excursion in Norway, and three post-meeting excursions in Sweden. (D.L. Bruton, Paleontologisk Museum, Sars gate 1, Oslo, 5, Norway).
- Aug 20 - 21 : Petroleum Resources and their Assessment in the Circum-Pacific, Honolulu, Hawaii, USA. Symposium and Workshop co-sponsored by IUGS, East-West Centre and CPEMRC. (C. Masters, U.S. Geological Survey, Reston, Va 22092, USA. Tel. 703-860-6681).
- Aug 22 - 28 : Circum Pacific Energy and Mineral Resources Conference, Honolulu, Hawaii, USA. M. T. Halbouty, 5100 Westheimer Road, Houston, Texas 77056, USA. (Sept-Oct 1981 & Nov-Dec 1981).
- Aug 22 - 28 : International Association of Sedimentologists Congress, Hamilton, Canada. Languages: English and French. (G.V. Middleton, IAS Congress 1982, Dept. of Geology, McMaster University, Hamilton, Ontario, Canada L8S 4M1).
- Aug 30 - Sep 1 : 3rd European Conodont Symposium (ECOS III), Lund, Sweden. Post-symposium field trip. (ECOS III, c/o Paleontologiska avdelningen, Solvegatan 13, S-223 62 Lund, Sweden).
- Aug 31 - Sep 4 : Mesozoic and Cenozoic Geology of China (Symposium), Beidaihe, Hebei Province, China. Celebrating the 60th anniversary of the Geological Society of China. Languages: Chinese and English. Excursions. (Wang Zejiu, Secretary General, The Geological Society of China, Fuchengmenwai, Baiwanzhuand, Beijing, China).
- Sep 1 - 8 : International Symposium on Applied Geophysics in Tropical Regions, Sept. 1-8, 1982, Belem Brazil. Contact: Jose Seixas Lourenco, NCGG-UFPa, Caixa Postal 1611, Belem-Para, 66000 Brazil. (Nov-Dec 1981).
- Sep : International Symposium on Archean and Early Proterozoic Geologic Evolution and Metallogenesis (ISAP), Salvador, Brazil. Symposium will precede the 32nd Brazilian Geological Congress. Presymposium field trips. (Augusto J. Pedreira, ISAP Coordinator, CPRM - Rua Barros Falcao, 21, 40,000 Salvador, Bahia, Brazil).
- Sep : Fluids in Metamorphism (Geological Society of London and Metamorphic Studies Group Meeting), Glasgow, Scotland, U.K. Excursions. (M. Brown, Department of Geology and Physical Sciences, Oxford Polytechnic, Headington, Oxford OX3 0BP, U.K.).

