

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

Jil. 8, No. 2 (Vol. 8, No. 2).

Mar-Apr. 1982

KANDUNGAN (CONTENTS)

CATATAN GEOLOGI (GEOLOGICAL NOTES)

J.K. Raj: A reappraisal of the Bok Bak fault zone	35
B.K. Tan: A chromium-nickel laterite in Bukit Punggor, Malacca	42
K.F.G. Hosking: The wonderful properties ascribed to geodes	47

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

A. Bowden: Resistivity technique as currently applied to groundwater exploration in Australia and the Klang Valley	48
Malam Kuater (Quaternary Evening) - Report & Abstracts of papers	
T. Suntharalingam: Quaternary geology study of Peninsular Malaysia by the Geological Survey Malaysia	51
S. Paramanathan & S. Zauyah: Soil scientist view of the Quaternary of Peninsular Malaysia	52
J.K. Raj: River terraces of the Tambunan Plain, Sabah	55
GSM Geoscience Education Workshop 1982 - Report	55
Abstracts of papers	59
Co-operation between local Universities and other sectors	63
Role of local Geoscience Societies and Institutes	67
Masalah peristilahan Geologi dan pendidikan Geosains	69
GSM Presidential Address	72
GSM Annual General Meeting 1982	72
GSM Annual Dinner 1982	74

BERITA PERSATUAN (NEWS OF THE SOCIETY)

GSM Council 1982/83	75
Message from the President	75
GSM events for 1982-84 - organization briefs	79
GSM Editorial Advisory Board 1982/83	80
ROCKCON - Training Course on Rock as Construction Material	80
GSM Economic Geology Seminar 1982 - Call for Papers	83
GSM Representatives to various bodies	84
Letters to the Editor	84
Young Geoscientist Publications Award 1980 citation	86
Professional Membership Vetting Committee	86
Nominations Committee	86
News highlights of the Society, Members	87
Editor's Note	88
Keshlian (membership)	89

BERITA-BERITA LAIN (OTHER NEWS)

Employment opportunities for Geologists	90
Kalendar (Calendar)	91



DIKELUARKAN DWIBULANAN
ISSUED BIMONTHLY

PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)

Majlis (Council) 1982/83

Pegawai-pegawai (Officers)

- Presiden
(President) : Khoo Teng Tiong, Jabatan Geologi,
Universiti Malaya, Kuala Lumpur.
- Naib-Presiden
(Vice-President) : Leong Khee Meng, Carigali-BP,
P.O. Box 757, Kuala Lumpur.
- Setiausaha Kehormat
(Hon. Secretary) : Tan Boon Kong, Jabatan Geologi,
Universiti Kebangsaan Malaysia, Bangi.
- Penolong Setiausaha Kehormat : Mohd. Ali Hasan, Jabatan Geologi,
(Hon. Asst. Secretary) 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.
- Presiden Yang Dahulu
(Immediate Past President) : Mohd. Ayob, Petronas,
P.O. Box 2444, Kuala Lumpur.
- Ahli-Ahli Majlis, 2-tahun
(Councillors, 2-year) : Abdul Aziz Hussin, Jabatan Kejuruteraan
Petroleum, Universiti Teknologi Malaysia, K.L.
Khoo Kay Khean, Pejabat Penyiasatan Kajibumi,
Kuala Kangsar, Perak.
Michael P.S. Leong, Petronas,
P.O. Box 2444, Kuala Lumpur.
Yeoh Gaik Chooi, Esso Production,
P.O. Box 857, Kuala Lumpur.
- Ahli-Ahli Majlis, 1-tahun
(Councillors, 1-year) : Abdul Malek Abdul Rani, Esso Production,
P.O. Box 857, Kuala Lumpur.
Ahmad Said, Petronas,
P.O. Box 2444, Kuala Lumpur.
Choo Mun Keong, Malaysian Mining
Corporation, P.O. Box 936, Kuala Lumpur.
Gan Ah Sai, Jabatan Penyiasatan Kajibumi,
Bang. Ukor, Jln. Gurney, Kuala Lumpur.
- Juruodit Kehormat
(Hon. Auditor) : Peter Chew

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

First Published 21 May 1982.

Printed by Art Printing Works Sdn. Bhd., 29 Jalan Riong, Kuala Lumpur.

CATATAN GEOLOGI

(GEOLOGICAL NOTES)

A REAPPRAISAL OF THE BOK BAK FAULT ZONE

J.K. RAJ, Jabatan Geologi, Universiti Malaya, Kuala Lumpur.

Burton (1965) proposed that the left-lateral Bok Bak fault zone (initially recognized in the Baling area) extended over a large distance through Peninsular Malaysia, from south Thailand and Perlis in the north to east Johore in the south. Proctor and Jones (1967), however, criticized the southeastward extension on the grounds that there was no field evidence south of the Baling area to support the contention. Furthermore, in recent years, the lithological displacements of east Johore have been attributed to the 290° trending, left-lateral Mersing fault zone (Stauffer, 1968; Suntharalingam, 1969; Chong *et al.*, 1970). The approximately 330° trending Bok Bak fault zone, as presently mapped, is thus limited to east Kedah and northwest Perak only (Fig. 1).

Lineaments, mapped from LANDSAT imagery (Band 7; scanned 5-1-1978 and 25-11-1979), in the granitic bedrock areas of east Kedah and central Perak (Fig. 2), however, suggest that the Bok Bak fault zone can be extended further southeastwards into central Perak and perhaps southwest Kelantan. This suggestion of the southeastward extension arises from the predominance of lineaments striking 320° to 340° and 50° to 70° (Fig. 3). The relatively fewer but longer 320° to 340° trending lineaments are here interpreted as representing the strikes of first order, left-lateral strike-slip faults, while the relatively more but shorter 50° to 70° lineaments are interpreted as representing the strikes of second order, right-lateral strike-slip faults after McKinstry (1953), Tjia (1972a). The 320° to 340° , and 50° to 70° , trending lineaments can also be interpreted as representing the strikes of first-order, left-lateral, and second-order, right-lateral, strike-slip faults, respectively, after the wrench-fault tectonic models of Moody and Hill (1956). These two sets of lineaments are thus interpreted as being first and second order, strike-slip faults that are associated with a major left-lateral fault zone, here considered to be the proposed extended Bok Bak fault zone.

If the interpretation of the lineaments is correct, it should then be possible to recognize large left-lateral lithological displacement in central Perak. This is seen in Fig. 1, where the Lower Palaeozoic strata of the Grik and northern Sungei Siput areas appear to be left-laterally offset. In southwest Kelantan, furthermore, there appears to be a left-lateral offset of the Main Range Granite (Fig. 1). If the arc of a circle of diameter 377 km (with its' centre at longitude $103^{\circ}42'E$ and latitude $7^{\circ}24'N$ - determined by trial and error) is drawn on a 1:500,000 scale geological map (rectified skew orthomorphic projection) of the Peninsula, it will be found that this arc passes through a part of the Bok Bak fault zone (as presently mapped), and through the apparent left-lateral displacements, of the Lower Palaeozoic strata of central Perak, and of the Main Range Granite in southwest Kelantan (Fig. 1).

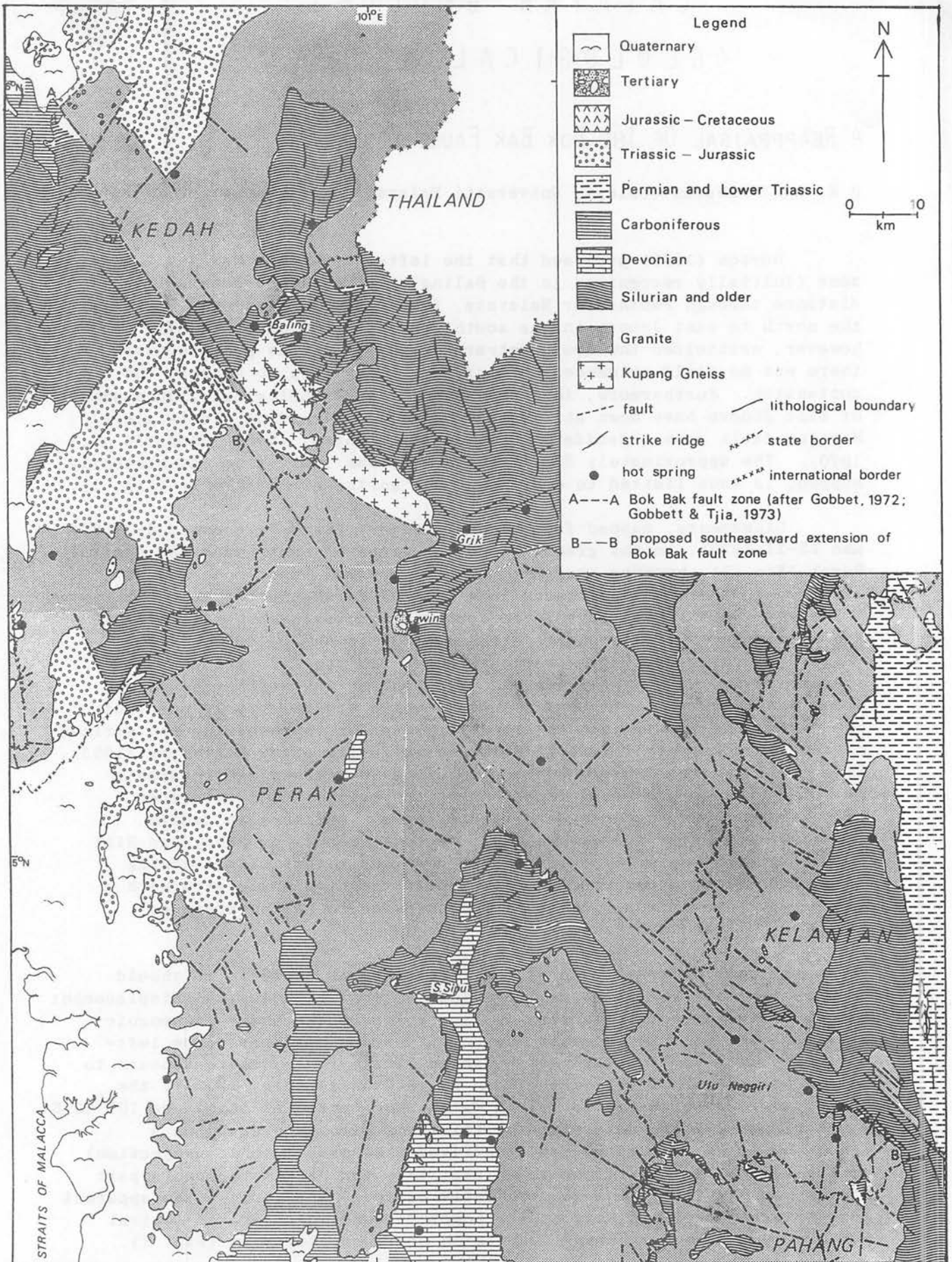


Fig. 1. Geological sketch map of east Kedah, central Perak, southwest Kelantan and northwest Pahang (after Gobbett, 1972; Chung, 1973; 1975).

Interestingly enough, the arc also passes close to the sites of a number of present-day hot springs in southwest Kelantan. This arcuate line, connecting a part of the Bok Bak fault zone with the apparent left-lateral lithological displacements of central Perak and southwest Kelantan, is here proposed to be the trace of the southeastward extension of the Bok Bak fault zone. Further evidence for this southeastward extension is seen in the reports of shears trending 340° in Lower Palaeozoic strata, south of Lawin (Jones, 1970), NNW - SSE trending shear zones in the Bintang Hills Granite, immediately west of Lawin (Jones, 1970) and highly sheared Main Range Granite in Ulu Nenggiri, southwest Kelantan (Wilbourn, 1932). Another possible evidence for the southeastward extension of the Bok Bak fault zone is the presence of the Tertiary sedimentary deposits at Lawin, for Stauffer (1973) has pointed out that most of the known Tertiary basins of Peninsular Malaysia are located along or near major faults or structural lineaments.

Various present-day geological features can be accounted for when matching of lithologies across the proposed extended Bok Bak fault zone is attempted, after correcting for a total left-lateral displacement of 20 km; a distance needed to restore continuity of the Main Range Granite in southwest Kelantan and continuity of the Lower Palaeozoic strata of central Perak (Fig. 4). It should be noted that correction of the 20 km displacement in Fig. 4 has been made along a single line i.e. the trace of the proposed extended Bok Bak fault zone. It is, however, here considered that this 20 km displacement represents the cumulative sum of smaller displacements occurring along a number of approximately 320° to 340° trending, *en echelon*, left-lateral strike-slip faults (within a fault zone at least 15 km wide).

After correction of the 20 km left-lateral displacement along the proposed extended Bok Bak fault zone (Fig. 4), however, it can be seen that there is still little matching of lithologies in east Kedah and northwest Perak. This mismatch of lithologies may be explained by the suggestion of Burton (1965) that the block northeast of the Bok Bak fault has been uplifted relative to the opposite (southwest) block within the Baling area (Fig. 5). It is here suggested that this uplift, not only pre-dated the left-lateral displacements along the extended Bok Bak fault zone, but also occurred along a number of approximately NW - SE trending block faults. This block faulting thus accounts for the uplift of the Kupang Gneiss, and the shapes of the granitic outcrops (northwest of the Kupang Gneiss), prior to left-lateral displacements as shown in Fig. 4. Possible evidence of the age of this block faulting is seen in the K-Ar date of 150 ± 8 Ma of biotite in the Kupang Gneiss; a date interpreted by Hutchison (1973) as resulting from tectonic activity rather than indicating the age of metamorphism. This possible date of block faulting thus suggests that left-lateral displacements along the proposed extended Bok Bak fault zone only occurred in post Upper Jurassic times. The postulation of block faulting in east Kedah and northwest Perak, prior to strike-slip faulting, furthermore indicates that current notions of the approximately 55 km left-lateral displacement along the Bok Bak fault zone (Burton, 1965; Gobbett and Tjia, 1973; Tjia, 1972b, 1973, 1978; Holcombe, 1977) need to be reconsidered in the light of the present suggestion of only a total 20 km left-lateral displacement.

No attempt has been made in this exercise to continue the Bok Bak fault zone further southeastwards into south Kelantan and north Pahang as stratigraphic information in these areas is lacking. The northwestward

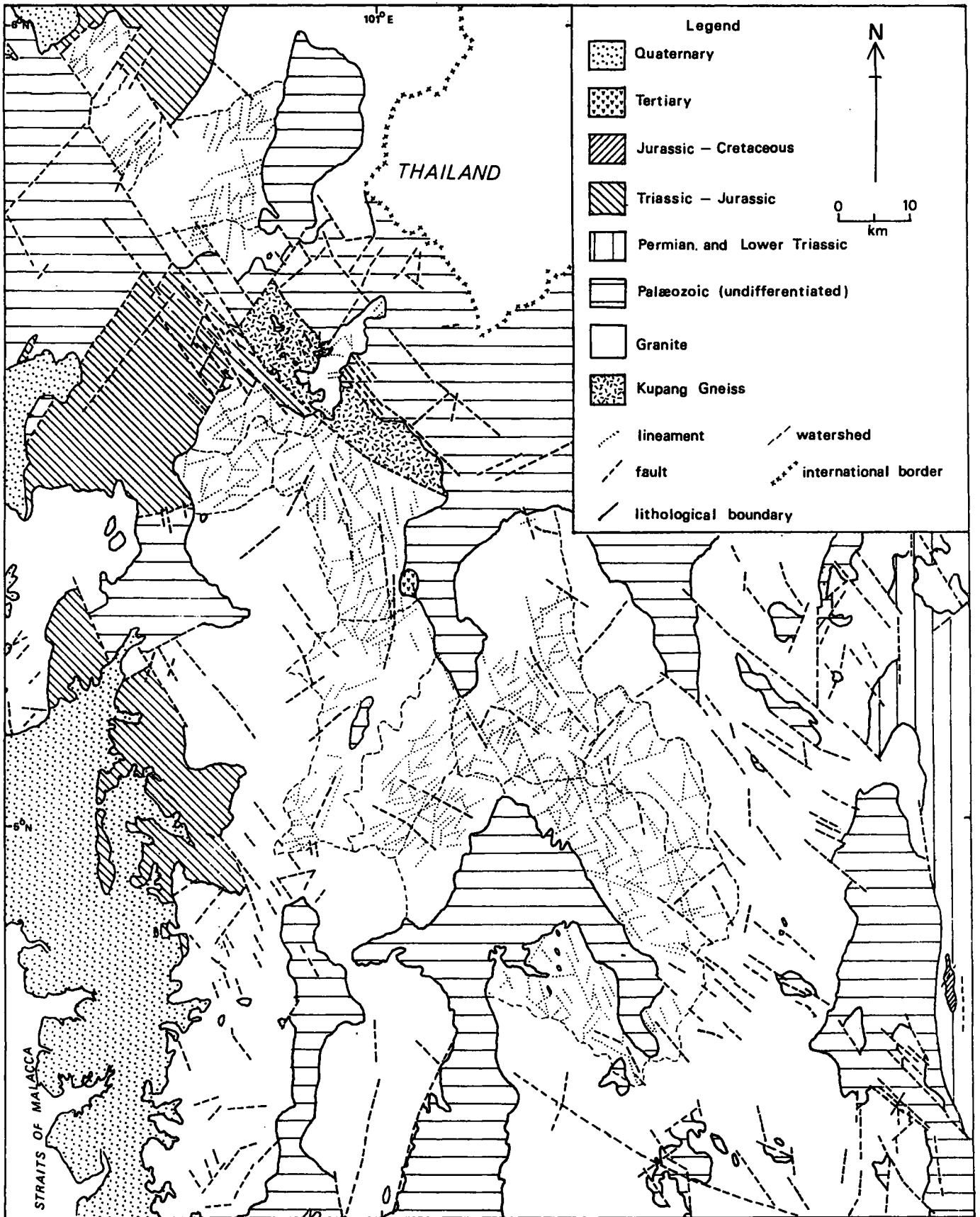


Fig. 2. Lineaments in granite in east Kedah and central Perak (Geology after Gobbett, 1972; Chung, 1973, 1975).

extension of the Bok Bak fault zone into central Kedah, Perlis and south Thailand, as proposed by Burton (1965), is similarly not attempted as this still awaits field evidence (Tjia, 1972b).

Acknowledgements

The writer wishes to thank Prof. Stauffer and Prof. Tjia for their comments on drafts of this short communication.

References

- Burton, C.K., (1968). Wrench faulting in Malaya. *J. Geol.*, V. 73, p. 781-798.
- Burton, C.K., (1970). The geology and mineral resources of the Baling area, Kedah and Perak. Mem. 12, *Geol. Survey Dept. W. Malaysia*, 150p.
- Chong, F.S., Cook, R.H., Evans, G.M. and Suntharalingam, T., (1970). Geology and mineral resources of the Melaka - Mersing area. *Geol. Surv. Malaysia, Ann. Rept.*, 1968, p. 89-94.
- Chung, S.K., (1973). Geological map of West Malaysia, 7th edition, 1:500,000 scale, *Geol. Survey Malaysia*.
- Chung, S.K., (1975). Hydrogeological map of Peninsular Malaysia, 1st edition, 1:500,000 scale, *Geol. Survey Malaysia*.
- Gobbett, D.J., (1972). Geological map of the Malay Peninsula, 1:1,000,000 scale, *Geol. Soc. Malaysia*.
- Gobbett, D.J. and Tjia, H.D., (1973). Tectonic History. In: D.J. Gobbett and C.S. Hutchison (Eds) "*Geology of the Malay Peninsula. West Malaysia and Singapore*", John-Wiley-Interscience, New York, p. 305-334.
- Holcombe, C.J., (1977). How rigid are the lithosphere plates? Fault and shear rotations in southeast Asia. *J. Geol. Soc. London*, V. 143, p. 325-342.
- Hutchison, C.S., (1973). Metamorphism. In: D.J. Gobbett and C.S. Hutchison (Eds) "*Geology of the Malay Peninsula. West Malaysia and Singapore*" John Wiley-Interscience, New York, p. 253-303.
- Jones, C.R., (1970). The geology and mineral resources of the Grik area, Upper Perak. Mem. 11, *Geol. Survey Dept. W. Malaysia*, 144p.
- Mckinstry, M.E., (1953). Shears of the second order. *Am. J. Sc.*, V. 251, p. 404-414.
- Moody, J.D. and Hill, M.J., (1956). Wrench fault tectonics, *Bull. Geol. Soc. Am.*, V. 67, p. 1207-1246.
- Proctor, E.D. and Jones, C.R., (1967). Wrench faulting in Malaya. A discussion. *J. Geol.*, V. 75, p. 127-128.
- Stauffer, P.H., (1968). The Kuala Lumpur fault zone - a proposed major strike-slip fault across Malaya. *Geol. Soc. Malaysia, Newsletter* No. 15, p.2-4.

- Stauffer, P.H., (1973). Cenozoic. In: D.J. Gobbett and C.S. Hutchison (Eds). "Geology of the Malay Peninsula. West Malaysia and Singapore", John Wiley-Interscience, New York, p. 143-176.
- Suntharalingam, T., (1969). Faulting in Malaya. *Geol. Soc. Malaya, Abstracts Ann. Discussion Meeting* (mimeographed).
- Tjia, H.D., (1972a). Fault movement, reoriented stress field and subsidiary structures. *Pacific Geology*, V. 5, p. 49-70.
- Tjia, J.D., (1972b). Strike-slip faults in West Malaysia. *Proc. 24th session, Int. Geol. Congress, sect. 3, Tectonics, Canada, Aug. 1972*, p. 255-262.
- Tjia, H.D., (1973). Displacement patterns of strike-slip faults in Malaysia-Indonesia-Phillipines. *Geol. en Mijnbouw*, V. 52, p. 21-30.
- Tjia, H.D., (1978). Structural geology of Peninsular Malaysia, *Proc. 3rd Regional Conf. on Geology and Mineral Resources of S.E. Asia Bangkok*, p. 673-682.
- Wilbourn, E.S., (1932). *Rept. Geol. Surv. Dept. F.M.S. (for 1931)*.

Manuscript received 30 Sept 1981

Revised Manuscript received 13 Apr 1982

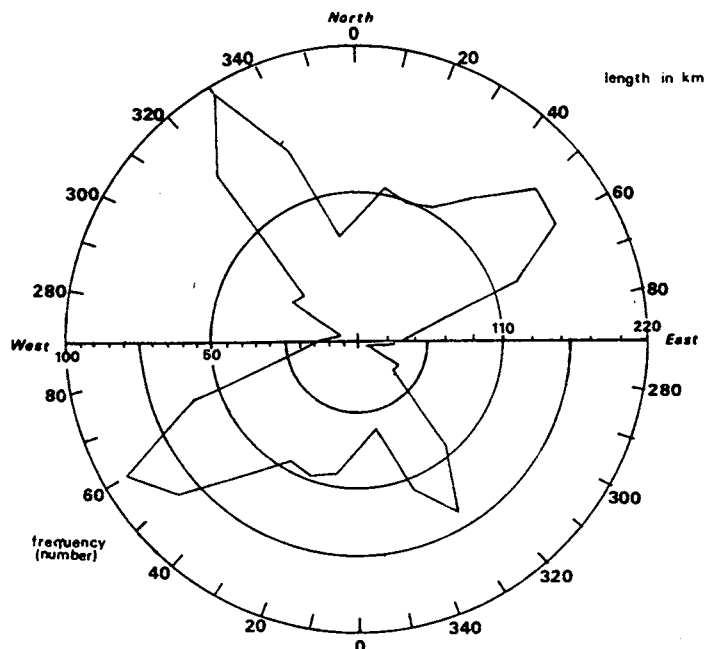


Fig. 3. Strike frequency diagram of lineaments in granite in east Kedah and central Perak (total number of lineaments - 750).

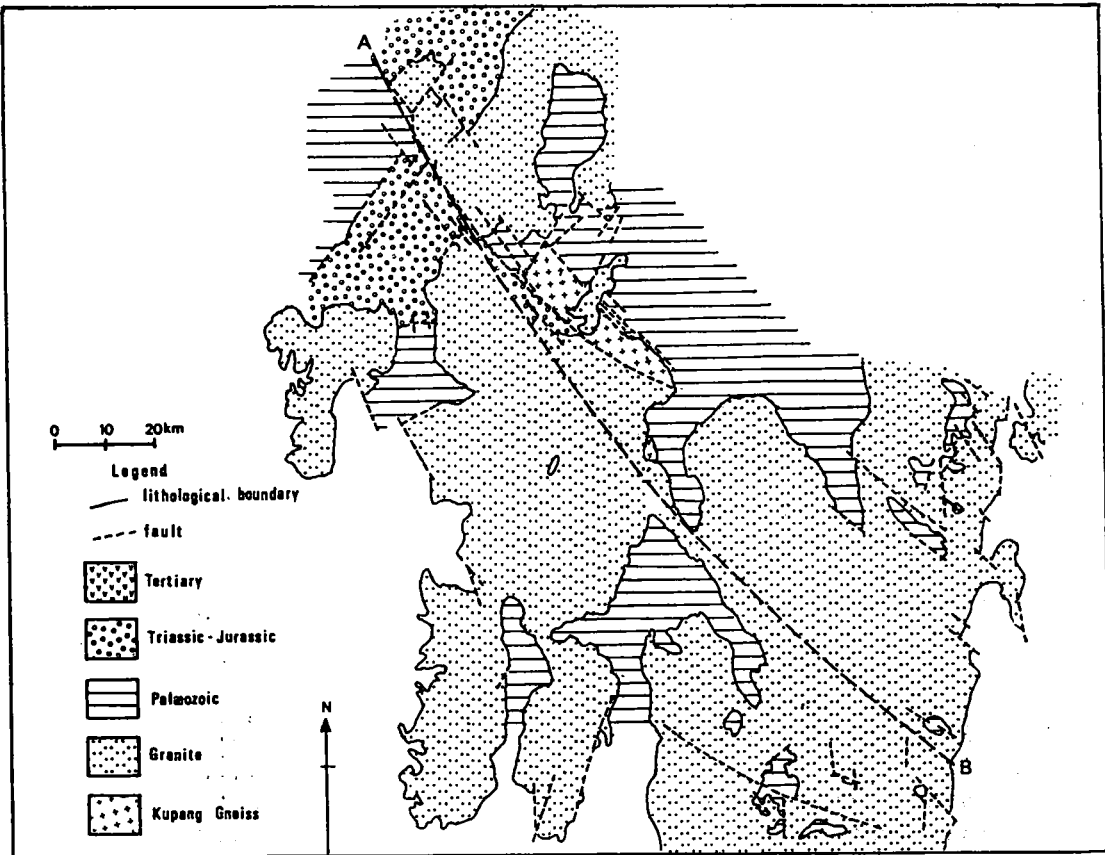


Fig. 4. Reconstruction of geological outcrops prior to 20 km left-lateral displacement along the extended Bok Bak fault zone (A--B).