- Sep : Kimberlite, (3rd International Conference), Clermont-Ferrand, France. (F. Boudier, Universite de Nantes, Laboratoire de Tectonophysique, 2 rue de la Houssiniere, 44072 Nantes, France).
- Sep 2 - 10 : Volcanic Processes in Marginal Basins, (Volcanic Studies Group Meeting), Keele, England. Field meeting to Ordovician volcanic terrains of SW Wales and Snowdonia. (R.A. Roach, Department of Geology, The University, Keele, Staffordshire ST5 5B6, England).
- Sep 3 - 11 : Water Resources (4th World Congress), Buenos Aires, Argentina. Sponsored by the International Water Resources Association. (G.E. Stout, Water Resources Center, University of Illinois, 2535 HydroSystems Laboratory, 208 N. Romine, Urbana, Illinois 61801, USA).
- Sep 5 - 11 : International Association of Hydrogeologists (6th Congress), Praha, Czechoslovakia. Excursions. Languages: English, French, Russian, Czech, Slovak. (Stavebni geologie n.p. Praha, Gorkeho namesti 7, 11309 Praha 1, Czechoslovakia).
- Sep 7 - 12 : International Association on the Genesis of Ore Deposits, (VI IAGOD Symposium), Tbilisi, USSR. Languages: Russian and English. (A.G. Tvalchrelidze, Caucasian Institute of Mineral Resources, 85 Paliashvili St., 380030 Tbilisi, USSR). (Jan-Feb 1982).
- Sep 9 - 10 : Volcanic Processes in Marginal Basin, (Meeting), Staffordshire, U.K. (Dr. B.P. Kokelaar, Ulster Polytechnic, School of Environmental Sciences, Shore Road, Newtonabbey, Co. Antrim, BT370QB, N. Ireland).
- Sep 19 - 25 : International Mineralogical Association (13th General Meeting and field excursions), Varna, Bulgaria. (Secretary General, 13th IMA Meeting, University of Sofia, Chair of Mineralogy, Boulv. Russki 15, Sofia, 1000 Bulgaria).
- Sep 21 - Nov 12 : Autumn Course on Geomagnetism, the Ionosphere and Magnetosphere, 21 Sept - 12 Nov 1982, Trieste, Italy. Contact: International Centre for Theoretical Physics, P.O. Box 586, I-34100 Trieste, Italy (Jan-Feb 1982).
- Oct : SEATRAD Centre - Seminar on Beneficiation of Tin and associated minerals, October 1982, Bangkok. Contact: The Director, SEATRAD Centre, 14 Tiger Lane, Ipoh, Malaysia. (Jan-Feb 1982).
- Oct 4 - Nov 5 : Remote sensing: Geologic Interpretation, (Advanced training course for foreign nations), Flagstaff, Arizona, USA. (Training Section, Office of International Geology, U.S. Geological Survey, 917 National Center, Reston, Virginia 22092, USA).
- Oct 4 - 8 : Applied Ore Microscopy, (12th Annual Short Course), Rolla, Missouri, USA. To precede International Conference on Mississippi Valley-type Lead-Zinc Deposits in Rolla. (R.D. Hagni, Dept. of Geology and Geophysics, University of Missouri, Rolla, Missouri 65401, USA).