Note: Reconstruction made by rotating northeast block along fault zone relative to southwest block on 1:1,000,000 scale map (rectified skew orthomorphic projection). Rotation around centre at latitude $7^{\circ}24'$ and longitude $103^{\circ}42'E$.

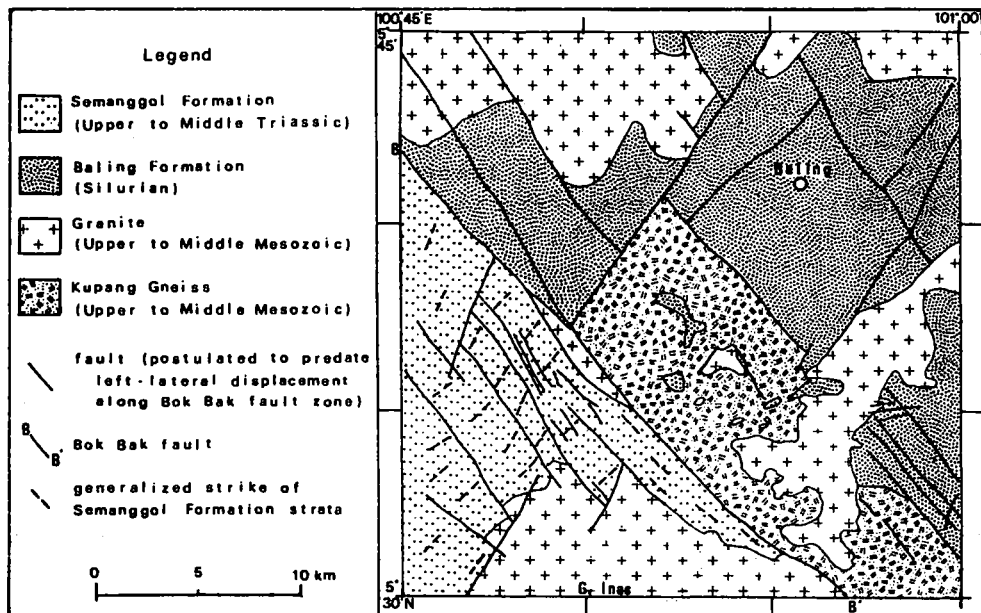


Fig. 5. Generalized geological map of the Baling area (after Burton, 1970).

A CHROMIUM-NICKEL LATERITE IN BUKIT PUNGGOR, MALACCA, PENINSULAR MALAYSIA.

B.K. TAN, Department of Geology, University of Malaya, Kuala Lumpur.

About 8 km south of Malacca Town, on the Malacca-Muar road, the road traverses over a slightly elevated terrain. Road cuttings over a stretch of approximately 300 metres at this locality (Fig. 1) expose a good lateritic soil profile which on casual inspection appears to be similar to other reddish soil profile with cappings of hard, iron-rich concretions seen in other parts of Malacca. This road cut is shown in the 1958 edition of the 1:25,000 Malacca Sheet 113 g prepared by the Survey Department and is therefore not a new exposure though subsequent earthworks, involving the quarrying of this lateritic soil for road fill material have exposed several fresh surfaces. A number of factors influenced the writer to collect some samples of this lateritic soil for geochemical analysis to test for the presence of chromium and nickel. Some of the soft lateritised soil display a slightly greenish appearance when wet, as was observed on the first visit made after a heavy downpour. The soil profile on closer inspection, however, appears to be different from other soil profiles in Malacca in that the colour is of a deeper reddish brown and some dark coloured layering and thin whitish weathered dykes are present. This location is also about $1\frac{1}{2}$ to 2 kilometres from the Henry Gurney School in Telok Mas where serpentinite occurrence has been reported from one of the drill cores by Khoo (1978).

A total of 8 samples were collected and analysed for Cr, Ni, Co, Mn and Fe by Atomic Absorption Spectrometry (AAS). The results (Table 1) indicate the presence of these elements in variable quantities. The interesting feature of these analyses is the presence of chromium, nickel and cobalt as the occurrences of these three elements in weathered soil give a good indication of the ultramafic nature of the parent material. The highest concentrations of these trace elements occur in sample BP7 collected from the hard massive laterite block forming about one to two metres capping the weathered soil profile and in sample BP8 from a slightly less compacted block. These blocks are very similar in appearance to other yellowish-brownish lateritic blocks used in the construction of many of the historical buildings in Malacca including the well-known remains of the old Malacca Fort. The lowest trace element concentration was found in sample BP6 collected from the most weathered exposure. As a comparison, a small sample of the serpentinite from one of the drill cores studied by Khoo (1978) was analysed for the same elements and the results are shown for comparison, sample TM 1 in Table 1. It is not certain whether the parent material for the lateritised soil profile is the same as the serpentinite found in the drill core but the close proximity of these two ultramafic masses indicates a good likelihood of this possibility.

This study is still at its preliminary stage but the discovery of this lateritised soil profile from a ultramafic source rock presents a number of interesting avenues for further studies. Soil profiles derived from ultramafic rocks have been reported in other parts of the Peninsula particularly in the Sg. Cheroh area near Raub, Pahang by Richardson (1939) and Law (1967) and near Kuala Pilah, Nègri Sembilan

by Paramanathan (1977). However, the new occurrence of a lateritised ultramafic soil is unique in that this is the first such occurrence where the soil profile is very thick and is capped by hard, pisolitic iron oxide or laterite. The previously reported soil profile in Cheroh and Kuala Pilah is rarely more than 3 to 4 metres. The exposed thickness of the Bt. Punggor soil profile is in the region of 8 metres on the eastern side of the road where active quarrying operation is still going on and the profile at the base is also highly weathered with no signs of the fresh bedrock. If the profile is similar to that in the two drill cores reported by Khoo (1978) then a thickness of the region of 30 metres or more may be expected since only one drill hole hit bedrock at 100 feet 2 inches while the other was unbottomed at 121 feet 6 inches. This thick soil profile is extremely interesting from the economic point of view. It is common in thick soil profile developed over ultramafic rocks to expect leaching and downward migration of nickel from the uppermost layers resulting in marked enrichment of nickel concentration at depth in the order of 10 to 30 fold, thus making such deposits economically viable for mining. The nickel deposit in New Caledonia (Park and MacDiarmid, 1964 p. 425-429) is an example of such a deposit where the natural process of weathering has given rise to an ore with an average of 3.5 percent nickel from a parent rock of 0.25% Ni + Cr. The best nickel ores are concentrated below the laterite at depths varying up to 100 feet below the surface in the zone immediately above the fresh ultramafic rocks. Viewed in this light, the preliminary geochemical results and the likelihood of a thick lateritised soil profile in Bt. Punggor, Malacca indicate that further detailed investigation including drilling is warranted so as to determine the distribution of nickel concentration in the soil profile. The extremely low values of nickel ranging from 0.01% or less to 0.09% in the near surface samples analysed indicate the considerable extent of migration of nickel during the weathering process if one is to assume that the parent material is the serpentinite from the drill core which contains 0.4% nickel. There appears to be a strong possibility that the leached nickel may be concentrated at depth and a geochemical analysis of a drill core down to the bedrock can easily confirm or reject the presence of a nickeliferous ore deposit at this locality. Unfortunately the soil profile in the drill cores studied by Khoo (1978) could not be traced and presumably these samples are no longer available. About 18 metres of dark brown to reddish and pruplish brown soil were reported to mantle the fresh serpentinite in the drill logs. Chromium also appears to have suffered some migration but such chromium enrichment is less economically interesting than that of nickel.

This discovery of laterite originating from an ultramafic source rock at Bukit Punggor also throws new light on some aspects of the geology of this region. It has from the early part of this century been commonly assumed that most of the laterite, so prevalent in Malacca, are derived from phyllite and schists or generally argillaceous rocks and only occasionally from arenaceous rocks and granitic rocks (Scrivenor, 1927; Paton, 1956; Paramanathan, 1963; and Eyles, 1970). Since good outcrops are few and scattered in Malacca, much of the geological mapping done in this state has had to resort to speculations on the parent rock types especially for the areas overlain by a lateritised thick soil cover. The well-developed lateritised soil profile at Bukit Punggor indicates that it is necessary to examine other laterites in this region more closely before an assumption can be made on the nature of the parent material. Although much speculation have been advanced on the sedimentary, metamorphic or

igneous parentage of Malaysian laterite, no criteria have been put forward as to how laterites from different parent material may be distinguished. In the case of laterite from ultramafic source rock, obviously the presence of Cr, Ni and Co is distinctive but similarly in other cases it should be possible to differentiate between a sedimentary or an igneous parent material.

Soil specialists have carried out extensive studies on Malaysian laterite especially the Malacca laterite and the term Malacca Series (Paramanathan, 1977) is now frequently used for lateritic soil developed presumably on shales and schists. Following the soil classification adopted by the Malaysian Soil Survey, e.g. Law (1967), the laterite described in this paper should be classified as that of the Sungai Mas Series or the Kuala Pilah Series. Both these soils from the agriculture point of view are easily identifiable as they are toxic to plant lives. Nickel and chromium concentration average 2000 ppm to 3000 ppm with 200 ppm of cobalt. However, the soil at Bukit Punggor now found to be derived possibly from an ultramafic parent supports a seemingly healthy rubber plantation. This difference in the toxicity is probably due to the considerable leaching of nickel and chromium that has taken place in Malacca, making the soil more conducive to plants as compared to soils of the Sungai Mas or Kuala Pilah Series.

This note is intended as a preliminary report on the findings on this interesting laterite from Malacca. Further research on this subject is planned in the near future and a more detailed study of the surrounding area will be carried out shortly. Besides the laterite at Bukit Punggor, other nearby localities such as Bt. Meta, Bt. Pegoh and Bt. Larang may also be underlain by basic or ultramafic rocks. A specimen collected from Bt. Larang has been studied by Dr. T.T. Khoo and found to be gabbroic (personal communication). The distribution and emplacement of these basic to ultramafic bodies is a subject of great interest for the tectonic evolution of this region and a more complete account of the geology of the Malacca-Johore area can assist in unravelling some of the complexities of Malaysian geology.

Acknowledgements

The writer would like to thank Mr. Lee Meng Chong for performing the Atomic Absorption Spectrometry analysis and several colleagues for useful discussion. Mr. K.K. Khoo, Geological Survey Malaysia, kindly provided part of the drill core specimen of the serpentinite from Telok Mas for this study.

References

- Eyles, R.J., (1970). Physiographic implications of laterite in West Malaysia. *Geol. Soc., Malaysia Bull.*, 3, 1-7.
- Khoo, K.K., (1978). Serpentinite occurrence at Telok Mas, Malacca. *Warta Geologi*, 4, 1-5.
- Law Wei Min, (1967). Reconnaissance soil survey of Raub-Termeloh-Jerantut region, Northwest Pahang. *Mal. Soil Survey Rep.* 2, 79p.
- Panton, W.P., (1956). Types of Malayan laterite and factors affecting their distribution. *6th Int. Cong. Soil Science, Paris*, 69, 419-423.

- Paramanathan, S., (1963). Reconnaissance soil survey of Malacca. *Malayan Soil Survey Report No. 3*, 59p.
- Paramanathan, S., (1977). *Soil genesis on igneous and metamorphic rocks in Malaysia*. State Univ. Ghent, Belgium. Unpubl. Doctor of Science thesis, 307p..
- Park, C.F. and MacDiarmid, R.A., (1964). *Ore Deposits*. W.H. Freeman, San Francisco and London. 475p.
- Richardson, J.A., (1939). The geology and mineral resources of the neighbourhood of Raub, Pahang, Federated Malay States. *Mem. Geol. Surv. Dept. Fed. Malaya 3*, 166p.
- Scrivenor, J.B., (1927). The geology of Malacca with a geological map and special reference to laterite. *Jour. Royal Asiatic Society (Malaysian Branch)*, V, 278-289.

Manuscript received 18 Jan. 1982

Table 1. Results of geochemical analysis by Atomic Absorption Spectrometry

Sample	Cr (%)	Ni (%)	Co (%)	Mn (%)	Fe (%)
BP 1	0.21	0.03	0.01	0.45	17.0
BP 2	0.03	0.01	0.01	0.25	6.1
BP 3	0.05	0.03	0.01	0.01	6.4
BP 4	0.09	0.01	0.01	0.45	11.4
BP 5	0.02	0.01	0.01	0	4.0
BP 6	0.01	0.02	0.03	0.04	10.8
BP 7	0.29	0.09	0.05	1.40	43.2
BP 8	0.38	0.05	0.01	0.06	14.8
TM 1	0.31	0.40	0.01	0.95	7.2

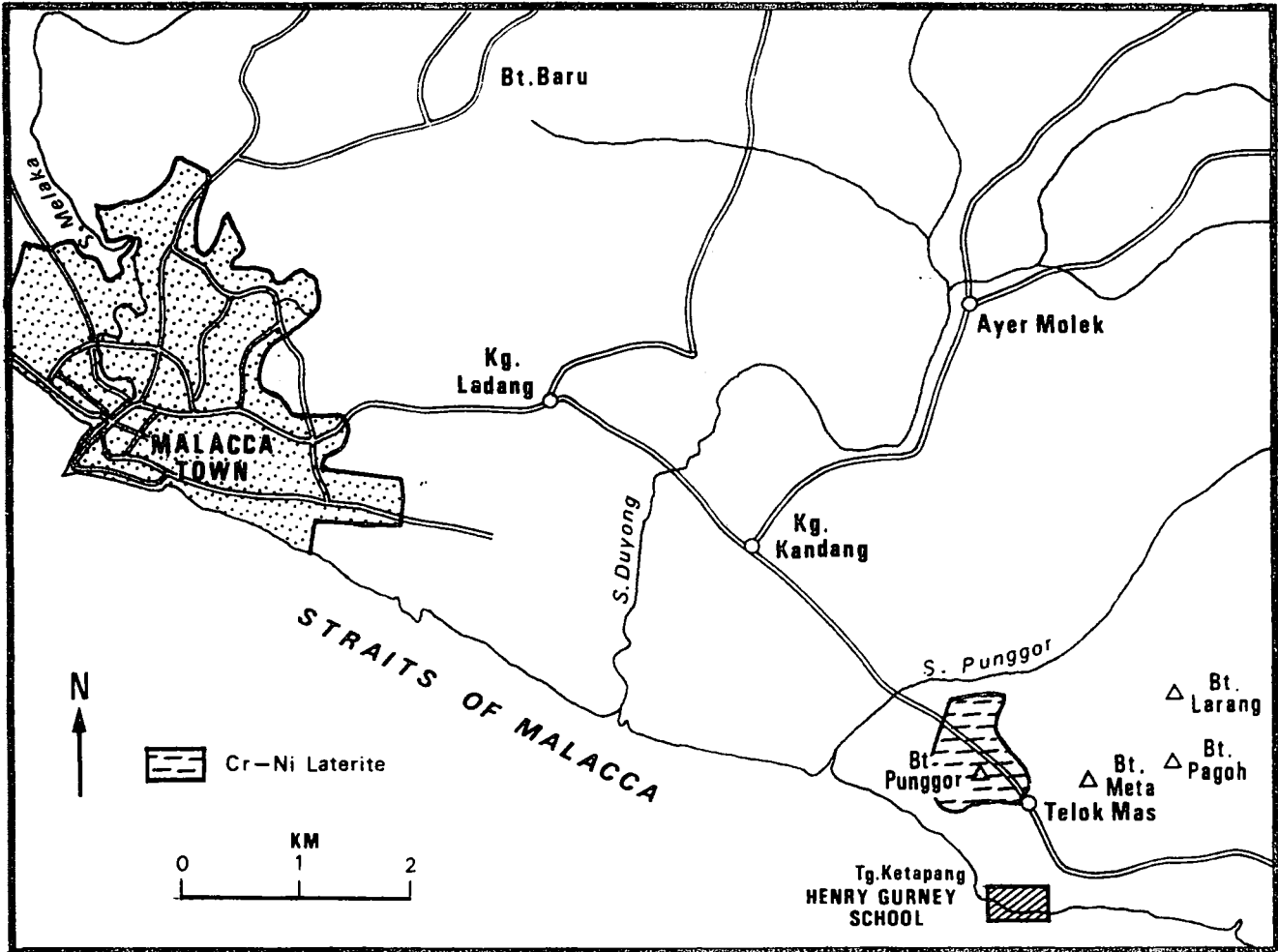


Fig. 1. Location Map

THE WONDERFUL PROPERTIES ASCRIBED TO GEODES

K.F.G. HOSKING, 1B Penlu, Tuckingmill, Camborne, Cornwall TR14 8NL, England.

The present-day mineralogist is concerned fundamentally with the investigations of minerals by physical and chemical techniques which are based on solid scientific principles. He aims at establishing, for example, the composition of the species under examination and how, and under what circumstances, it can be created by natural processes. Others, most of whom are not mineralogists, are interested solely in the beauty displayed by single crystals, cut or in the natural state, and by aggregates of crystals. And there are those people living today whose interest in minerals stems, from their belief that some of them possess curative and other magical properties. In the past such beliefs were doubtless far more widespread and common than they are today. The geodes are such bodies which were thought, as will be clear later, to possess some remarkable properties.

In case there are those who when reading this note, do not recall the characteristics of geodes I insert the following abstract from "Dictionary of Geological Terms", 1962, p. 204, New York:-

Geodes are "Hollow, globular bodies, varying in size from an inch to a foot or more Significant features are (1) subspherical shape, (2) a hollow interior, (3) a clay film between the geode wall and the enclosing limestone matrix, (4) an outer chalcedonic layer, (5) an interior drusy lining of inward projecting crystals, and (6) evidence of expansion or growth".

On page 104 of the 1955 translation, by Bandy and Bandy, of Agricola's *De Natura Fossilium* (Textbook of Mineralogy) which saw the light of day in 1546, one finds the following account of the remarkable properties which geodes were then thought to possess:- *"All geodes are dry and certain ones are astringent. A geode will purge matter which may cover the eyes and when mixed with water and used as a salve it reduces inflammation of the breast and testes. When it contained small pebbles the Greeks believed that it would keep the fetus in place and prevent miscarriage if fastened to the left forearm of a pregnant woman and when bound to her left thigh would reduce labour pains and permit a painless delivery. Pliny writes, however, that it is efficacious only when it has been newly taken from the earth".*

Did these beliefs stem, at least in part, to the fact that to the ancients, the geode was shapewise, etc., reminiscent of the womb?

Manuscript received 23 February, 1982.

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

TECHNICAL TALKS

- A. BOWDEN: Resistivity technique as currently applied to Groundwater Exploration in Australia and the Klang Valley Groundwater Project, Peninsular Malaysia.

Some 45 enthusiastic members turned up for the above talk held at the Department of Geology, University of Malaya on Wednesday, 3rd March, 1982. In his introductory remarks, Dr. Bowden is of the opinion that groundwater exploration has special meaning in Malaysia and is currently, however in an infancy state. He also suggested that groundwater exploration must be done in an orderly, scientific manner such that it will reduce cost and maximise returns.

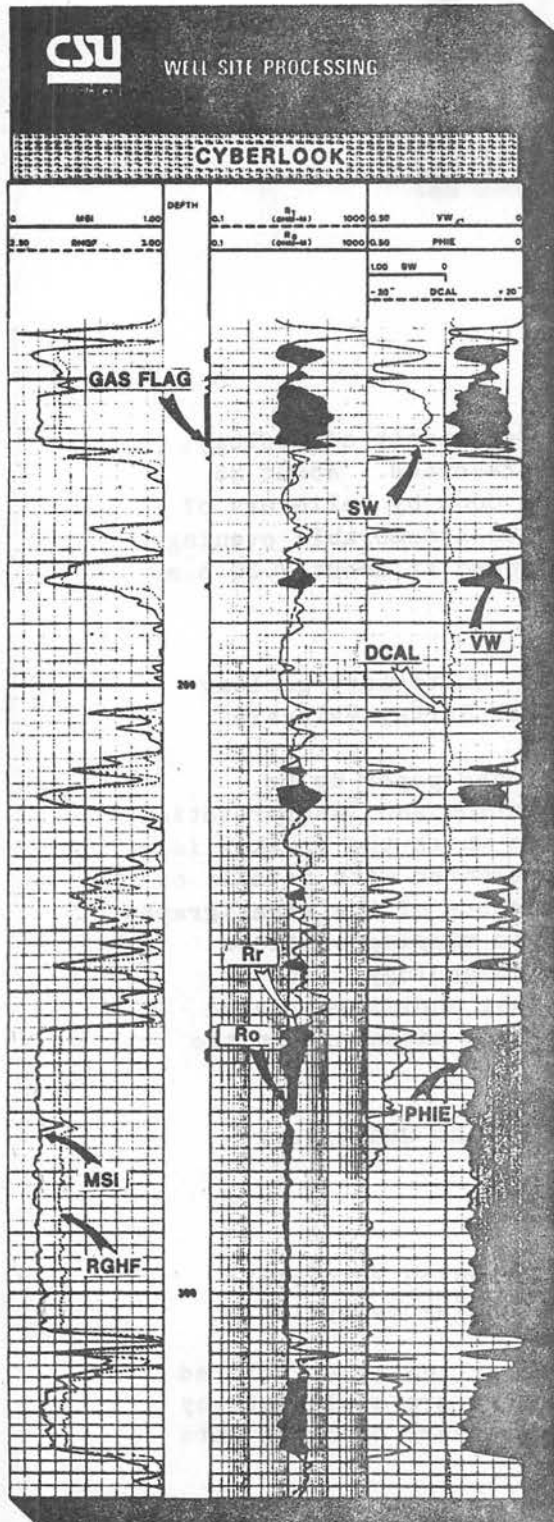
He then mentioned 3 common approaches in groundwater investigations that have usually been carried out in Australia, namely the 'hit-and-miss' drilling technique, water divine or witching, and the technical approach. He favoured the technical approach which relied both on geophysical and geological surveys. Geophysical technique, according to Dr. Bowden is getting more important in Malaysia due to a number of reasons, for one, there is not much good data base, and for another, drilling is expensive. Therefore, geophysical techniques allow for site maximisation. He proceeded to outline various geophysical techniques used in groundwater investigations, and singled out the resistivity technique which has been proven to give alot of information, particularly when it is used with geological data. Principles, factors affecting resistivity, theoretical and interpretation of resistivity techniques were then elaborated upon.

Applications of this technique, in some detail, were then cited with Australian and Malaysian (Klang Valley) examples. In Australia, the resistivity technique has been successfully applied in locating artesian aquifers, fracture zones in schists, channels in alluvium, basement configurations and retention ponds. In Malaysia, preliminary studies have shown that groundwater potential is available in fractured granite zones (Subang Jaya); saturated sand and gravels (Subang Jaya); fractured zones in limestone (MAHA, Old Klang Road) and the Kenny Hill Formation (Shah Alam).

In summing up, Dr. Bowden concluded that the resistivity technique is a tool in groundwater investigations and has great potential in groundwater exploitation in Malaysia. He also warned that geophysical techniques, however, are not at all definitive, 'it is a means to an end'. A lively and useful discussion followed the talk.

Dr. Bowden is presently engaged in groundwater exploration in a few areas in Malaysia, namely the Klang Valley and Parit Buntar. He has worked extensively throughout Australia and Indonesia and is presently Supervising Senior Consultant attached to the Australian Groundwater Consultants Pty. Ltd., Australia.

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



A. BOWDEN

MALAM KUATER (QUATERNARY EVENING)

The Malam was held on 10 March 1982 in the Department of Geology, Universiti Malaya at 5.00 p.m. Three papers were presented. About 25 people attended the Malam in spite of prophecies of doom by believers of the so-called Jupiter effect and they were treated to a memorable evening of interesting and informative papers. The Malam ended at about 7.30 p.m.

Mr. T. Suntharalingam (Geological Survey Malaysia): Quaternary geology study of Peninsular Malaysia by the Geological Survey Malaysia.

The evening started off with the above-mentioned paper by Mr. Suntharalingam. The paper is an up-to-date presentation and interpretation of the results of the Survey's Quaternary Project in which the speaker is the leading investigator. The talk was expertly presented with details of the methodology and discussion of the aims. The results of the stratigraphy of the Quaternary deposits and the classification and mapping of these deposits represent a significant advance in Malaysian geology. The forthcoming Survey's map of the Quaternary (at present undifferentiated and in one dull grey colour) will be another important milestone in the progress of Malaysian geology.

Questions from the floor on several aspects of the Quaternary were convincingly answered.

Dr. S. Paramanathan and Cik S. Zauyah (Universiti Pertanian Malaysia): Soil scientist view of the Quaternary of Peninsular Malaysia.

This paper was presented by Cik S. Zauyah who at the onset pointed out that although both authors are soil scientists they are geologists by training. The paper is on the classification of Quaternary deposits into

pedological units and the nature and characteristics of these units were carefully described. Of interest is the attempt to determine the environment of deposits of these units and approximate age of the deposits.

Questions from the floor were mainly on the terminology used and it is interesting to note that the geological training enabled the soil scientist to communicate with geologists easily.

Mr. J.K. Raj (Universiti Malaya): Raised river terraces, Tambunan, Sabah.

The paper described the occurrence of 3 main raised river terraces at the Tambunan Plain in Sabah and described the nature of each terrace. The speaker interpreted that the terraces developed due to fluctuations of climatic conditions in the Quaternary and proposed a model based on it.