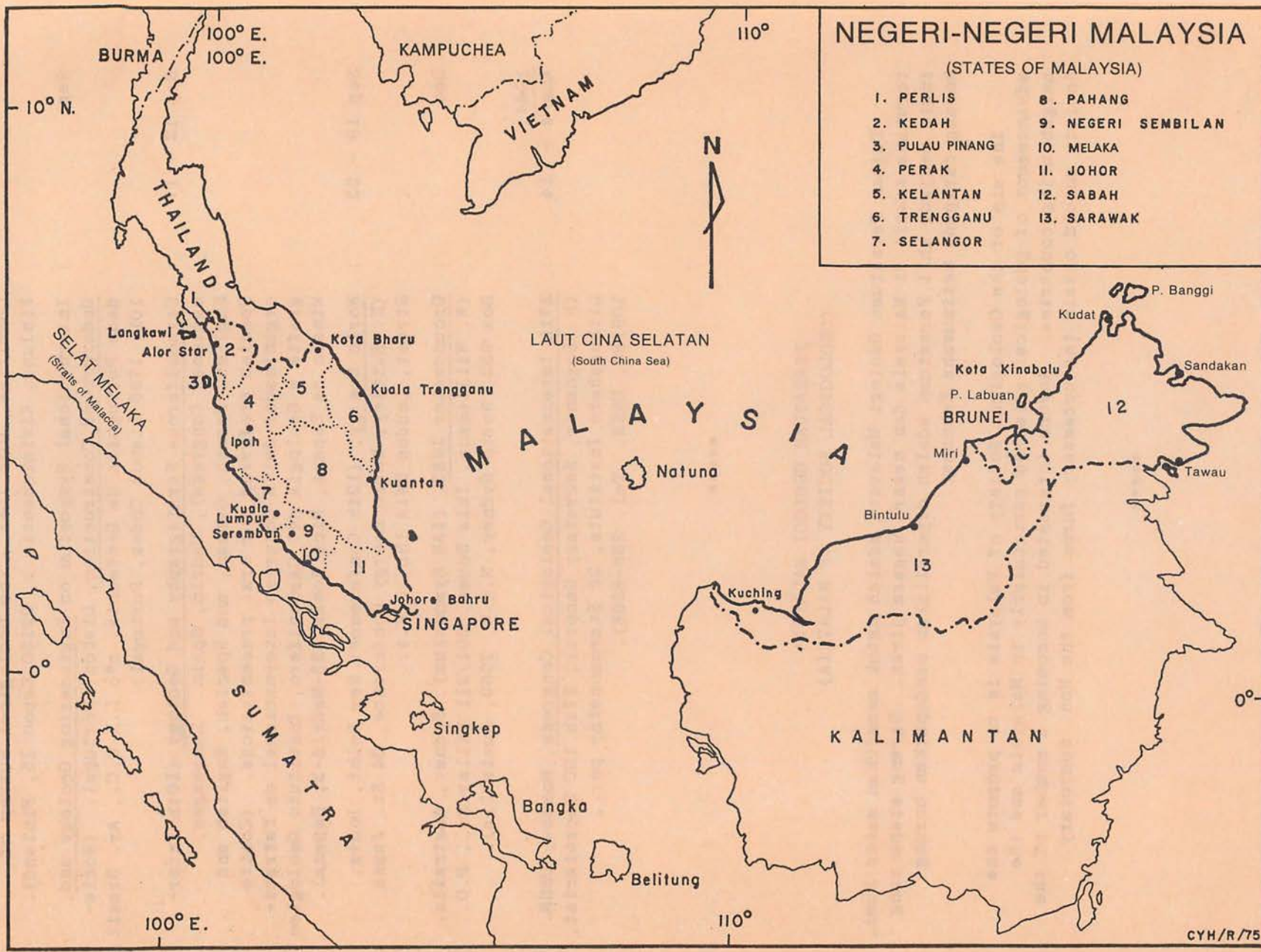
- Oct 17 - 23 : XIV International Mineral Processing Congress, Toronto, Canada. L.J. Vincze, Publicity Chairman
XIV IMPC, c/o CE Lummus - Minerals Division, 25
Consumers Road, Willowdale, Ontario M2V 4H4, Canada
(Jan-Feb 1982).
- Oct 27 - 29 : New Paths to Mineral Exploration, (3rd International
Symposium on Mineral Resources), Hannover, F.R.G.
(R. Weber, Federal Institute for Geosciences and Natural
Resources, Postfach 51 01 53, D-3000 Hannover 51,
F.R.G.).
- Nov 17 - 19 : Ophiolites and Oceanic Lithosphere (Meeting), London,
England. (S. Lippard, Department of Earth Sciences,
Open University, Milton Keynes MK7 6AA, U.K.).
- Nov 24 : Metamorphic Studies: Research in Progress (Joint
Geological Society and Mineralogical Society Meta-
morphic Studies Group Meeting), London, U.K. (M.
Brown, Metamorphic Studies Group, Department of Geo-
logy and Physical Sciences, Oxford Polytechnic,
Readington, Oxford OX3 0BP, U.K.).
- Nov : 1st International Short Course on Small Scale Mining,
(Sponsored by AGID and includes lectures, lab work,
seminars and field tours), Bangalore, India. (Prof.
C. Naganna, Director, School of Earth Sciences,
Bangalore University, Jnana Bharathi, Bangalore
560 056, India).
- Dec 1 - 6 : 4th International Congress of Engineering Geology,
New Delhi. Contact: G. Pant, Geological Survey of
India, 47-48 Pragati Bhawan. Nehru Place, New Delhi
110019, India.
- 1983
- Feb 1 - 11 : XV Pacific Science Congress, Dunedin, New Zealand.
(Secretary-General, 15th Pacific Science Congress,
P.O. Box 6063, Dunedin, New Zealand) (Jan-Feb 1982).
- Feb 1 - 11 : Pacific Neogene Stratigraphy, (3rd International
Meeting), Dunedin, New Zealand. Sponsored by the
Royal Society of New Zealand and IUGS. (A.R. Edwards,
Secretary, N.Z. Geological Survey, P.O. Box 30 -
368, Lower Hutt, N.Z.).
- Mar 6 - 10 : 3rd International Symposium on Hydrometallurgy,
Atlanta, Georgia, USA. K. Osseo-Asare, Dept. of
Materials, Science and Engineering, 202A Steidle
Building, the Pennsylvania State University, Univ-
ersity Park, Pennsylvania 16802, USA.
- Aug 7 - 12 : Fossil Corals (Symposium), Washington, D.C. (W.A.
Oliver, Jr., U.S. Geological Survey, E-305 Natural
History Building, Smithsonian Institution, Washing-
ton, D.C. 20560, USA).
- Aug 27 : Krakatau Eruption (Centennial Symposium), Jakarta,
Indonesia. (D. Sastrapradja, Indonesian Institute
of Sciences, Box 250, Jakarta, Indonesia).
- Sep : 10th International Geochemical Exploration Symposium,
Helsinki, Finland. Sponsored by the Association of
Exploration Geochemistry. (L.K. Kauranne, Organizing