Questions from the floor came from those with knowledge of the area and also those who doubted the model proposed. As a result more details were given by the speaker to clarify the points raised or to enlighten the doubts.

T.T. Khoo

MALAM KUATER - ABSTRACTS AND SUMMARY OF PAPERS

T. SUNTHARALINGAM: Quaternary Geology Study of Peninsular Malaysia by the Geological Survey of Malaysia.

The Quaternary Geology Division was established in 1977 in order to map the unconsolidated to semi-consolidated sediments and to indicate the areas of economic importance.

The technique of mapping Quaternary deposits is different from that of consolidated deposits. In the office a proper literature survey is carried out besides studying topographic maps, aerial photographs and prospecting or other drilling records. Then geophysical methods using seismic or resistivity techniques are employed to find the depth of bedrock and the various stratigraphic units. On completion of the geophysical survey the most suitable drilling equipment is then considered for further work. Initially, shallow holes (up to 20 m depth) are drilled using hand augers and followed by deeper holes using hand banka and semimechanized banka drill.

The drilling data are recorded into log sheets in accordance to a standard description format prepared by the department. Samples from suitable and distinct layers are collected for pollen analyses, fossil studies, grain size and heavy mineral analyses. Suitable samples are sent overseas for radiocarbon dating.

From field and laboratory information reports, geology maps, cross-section and other figures are prepared e.g. isopach map showing thickness of alluvium. It is a standard practice to plot tin results per 1.5 m section alongside the boreholes.

Systematic mapping on a scale of one inch to the mile from the Taiping to Lumut area indicates the presence of three stratigraphic units. They are the Simpang Formation which is the oldest and is equivalent to the Old Alluvium of Walker (1955), the Gula Formation which is an estuarine to marine clay with subordinate sand member and the continental Bruas Formation which is equivalent to the Young Alluvium of Walker (1955). The first edition of the Quaternary geology map of Peninsular Malaysia (1 inch to 500,000) is being prepared based on these formational units. An isopach map on a similar scale is also being prepared to indicate the thickness of alluvium. Information collected about the Quaternary deposits have been utilised by hydrogeologists, engineers and planners for their studies.

Finally it must be mentioned that the division in cooperation with other divisions of the department from time to time prepares economic geology reports especially pertaining to placer tin, clay and other industrial minerals for public consumption.

S. PARAMANANTHAN and S. ZAUYAH: Soil Scientist View of the Quaternary of Peninsular Malaysia.

The Quaternary of Peninsular Malaysia can be separated into eight distinct pedological units. Six of these units have been recognized by soil scientists since soil surveys began in Peninsular Malaysia as early as the 1950's. Two other units were only recognized in the last two years. These eight pedological units are as follows:-

- | | |
|--|------------------|
| 1. Reworked Lateritic Deposits (Older) | P ₃ T |
| 2. Reworked Lateritic Deposits (Younger) | P ₂ T |
| 3. Older Alluvial Deposits | T ¹ |
| 4. Sub-Recent Alluvial Deposit | T ³ |
| 5. Recent Alluvial Deposit | T ² |
| 6. Marine/Estuarine Deposits (Clay) | T ¹ |
| 7. Marine/Estuarine Deposits (Sand) | |
| 8. Organic Deposits | |

The main features of each of these pedological units are given in Table 1 below. Their approximate geological ages are also suggested. It must be pointed out that these ages are yet to be confirmed.

Table 1: Characteristics of the Pedological Units of the Quaternary of Peninsular Malaysia

Pedological Unit	Characteristic Features	Possible Geological Age
Organic Deposits	Deep organic deposits of brackish water origin. Large pieces of undecomposed logs often present.	Recent

Pedological Unit	Characteristic Features	Possible Geological Age
Marine-Estuarine Deposits (Sand)	Characteristic series of beach ridges found along the east coast. Age of ridges progressively becomes older with distance from the coast. Their sandy nature enhances the formation of podzols.	Recent
Marine-Estuarine Deposits (Clay)	Broad coastal plain deposits found typically along the west coast. Deposits are dominantly 2:1 minerals, high water tables and saline in their natural state. On drainage they may develop into acid sulfate soils. They have high amounts of Ca and Mg. They grade further inland into the organic soils. These areas are cultivated with rice (Muda) or oil palm, coconut, cocoa and rubber.	Recent
Recent Terrace Deposit (T_1)	Terrace alluvial deposits found along the major rivers. These form a sequence of soils affected by the present day ground water table which occurs near the surface. Deposits are often characterised by high silt content, mica flakes, manganese concretions. Rice is grown on the drained soils. Mineralogy is characterized by kaolinite and illite. These areas are characterized by flat terrain (relief amplitude less than 1 m), with old river channels, ox-bow lakes, etc.	Recent
Sub-Recent Deposits (T_2)	These alluvial deposits occur on gently undulating terrain with a relief amplitude of about 3 metres. These deposits are characterized by variable textures-sandy loams to clays, kaolinite mineralogy, low silt content, plinthite within the profile (in the clayey soils) a deep fluctuating water table, sometimes deficient in Cr and other trace elements. These deposits are the Younger Alluvium of Walker (1956).	Late Pleistocene to Recent
Reworked Lateritic Deposits (P_2T)	These are deposits which have lateritic gravels within one metre of the surface. The lateritic gravels (petroplinthite) overlie a massive, impervious plinthite saprolite. The terrain is gently	Late Pleistocene

Pedological Unit	Characteristic Features	Possible Geological Age
	<p>undulating and the relief amplitude about 2 to 5 metres. These deposits occur at about 3 metres above the level of the sub-Recent Deposits. Mineralogy is mainly kaolinitic and iron-minerals and the plinthite is "fresh" and shows little or no indication of having been altered. The laterite gravels are fine, hard and smooth, with a high bulk density (B.D.).</p>	
Old Alluvial Deposits	<p>These deposits form low hills and often occur as foothills along the Main Range. These deposits can be easily mistaken for the in situ soils. However at depths around one metre the colours first become mottled and then become paler due to presence of either quartzite or granite pebbles. These deposits are probably not true alluvium but more likely colluvium or alluvial fans. The provenance controls the nature of the deposits - particularly the texture. The quartz is sub-rounded and milky-coloured. Structures are often weak and consistence very friable.</p>	Mid-Pleistocene
Reworked Lateritic Deposits (P ₃ ^T)	<p>These lateritic deposits are often red coloured and deep. The lateritic gravels (Petroplinthite) are less rounded and mixtures with iron-coated materials may be common. The B.D. of these gravels is lower than these in P₂^T. The plinthite which occurs below the gravels is more weathered and crumbles easily when pressed between the fingers. These deposits form low hills, which have a relief amplitude of about 5-15 metres. These deposits occur at an elevation about 2-5 metres above the level of P₂^T.</p>	Early Pleistocene
Reworked Lateritic Deposits/Iron-coated Parent Materials (P)	<p>These deposits form lateritic cappings on hills with a relief of about 15 to 20 metres. The materials are less rounded, and are almost always a mixture of iron-coated parent materials and sub-rounded petroplinthite gravels. The underlying saprolite is highly weathered. Some recementation of the materials to form large blocks are common. The B.D. of the gravels is low.</p>	Mid-Late Tertiary

J.K. RAJ: River Terraces of the Tambunan Plain, Sabah, East Malaysia.

In the Tambunan Plain of Sabah, East Malaysia are found four levels of river terraces at heights of about 30-40 m, 10-20 m, 5-8 m and 1-3 m above the present-day Sg. Pegalan. The Plain itself has developed as a result of alluvial fan deposition in a fault-controlled downwarp during the early Quaternary (?), and is surrounded by denudational hills developed over sedimentary strata of the Crocker formation. The river terraces are preferentially developed on the western side of the Plain and are interpreted to be the result of climatic fluctuations (due to variations of annual rainfall distribution and resultant variations of river discharges) during the Quaternary.

GEOSCIENCE EDUCATION WORKSHOP 1982 - REPORT

The above workshop was successfully held at Abbey Room 1, Hotel Merlin, Kuala Lumpur on Tuesday, 27th April, 1982. Some 42 members and non-members participated in the workshop, which comprised participants from all the universities in Malaysia, Mara Institute of Technology, Petroleum companies (such as Petronas, Esso, BNOB), Geological Survey Malaysia, Ministry of Education (Curriculum Centre and Lembaga Peperiksaan) and the mining sector (MMC, SEATRAD Centre, Perangsang Selangor).

The objectives of the workshop were the following:

- a) To provide a forum for the exchange of views and experiences between teaching programs and the use of available geoscience manpower, facilities and services in universities and research institutions in Malaysia.
- b) To identify clearly the needs and problem areas.
- c) To propose realistic ways of improving the present situation and to plan for practical follow-up activities.

Dr. Mohamad Ayob, the President of the Geological Society of Malaysia gave the welcoming address and declared open the workshop. There were 4 sessions in the workshop (see workshop programme). The opening session on Geoscience Curriculum comprised papers presented by various heads and leaders of geoscience departments of higher institutions in Malaysia and also a representative of the oil industry, Dr. David Skevington from British National Oil Corporation. This was followed by 2 forums given by invited personnels from the industry, government, universities and local geoscience societies. The last session was an open discussion concentrating on 'geological terms', refreshers courses and geoscience education at Pre-university levels.

Seven papers (see abstracts of papers) covering geoscience curriculum and problems relating to geological terms were presented and discussed. Reports on the forum sessions are available in this Warta. The Society will try and publish the proceedings of the Workshop in the near future.

The Organising Committee would like to thank all the organisations and individuals, for their kind cooperation, interesting and lively discussions and for services rendered during the workshop.

Mohamad Ali Hasan

CAPTIONS TO FIGURES (GEOSCIENCE EDUCATION WORKSHOP)

SESSION 1: Geoscience Curriculum

- Fig. 1 Mohd. Ayob declaring open the Workshop
- Fig. 2 B.K. Tan on the Universiti Malaya Geology Curriculum
- Fig. 3 Syed Sheikh Almashoor touching on the development of UKM's Geology Curriculum
- Fig. 4 C.Y. Lee elaborating on the Geophysics Programme at USM
- Fig. 5 Wan Sulaiman W. Harum explaining UPM's Geoscience Curriculum
- Fig. 6 C.S. Hutchison putting forward a point for discussion
- Fig. 7 Miss O.K. Lim from Curriculum Development Centre actively involved in the discussions
- Fig. 8 D. Skevington on his experiences as a lecturer and an employee

SESSION 2: Forum: Cooperation between local Universities and other sectors

- Fig. 9 The Forum Panel comprising (from left): S.K. Chung, M.K. Choo, E.H. Yin (Chairman), D.L. Bostwick and T.G. Carson
- Fig. 10 D.L. Bostwick on the performance of graduates

SESSION 3: Forum: Role of Local Geoscience Societies and Institutes

- Fig. 11 The Forum Panel comprising (from left): T.T. Khoo, S. Paramanathan, Ismail Mohd. Noor (Chairman), C.S. Hutchison and Abdullah Hasbi.
- Fig. 12 S. Paramanathan stressing a point during the forum

SESSION 4: Open Discussion, including problems of Geology terminology

- Fig. 13 Puan Siti Zauyah delivering her paper on "The Development and Preparation of Geoscience Terminology"
- Fig. 14 Mohamad Ali Hasan with his presentation on "Towards Uniformity of Geologic Terminology?"
- Fig. 15 Mohd. Shah Abdullah ably chairing the Open Discussion that followed

GSM GEOSCIENCE EDUCATION WORKSHOP

27 April 1982



SESSION
1

SESSION
2



SESSION
3

SESSION
4



PROGRAMME - Tuesday, 27th April, 1982.

- 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: **SESSION 1: GEOSCIENCE CURRICULUM (Paper presentation)**
Chairman: Dr. T.T. Khoo (University of Malaya)
- (i) Geology Curriculum at the University of Malaya: Associate Professor Dr. B.K. Tan, Department of Geology, University of Malaya, Kuala Lumpur.
 - (ii) Development of Geology Curriculum in University Kebangsaan Malaysia: Tuan Syed Sheikh Almashoor and Associate Professor Dr. Ismail Md. Noor, Department of Geology, National University of Malaysia, Bangi.
 - (iii) The Geophysics Programme in Universiti Sains Malaysia: An Assessment: Dr. Lee Chong Yan, Leader, Geophysics Group, School of Physics, Universiti Sains Malaysia, Penang.
 - (iv) Geoscience Curriculum in Universiti Pertanian Malaysia: Associate Professor Dr. Wan Sulaiman W. Harum; S. Zauyah and Othman Yaacob, Universiti Pertanian Malaysia, Serdang.
 - (v) Geoscience Education - experiences from both sides of the fence: Dr. David Skevington, British National Oil Corporation.
- 11.00 - 12.30: **SESSION 2: FORUM: COOPERATION BETWEEN LOCAL UNIVERSITIES AND OTHER SECTORS (AND TYPES OF GRADUATES NEEDED)**
Chairman: Mr. E.H. Yin (Geological Survey of Malaysia)
Members of Panel:
- (i) Mr. Chung Sooi Keong, Director-General, Geological Survey of Malaysia.
 - (ii) Mr. T.G. Carson, Chief Geophysical Interpreter, Geophysical Division, Esso Production Malaysia, Inc.
 - (iii) Mr. D.L. Bostwick, Geological Coordinator, Geological Division, Esso Production Malaysia, Inc.
 - (iv) Mr. Choo Mun Keong, Malaysian Mining Corporation.
- 12.30 - 1.30: Lunch
- 1.30 - 2.30: **SESSION 3: FORUM: ROLE OF LOCAL GEOSCIENCE SOCIETIES AND INSTITUTES**
Chairman: Associate Professor Dr. Ismail Md. Noor, Jabatan Geologi, Fakulti Sains Fizis dan Gunaan, Universiti Kebangsaan Malaysia, Bangi, Selangor.
Members of Panel:
- (i) Professor C.S. Hutchison, Professor in Applied Geology, Department of Geology, University of Malaya, Kuala Lumpur.
 - (ii) Dr. S. Paramanathan, Department of Soil Science, Agricultural University of Malaysia, Serdang, Selangor.

(iii) Dr. T.T. Khoo, Vice-President, Geological Society of Malaysia.

(iv) Dr. Abdullah Hasbi b. Hj. Hassan, Director, SEATRAD Centre, Ipoh.

2.30 - 3.30: SESSION 4: OPEN DISCUSSION: GEOSCIENCE EDUCATION AT PRE-UNIVERSITY LEVELS/REFRESHER COURSES/IN-SERVICE TRAINING/MASAALAH PERISTILAHAN GEOLOGI

Chairman: Mr. Mohd. Shah Abdullah, MARA Institute of Technology, Shah Alam, Selangor.

(i) Perkembangan dalam Pembentukan Istilah-Istilah Geosains: S. Zauyah dan A.B. Rosenani, Jabatan Sains Tanah, Universiti Pertanian Malaysia, Serdang.

(ii) Ke Arah Keseragaman Istilah Geologi? - Mehamad Ali Hasan, Jabatan Geologi, Universiti Malaya.

3.30 - 3.40: Closing remarks

GEOSCIENCE EDUCATION WORKSHOP - ABSTRACTS OF PAPERS

Geology Curriculum at the University of Malaya

Dr. B.K. Tan, Department of Geology, University of Malaya, Kuala Lumpur.

The main objective in the undergraduate training programme at the University of Malaya is to produce geology graduates proficient in the basic skills which would make them able to contribute usefully to the organizations and companies which require such graduates. Although two types of geology graduates, geologists and applied geologists are produced, the curriculum is designed so as to ensure that all graduates have sufficient fundamental background in the traditional geological disciplines such as mineralogy, petrology, paleontology, structural geology, sedimentology and stratigraphy. A limited degree of specialization is only permitted in the final year where students are allowed to choose some optional subjects either to satisfy their interest or to enhance their knowledge in the field in which they would like to follow after graduation. The important role of geophysics in present day geology is recognised and more courses in this subject are offered at present compared to the past.

Traditionally, the main avenues for employment of our graduates have been the Geological Survey of Malaysia. The undergraduate course has therefore been designed to include a major project involving a field mapping programme and the compilation of the data into a thesis or project report. This part of the training programme is considered to be very important and we feel that this training has enabled many of our graduates to meet the expectations of their future employers in having some training in undertaking independent geological work and in preparing technical reports. Although in recent years the avenues for employment for our graduates have shifted more towards the petroleum industry, we feel that our basic training programme need not be radically changed as a geologist well-trained in fundamental geological disciplines, with the ability to carry out independent investigations and preparation of concised reports,

is well-equipped to meet most of the demands of his prospective employer be it the Geological Survey, mining companies or the petroleum industries.

Development of Geology Curriculum in Universiti Kebangsaan Malaysia

Syed Sheikh Almashoor and Ismail Mohd. Noor

The Geology Department, Universiti Kebangsaan Malaysia was established in 1970. During the early part of the seventies the teaching of geology was based essentially on the curriculum used by the Geology Department, University of Malaya. However, after several years we reviewed the curriculum and because of the market trend we have to change our programme of study in order to suit the country's need. More applied geologists are needed to work in projects under the Malaysian Development Programme. We tailored our programme of study towards three important disciplines: engineering geology, mining geology and petroleum geology. Basic subjects are taught at all levels - first to fourth year, whereas specialised subjects are only taught at the third and fourth year levels. At the end of the fourth year each student has to submit a project paper in his field of specialization.

The Geophysics Programme in Universiti Sains Malaysia - An Assessment

Dr. Lee Chong Yan, Leader, Geophysics Group, School of Physics, Universiti Sains Malaysia.

Since its inception in 1972/73 the geophysics programme in Universiti Sains Malaysia has been the only full-fledged programme in geophysics to be offered by any of our local universities. It is an elective within the Bachelor of Science programme in Physics. Consequently, the number of courses which can be offered in geophysics is rather severely constrained. However the course units available have been put to good use in our broad-based package. Its success is attested to the fact that our graduates have been favourably received by employers. Graduates have so far not experienced much difficulty in securing gainful employment. Cooperation with other organizations has been close although they have not fully availed themselves of our research facilities and capabilities. The programme is being expanded and improved upon to cater for the projected increase in the student intake.

Geoscience Curriculum in Universiti Pertanian Malaysia

Wan Sulaiman W. Harun; S. Zauyah and Othman Yaacob, Universiti Pertanian Malaysia.

Geoscience in the context of Universiti Pertanian Malaysia is almost entirely soil science. The subject is taught by the Department of Soil Science intensively as a core subject to Agricultural students and as a supporting subject to the others.

In the main, the curriculum or course design is based on Pedogenic concept of soil formation, the physical, chemical and biological behaviour of the soil, leading eventually to the understanding of the distribution of the Malaysian soils, their classification, utilization and management.

Within the Agricultural programme (B. Agric. Sc. and Dip. Agric.) these elements are taught, wherever appropriate, in relation to the needs of the export-oriented commodities, namely, rubber, oil palm and lately cocoa and to a lesser extent the need of food crop.

Where it serves as a supporting course in Veterinary, Agribusiness or Resource Economic programme, minor variations exist in the emphasis, tuned mainly to the needs of the particular group it is servicing. The main theme carried through in all cases, however, is the concept of soil as a natural and depletable resource requiring optimum management.

Geoscience Education - Experiences from both sides of the fence

Dr. David Skevington, British National Oil Corporation

Twenty years as a university teacher, and somewhat fewer as an oil company employee, have confirmed the existence of a real, but by no means insurmountable, barrier between educators and employers of geoscientists. Misunderstandings occur on both sides and derive from a lack of appreciation of each other's role and expectations.

Outside of the professional schools (Medicine, Engineering), universities should not be regarded as, nor should they attempt to be, training grounds for industry. Technological, commercial and other specialist institutions, and indeed industry itself, are available for that purpose. That said, however, a university geoscience programme (to first-degree level) can produce a graduate highly suited to the needs of industry, as well as numerous other occupations, provided that:

- (a) there is provision for, and assistance given in obtaining, course-related employment in the long vacations;
- (b) the degree programme offers adequate coverage of 'classical' geoscience (mineralogy, petrology, palaeontology, stratigraphy, etc.); and
- (c) completion of at least one major, independent project is part of the degree requirements.

The successful graduate of a degree programme structured in this fashion is well-suited to the needs of industry. On joining a major oil company, for example, such a graduate — broadly- and soundly-based academically, capable of independent thought and action, and already familiar with industrial procedures — will embark on a learning and work experience programme (which in BNOC's case extends over the first two to three years of employment) at the end of which he will emerge as a fully-fledged explorationist, well-versed in all the specialisations which collectively constitute the day-to-day activities of an oil company's exploration and production division.

Perkembangan dalam Pembentukan Istilah-Istilah Geosains

S. Zauyah dan A.B. Rosenani, Jabatan Sains Tanah, Universiti Pertanian Malaysia.

Pembentukan istilah-istilah dalam bidang Geosains telah bermula dengan penubuhan Jawatankuasa Istilah Geografi pada 3hb Julai, 1959. Jawatankuasa ini telah menghasilkan buku Istilah Ilmu Alam (1967), Istilah Geografi (1976), dan Senarai Istilah Geografi (1980). Istilah-istilah ini belumlah lengkap dan hanya dapat membantu pelajar-pelajar di peringkat sekolah. Universiti-universiti yang bergiat dalam pengajaran Geosains, iaitu dalam bidang-bidang Geologi dan Sains Tanah, telah mengumpul dan membentuk istilah-istilah sendiri dalam bidang-bidang ini. Universiti Malaya mengeluarkan Istilah Geologi dan Universiti Kebangsaan Istilah Kajibumi pada tahun 1972.

Dewan Bahasa dan Pustaka (DBP) telahpun menubuhkan dua lagi Jawatankuasa Istilah, Jawatankuasa Tetap Bahasa Malaysia (JK1 JKTBM) iaitu untuk bidang-bidang Mineralogi (1976) dan Hidrologi (1980). Jawatankuasa Istilah (JK1) kedua ini telahpun bersidang dalam Majlis Bahasa Indonesia-Malaysia. Hasil daripada usaha-usaha JK1 kedua ini belum lagi diterbitkan untuk kegunaan orang ramai. Pada tahun 1981, untuk mempercepatkan dan melengkapkan lagi pembentukan istilah-istilah, DBP telah memulakan projek penyediaan dan penerbitan istilah untuk universiti-universiti. Tetapi, ramai pakar-pakar tidak dapat menyiapkan manuskrip pada masa yang dirancangkan dalam projek ini. Oleh yang demikian, bagi pelajar-pelajar dan tenaga pengajar dalam bidang-bidang Geosains, kemungkinan mendapat buku-buku istilah yang lengkap hanyalah pada penghujung tahun 1983.

Ke Arah Keseragaman Istilah Geologi?

Mohamad Ali Hasan, Jabatan Geologi, Universiti Malaya.

Satu tinjauan awal dibuat mengenai persamaan dan perbezaan istilah-istilah geologi yang digunakan di kedua-dua Jabatan Geologi (Universiti Malaya dan Universiti Kebangsaan Malaysia). Berdasarkan kepada buku terbitan (istilah geologi) yang dibandingkan terdapat perbezaan yang amat ketara sekali. Implikasi-implikasi atau masalah-masalah yang akan timbul di atas perbezaan istilah ini dibincangkan. Beberapa cadangan dimajukan mengenai ketidak persamaan ini bagi tujuan agar istilah geologi ini dapat diseragamkan (selaraskan).

COOPERATION BETWEEN LOCAL UNIVERSITIES AND OTHER SECTORS (AND TYPES OF GRADUATES NEEDED) - FORUM REPORT

Members of the panel:

- (i) Mr. Chung Sook Keong, Director-General, Geological Survey of Malaysia.
- (ii) Mr. Choo Mun Keong, Malaysian Mining Corporation.
- (iii) Mr. T.G. Carson, Chief Geophysical Interpreter, Geophysical Division, EPMI.
- (iv) Mr. D.L. Bostwick, Geo-ogical Coordinator, Geological Division, EPMI

Chairman of the forum: Mr. E.H. Yin, Geological Survey of Malaysia.

What follows is a brief account of the views put forward by what may be termed as the "employing" sector which was quite well represented by panel members from the government (Geol. Survey), local industry (MMC) and a foreign-based company (ESSO Production). Throughout the discussion an analogy of the universities being the "manufacturers", the students being the "products" and the employers as the "consumers" were aptly used (Fig. 1).

Mr. S.K. Chung:

He talked about how inadequately trained and in need of further training the graduates are when they first join the Geol. Survey. This need is evident when the new personnel are unable to perform normal functions of the Geol. Survey such as geological mapping and mine evaluation (especially evaluation of reserves and potential). Although this kind of training is always available and has been a kind of standard practice, alot still depends on the graduates themselves, i.e. how motivated they are, etc. He mentioned how being a government body the survey is not in the position to choose its intake of the graduates as the private companies are able to do. The Geological Survey has many divisions and in almost all of them what is most important is the interpretation of data and not so much on instrumentation. He urged the universities to put greater emphasis on this aspect of their geology curriculum. He also supports the view that a university education that covers more basic geology than specialised areas should put the students in good stead in their future career. Another point raised by him was that the university curriculum seem to be cramming too much within a very short period of time. He suggested the length of time needed for a B.Sc. degree be stretched to 5 or 6 years. This was, however, objected to by Dr B.K. Tan on the grounds that there would arise the problem of unfairness as the Arts course is only for 3 years; therefore a 5-year geology course would not be feasible when the salary scale is the same for both. On the question of the Geological Survey taking in students for vacation training, Mr. S.K. Chung said that even if the Survey is willing to undertake the task, the treasury would not, on the other hand, agree to the finances involved.

Mr. M.K. Choo:

Mr. Choo stressed the importance of quality in the graduates. Malaysian Mining Corporation (MMC) has employed graduates from all the local universities so far. Most seems to lack prior exposure to such important

concepts as evaluation. He stressed that even though most appear to be quite good operators their skills in the interpretation of data are not satisfactory enough. He suggested that perhaps a greater dose of basic geology is what they need in their varsity years. On another issue he stated that the graduates are not expected to be able to fit themselves perfectly into the slot available to him in the company. Rather what is needed is a person who has the ability to adopt well and be able to write clear and concise reports. He queried if the universities are giving enough emphasis on this aspect.