- Committee, 10th IGES., The Geological Survey of Finland, Kivimiehentie 1, 02150 Espoo 15, Finland).
- Sep : International Symposium on Engineering Geology and Underground Construction, Lisbon, Portugal. (Sociedade Portuguesa de Geotecnia, c/o L.N.E.C., Av. Brasil, 101, 1799 Lisboa Codex, Portugal).
- Sep 12 - 17 : Carboniferous Stratigraphy and Geology (10th International Congress), Madrid, Spain. Languages: English, French, German, and Spanish; English and Spanish preferred for oral presentations. (Comite organizador del X Congreso Internacional de Estratigrafia y Geologia del Carbonifero, Instituto Geologico Minero de Espana, Rios Rosas, 23-Madrid-3, Espana).
- Sep 19 - 23 : World Energy, (12th Conference), New Delhi, India. (E. Ruttley, World Energy Conference, 34 St. James Street, London SW1A 1HD, U.K.).
- Dec : Groundwater 1983, (IAH Symposium), Sydney, Australia. (W. Williamson, Ibis House, 201/211 Miller St., P.O. Box 952, North Sydney, N.S.W. 2060, Australia).
- 1984
- Aug 4 - 14 : 27th International Geological Congress, Moscow, USSR. (N. Bogdanov, Secretary General, 27th IGC Secretariat, Lithosphere Institute, 22 Staromonetny per., 109180, USSR. Tel. 238-8588).

PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)

Tujuan Persatuan Geologi Malaysia adalah untuk memajukan sains bumi, terutama sekali di Malaysia dan negara-negara jiran. Barang siapa yang ingin menjadi ahli Persatuan adalah dipersilakan mendapatkan borang-borang daripada Setiausaha Kehormat.

The aim of the Geological Society of Malaysia is to promote the advancement of geological sciences particularly in Malaysia and the neighbouring countries. Anyone interested in becoming a member of the Society should obtain the necessary forms from the Hon. Secretary.



- ### NEGERI-NEGERI MALAYSIA
- (STATES OF MALAYSIA)
- | | |
|-----------------|--------------------|
| 1. PERLIS | 8. PAHANG |
| 2. KEDAH | 9. NEGERI SEMBILAN |
| 3. PULAU PINANG | 10. MELAKA |
| 4. PERAK | 11. JOHOR |
| 5. KELANTAN | 12. SABAH |
| 6. TRENGGANU | 13. SARAWAK |
| 7. SELANGOR | |