He also drew attention to the tight market situation which resulted in the MMC having to take in inexperienced graduates. On the attitude of the fresh graduates, he emphasized that what is required is keenness, initiative, ability to work within a team and should also be flexible.

Mr. D.L. Bostwick:

He, in general, seemed to be quite pleased with the local geologists ESSO has employed so far and is of the opinion that the task of the university should be to provide training in basic geology and that the task of training them for specialised areas should be left to the industries or companies. At least this is what has been done within ESSO itself - in the form of on-the-job training.

Mr. T.G. Carson:

He mentioned that ESSO has so far employed 8 geophysicists, and the company is quite satisfied with their performance. He stressed that geophysicists need a very good grounding in basic geology before he can do his job well. He even cited the example of himself being originally only a geologist, and only became a geophysicist after the company's training scheme. The underlying message is that geophysicist need geology in their data interpretation. He was also of the opinion that to begin with, the grades of the students are very good indicators of their abilities. Good grades often mean that the student have a good ability to learn as well as to generate ideas to others. As such they must be taught to think, to ask questions and express themselves well.

OTHER IMPORTANT CONTRIBUTIONS/COMMENTS:

Mr. E.H. Yin:

Commented on the fact that recent graduates do not have enough field experience.

Mr. M. Shah:

Started by asking members of the panel to what extent their university education had contributed to their present positions. Commenting on the panels' complaints about the graduates that come to them, he explained that normally the employer has narrower perspectives compared to what the university education provides to the student. Also, whilst in their undergraduate days, the student are subjected to a different sort of pressure - that of facing the examinations. On the other hand, once they are in the services of their respective employers the pressure would be quite different. Perhaps, it is this factor that should be considered when

talking about student quality. He likened the graduates as being semi-processed products and it is up to the industries/employers to mould them further.

Mr. L.H. Teoh:

When commenting on the types of graduates that join the Geol. Survey every year, he gave quite a thorough account of several important inferences whilst being involved in their early training at the Geological Survey. From these inferences it seems that recent graduates, especially those from U.K.M. prefer the geotechnical lines. This can be explained by the fact that the U.K.M. curriculum is more aimed at specialisation than mere basic geology. Very rarely is there interest in the classical fields such as mineralogy, petrology, etc. Most seem to prefer the more lucrative areas regardless of their real interests.

Prof. C.S. Hutchison:

He observed that most students are too examination conscious. He pointed out that this is one of the weaknesses of the unit system, whereby a student has to pass a number of specific units (usually quite a few). As such the students have no opportunity to develop a real interest for the subject. The problem of geoeconomists is perhaps to find ways to make the students regain some 'excitement' in the subject. Many of them are just 'followers' on the field. Perhaps, he pointed out, the problem as a whole has its roots at the secondary school level.

Assoc. Prof. Paramanathan:

He pointed out the fact that students are being over-specialised. He also mentioned that perhaps the reason for the students not being able to develop a love for the subject is because of the fact that the classes are too big these days for individual attention by the lecturer concerned.

From the employers' point of view the following factors were very important:

1. The discussion pointed out the problem of overspecialisation such that it is difficult for the graduates to fit themselves properly into the job given to them. Most lack basic geology and prior exposure to enable them to make good interpretation of data.
2. On student quality, the students should be taught important complementary skills such as report writing as well as develop qualities of keenness and flexibility. They are also expected to have the ability to communicate ideas verbally as well as in the form of writing which are very important for the industries.

From the universities' points of view, the following points were highlighted:

1. It is difficult to instill a real love for the subject because classes are too large and many students recently take up geology only because of the lucrative job market.
2. Overspecialisation cannot be helped because there is, for one thing, the unit system in most of the science faculties which makes it inevitable that the students have to cover quite a great deal of subjects in a

number of areas in order to pass. Such a situation in turn has been due to the recent avalanche of information required not only in geology but also in other areas of knowledge. As it is a fact of life it just cannot be helped.

The above problem brought the discussion to a climax when both the "manufacturers" and the "consumers" agreed that what should be aimed at is a 'thinking' graduate, one who has enough strong basic geology as background and one who knows where to get his specialised information from. The secondary school curriculum can perhaps be changed so that the 'exam-conscious' mania can be reduced to a minimum. Exposure to job requirements can also be provided to students, that is if the industries are willing to sponsor them. At the end of it all one wonders what the "products" have to say for themselves!

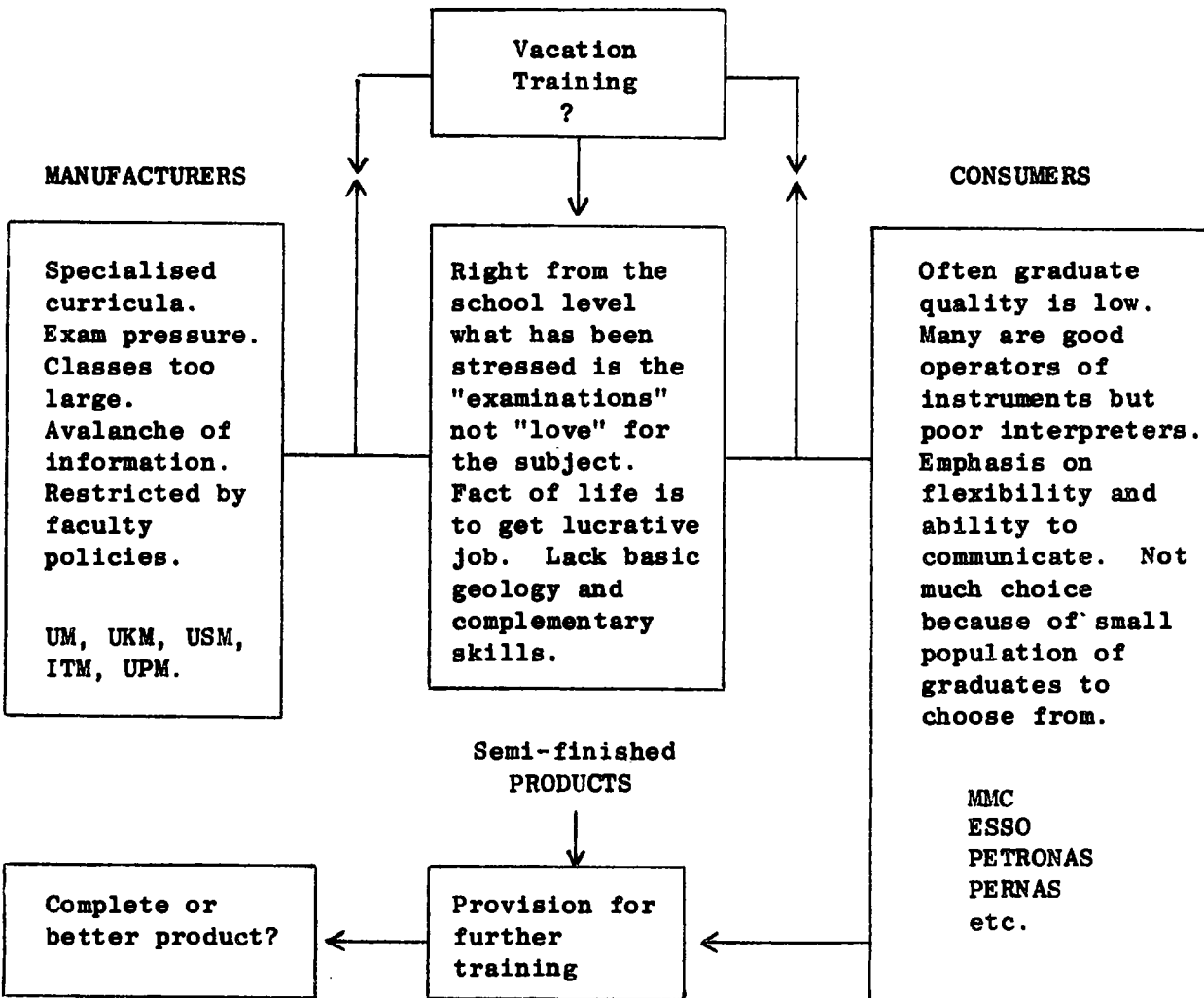


Fig. 1: Relationship between "Manufacturers", "Products" and "Consumers".
- A suggestion of realities.

ROLE OF LOCAL GEOSCIENCE SOCIETIES AND INSTITUTES

- A FORUM REPORT

The forum was held on the 27th of April 1982 between 1.30 and 2.30 p.m. at Abbet Room 1, Hotel Merlin. Some 42 participants were present at the forum.

On the whole, discussion centred about the activities of two geoscience societies and one institute namely the Geological Society of Malaysia (GSM), Soil Science Society of Malaysia (SSM) and the Southeast Asia Tin Research And Development Centre (SEATRAD). Some very interesting, important and beneficial (if implemented) ideas were put forward by the speakers who included the following illustrious geoscientists:

1. Dr. T.T. Khoo (Vice-President of GSM and lecturer at the University of Malaya).
2. Assoc. Prof. S. Paramanathan (Vice-President, Soil Science Society of Malaysia and lecturer at the Universiti Pertanian Malaysia).
3. Prof. C.S. Hutchison (Professor in Applied Geology, University of Malaya).
4. Dr. Abdullah Hasbi (Director, SEATRAD Centre, Ipoh).

Assoc. Prof. Ismail Md. Noor from the Universiti Kebangsaan Malaysia chaired the forum.

Some of the ideas put forward were as follows:

Dr. T.T. Khoo:

The geological society can organise short courses or training sessions which should be opened not only to the academic geologists and those working with the government or big companies but more specifically to personnel of smaller commercial holdings such as the managers of very small and remote tin mines for instance. The latter not only can improve their knowledge in geology of which they may not have had any comprehensive training in, but also get to know the usage of the latest technical know-how available. Such a valuable experience and opportunity rarely, if ever, walks into the path of the small timer. The biggest problem associated such training is of course that of funds as such ventures are never cheap to organise. Of course such projects should be well articulated in terms of its aims, the means by which it is to be done, who is to benefit from it, who are the experts to be invited to teach and so on. Short courses can also be organized in conjunction with conferences held. Dr. Khoo also mentioned the fact that many of the technical talks organized by the GSM may be too sophisticated for most of the members to comprehend.

Assoc. Prof. Paramanathan:

Dr. Param was of the opinion that societies such as the GSM or SSM can play a vital role in several ways. Firstly, it can help to bring people in the government service come into contact with people in the other sectors such as the academics and industrialists. These different groups who normally do not have the avenues to mix with each other could be brought together by their participation in such activities as arranged by the society, such as field trips to suitable localities. Dr. Param gave an example of

how the agronomists from FELDA, MARDI and other government bodies have learnt a great deal from their soil science counterparts who were on a field trip organised by the SSM. Another suggestion made was that societies can help prepare manuals or pamphlets containing some information about various topics on geoscience. Such manuals can help explain to would-be school leavers for instance what to expect in the field of geoscience, e.g. what is geoscience, what possible jobs can they do as geoscientists should they decide to embark on a university education. Another very important role that a society can play is that of public education. In the Malaysian context for instance we can speak of the society 'educating' the public with regards to issues such as pollution, deforestation, wasted mined lands, etc. Clear, objective and scientific accounts by the societies in the popular mass-media on such issues can help inform the public, who would then be made aware of such dangers should they be involved with government projects that run the risk of having any of the above unwanted effects.

In addition to the distribution of manuals the societies can also prepare educational items such as films, slides, sets of different rock types, etc. Members of the floor were happy when informed by Mr. L.H. Teoh, that the Geological Survey, Ipoh, have been giving away specially prepared rock samples to various schools which have requested for them (This was in response to a similar suggestion by Mr. K.Y. Khong of the Education Ministry). Dr. Param also spoke of societies lobbying for or against certain issues. However, En. Mohamad Ali Hasan mentioned that such practices may lead the societies into unhealthy politicking and suggested that it is perhaps better for societies to get involved through other more beneficial channels. He quoted an example whereby member/s of the GSM were included in the board of inquiries in the Kepong landslide incident. Incidentally, a member of the floor (Miss O.K. Lim, Curriculum Development Centre) inquired about the rehabilitation of mined-out land. A participant from the mining sector (En. Mokty Mahmood) answered that only large mines especially those dredged out have been shown to be profitably rehabilitated for agricultural purposes. Dr. Hasbi added that according to studies carried out by certain authorities most mined-out land are stable enough for houses to be built on them if they have the proper foundations.

Prof. Hutchison:

Reiterated and supported Dr. Khoo's proposal on the organising of short courses. He also mentioned that societies should provide the opportunity for members to exchange experiences and information with one another. He also stressed the role of educating the public.

Dr. Hasbi:

Gave a comprehensive account of the nature, history and function of SEATRAD Centre. He mentioned that SEATRAD Centre would be willing to take in students for on-the-job vacation training as well as carry out joint researches with the university geologists, provided that the projects involved are in line with those of the Centre.

SUMMARY:

It was agreed on the whole that the role of geoscientific societies such as the Geological Society of Malaysia, Soil Science Society of Malaysia, geoscience institutions and the SEATRAD Centre may be two-pronged

- (1) the organisation of functions beneficial to members of the societies concerned. This can be done through activities such as short courses, seminars, workshops, exchange of views and experiences and field trips, (2) the education of the public at large through relevant news items, explanations or comments or important related issues of interest in popular mass media, newspapers, film shows, pamphlets or samples for school pupils.

Mohamad Ali Hasan & Azizan Baharuddin

MASALAH PERISTILAHAN GEOLOGI DAN PENDIDIKAN GEOSAINS

(SATU LAPURAN MENGENAI PERBINCANGAN TERBUKA)

Walaupun sesi keempat di *Bengkel Pendidikan Geosains* telah diikhaskan untuk perbincangan terbuka (open discussion) berkenaan perkara-perkara Pendidikan Geosains di Peringkat Pra-Universiti; kursus-kursus 'refresher'; Latihan dalam perkhidmatan dan masalah peristilahan Geologi, perbincangan hanya dapat ditumpukan kepada dua topik yang disebutkan (tajuk) di atas.

Di masa perbincangan terbuka yang dipengerusikan oleh En. Mohd Shah Abdullah (ITM), dua kertas kerja telah mula-mula dapat diperbincangkan.

Puan Siti Zauyah (UPM) telah membentangkan kertas kerja berjudul "Perkembangan Dalam Pembentukan Istilah-Istilah Geosains". Kertas kerja ini menyentuh aspek-aspek seperti aktiviti pembentukan istilah oleh Jawatankuasa yang berkenaan; projek penyediaan dan penerbitan istilah untuk universiti dan kerumitan dalam pembentukan dan penerbitan istilah. Permulaan pembentukan istilah-istilah dalam bidang geosains yang meliputi bidang-bidang geografi, geologi, hidrologi, perlombongan dan sains tanah, menurut beliau telah bermula dengan penubuhan Jawatankuasa Istilah Geografi pada 3hb Julai, 1959. Ini bermakna usaha dalam kegiatan pembentukan istilah-istilah geosains telah menjangkau lebih daripada dua puluh tahun. Sehingga ini Dewan Bahasa dan Pustaka, sebagai badan induk perkembangan Bahasa Malaysia telah menghasilkan penerbitan Buku Istilah Ilmu Alam (1967), Istilah Geografi (1976) dan Senarai Istilah Geografi (1980). Terbitan istilah-istilah ini mungkin dapat memenuhi kehendak penggunaan sebelum/pra universiti dan tentunya terbitan-terbitan tadi belumlah lengkap lagi untuk kegunaan di peringkat universiti.

Memandangkan keperluan istilah-istilah geosains (terutamanya geologi) amat berkurangan maka kesemua universiti pada dasarnya telah menubuhkan Jawatankuasa Istilah secara tersendiri. Hasilnya, Jabatan Geologi Universiti Kebangsaan Malaysia telah mengeluarkan edisi pertama Istilah Kajibumi pada bulan Januari 1972, sementara Universiti Malaya mengeluarkan Istilah Geologi lima bulan kemudian. Istilah Sains Tanah juga telah dikeluarkan oleh Universiti Pertanian Malaysia pada bulan April 1981. Sebagai satu badan utama pengembangan bahasa, Dewan Bahasa dan Pustaka mula bergiat dalam aktiviti peristilahan bersama Bahasa Malaysia dan Bahasa Indonesia pada tahun 1972. Tujuan utama kegiatan DBP ini ialah

menyelaraskan istilah-istilah yang digunakan antara kedua-dua negara menerusi Majlis Bahasa Indonesia-Malaysia (MBIM). Dalam hal ini dua Jawatankuasa Istilah-Jawatankuasa Tetap Bahasa Malaysia (JKI-JKTBM) telah ditubuhkan. Pertamanya ialah JKI-Teknologi dan Sains Mineral (ditubuhkan pada tahun 1978) yang bertanggung-jawab membentuk istilah-istilah nama mineral, batuan, proses-proses geologi dan juga proses-proses perlombongan, manakala JKI-Hidrologi (ditubuhkan pada tahun 1980) bertanggung jawab memberntuk istilah-istilah dalam hidrologi dan hidrogeologi. Malangnya sehingga laporan ini ditulis istilah-istilah berkenaan belum lagi diterbitkan sebagai istilah rasmi.

Satu lagi projek DBP yang dilaporkan oleh Puan Siti Zauyah ialah projek penyediaan dan penerbitan istilah-istilah untuk 300 bidang ilmu dalam masa dua tahun (1981-82). Beberapa pakar daripada kalangan pensyarah-pensyarah universiti dan orang perseorangan dilantik oleh DBP untuk menyiapkan 2,000 istilah setiap bidang. Bagi bidang-bidang dalam geosains yang termasuk dalam projek ini adalah seperti berikut: (1) Geomorfologi, (2) Geokimia, (3) Geologi Kejuruteraan (termasuk Mekanik Tanah dan Batuan), (4) Geologi Ekonomi, (5) Geologi Perlombongan, (6) Geologi Struktur, (7) Kristalografi, (8) Geologi Petroleum, (9) Petrologi, (10) Fotoudara, (11) Geofizik, (12) Kejuruteraan Geoteknik, (13) Kejuruteraan Petroleum dan Gas, (14) Kajilogam/Metalurgi, (15) Kimia, Radiokimia dan Kesuburan Tanah, (16) Genesis Tanah, (17) Survei dan Klasifikasi Tanah, (18) Mineralogi dan Mikromorfologi Tanah dan (19) Fizik Tanah. Kemajuan projek yang dinyatakan amatlah lambat dan lembab. Dari 19 bidang geosains yang dinyatakan, hanya empat sahaja bidang yang manuskripnya telah diterima, iaitu Geologi Struktur; Kejuruteraan Petroleum dan Gas; Kimia, Radiokimia dan Kesuburan Tanah dan Fizik Tanah.

Beberapa kerumitan dalam pembentukan dan penerbitan istilah telah diperkatakan oleh Puan Siti Zauyah. Ini termasuklah mengenai istilah-istilah yang diterbitkan/diedarkan belum lagi dapat diselaraskan oleh DBP; projek DBP yang tidak dapat diselesaikan mengikut jadual yang dicadangkan dan cara menyimpan istilah-istilah selama ini, iaitu di atas kad-kad. Mungkin masalah yang dihadapi oleh Cawangan Istilah, DBP, menurut Puan Zauyah, adalah kekurangan pegawai dan pembantu penyelidik. Oleh yang demikian, bagi pelajar-pelajar dan tenaga pengajar dalam bidang-bidang Geosains, berkemungkinan mendapat buku-buku istilah yang lengkap hanyalah pada penghujung tahun 1983.

Kertas kerja kedua telah dibentangkan oleh En. Mohd. Ali Hasan (Universiti Malaya) berjudul 'Ke Arah Keseragaman Istilah Geologi?'. En. Mohamad Ali Hasan telah membuat tinjauan awal mengenai persamaan dan perbezaan istilah-istilah geologi yang digunakan di kedua-dua Jabatan Geologi (Universiti Malaya dan Universiti Kebangsaan Malaysia). Berdasarkan kepada buku terbitan (istilah geologi) yang tersebut di atas terdapat perbezaan yang amat ketara. Dari Jumlah 516 bilangan perkataan (istilah) yang dibandingkan istilah yang sama ialah 30% dan istilah yang tidak sama adalah 28%. Selainnya terdapat 214 istilah (42%) dari buku *Istilah Geologi* Universiti Malaya yang tidak ada kemasukannya (entry) di buku *Istilah Sains* terbitan Universiti Kebangsaan Malaysia. Contoh-contoh istilah yang berbeza ada ditunjukkan oleh En. Mohaman Ali Hasan. Beliau kemudian memperkatakan implikasi atau masalah yang akan timbul dari perbezaan istilah yang digunakan. Ini akan menimbulkan masalah kepada pelajar, pensyarah, masyarakat luar akademik dan juga kefahaman dari segi peperiksaan, dan mungkin juga melambatkan persediaan Bahasa Malaysia sebagai pengantar pengajaran dan pembelajaran (terutamanya penerbitan buku-buku Geosains dalam Bahasa Malaysia).

Beberapa cadangan telah dikemukakan. Antaranya:

- (i) Mengadakan 'Glossary' - Bahasa Malaysia-Bahasa Inggeris, dan sebaliknya sebagai Lampiran pada buku yang akan diterbitkan.
- (ii) Membentuk satu badan penyelaras antara universiti, seperti yang telah ada sekarang bagi Fizik dan Matematik. Badan penyelaras ini bolehlah dipanggil sebagai Jawatankuasa Istilah Geologi Antara Universiti.
- (iii) DBP patut membentuk JKI-JKTBM *Istilah Geologi*, yang ahli-ahlinya terdiri dari wakil-wakil kesemua universiti dan agensi kerajaan dan swasta yang berkaitan dengan geologi/geosains.
- (iv) Hasil (Rumusan) dari Persidangan-Persidangan Majlis Bersama Indonesia-Malaysia (MBIM) disebarikan dengan luasnya ke universiti-universiti dan perseorangan yang berkenaan untuk diperhatikan dan untuk mendapat pandangan serta komen.
- (v) Hasil (Rumusan) dari Persidangan-Persidangan MBIM, sekiranya agak lambat diterbitkan, patutlah diterbitkan secara bersiri menerusi media massa tempatan, seperti akhbar, terbitan persatuan (umpamanya Persatuan Geologi Malaysia) dan terbitan jurnal universiti (umpamanya Sains Malaysiana, Jurnal Sains Malaysia, dll.).
- (vi) Dewan Bahasa dan Pustaka disyorkan untuk menerbitkan *Istilah Geologi* dengan seberapa segera. Ini memandangkan istilah geologi belum pernah ada usaha-usaha penyelarasan dan keperluan yang amat sangat.
- (vii) Dewan Bahasa dan Pustaka juga disyorkan untuk mengadakan 'Bank *Istilah*' dan mengkomputerkan istilah-istilah yang sekarang telah dibentuk dan dalam simpanan DBP dan akhirnya,
- (viii) Di masa persidangan-persidangan MBIM, DBP disyorkan untuk membawa bersama (menjemput) lebih ramai lagi pemerhati (terutamanya dari kalangan universiti) untuk turut serta di dalam persidangan-persidangan yang berkenaan. Pembiayaan ke persidangan-persidangan ini mungkin separuhnya dibiayai oleh DBP atau pihak badan dari mana pemerhati itu datang untuk membiayai keseluruhan perbelanjaan yang berkaitan dengannya.

Di masa perbincangan, beberapa komen telah diterima dari ahli-ahli yang hadir. Antaranya (a) memperkatakan mengenai kemuslihatan dengan kehadiran istilah-istilah dari Indonesia. (b) merasakan kebimbangan dan kehairanan terhadap universiti-universiti menggunakan istilah-istilah yang berlainan. (c) ketiadaan istilah-istilah paleontologi, stratigrafi dan penilaian lombong dalam projek yang dikelolakan oleh DBP. Dalam perkara pendidikan Geosains, seorang ahli mencadangkan pertumpuan hendaklah dibuat kepada pemberian gambaran yang jelas mengenai aspek-aspek yang bersangkutan dengan geologi kepada masyarakat umum. Beliau mencadangkan salah satu projeknya ialah seperti penjualan sampel-sampel batuan, mineral, dll kepada mereka-mereka yang berminat, seperti sekolah-sekolah. Pihak Persatuan Geologi Malaysia menyambut baik terhadap saranan ini dan akan membentuk satu jawatankuasa untuk mengendalikan projek-projek 'mendidik' masyarakat umum dan dikenali '*Projek Pendidikan Geosains 1982*'. Ahli-ahli yang berminat untuk menjadi ahli jawatankuasa dan memberi cadangan mengenai projek geosains bagi tahun 1982 boleh menulis ke alamat: Pengerusi, Projek Pendidikan Geosains 1982, Persatuan Geologi Malaysia, d/a Jabatan Geologi, Universiti Malaya, Kuala Lumpur 22-11, Malaysia.

Mohamad Ali Hj. Hasan

PRESIDENTIAL ADDRESS & ANNUAL GENERAL MEETING 1982 - REPORT

PRESIDENTIAL ADDRESS

Dr. Mohamad Ayob, delivered his presidential address on 'Petroleum Exploration in Malaysia' on 27th April 1982 in Abbey Room 1, Hotel Merlin, Kuala Lumpur immediately after the Geoscience Education Workshop. The talk attracted about 40 members, a large portion of which were from the oil industry.

The contents of Dr. Mohamad Ayob's Presidential Address will be published in one of the Society's Bulletins.

ANNUAL GENERAL MEETING

Following the presidential address and a short teabreak, members of the geological society turned up for the AGM which was held at the same place on 27th April 1982 at 5.15 p.m. It was attended by about 25 members. Reports by the various office bearers were read and confirmed without much query.

The meeting then discussed two letters received. The first one, a letter from Professor P.H. Stauffer, urged the Society's newsletter to be issued in time, and the other from Mr. Koh Tuck Wai pertained to the formation of an Institute of Geologists Malaysia.

Next, Mr. Jimmy Khoo, the Chairman of the Young Geoscientist Publication Award for the year 1980 read the 'citation' announcing Mr. S. Chandra Kumar as the recipient of the award. A certificate and a cheque worth \$150.00 were then presented to Mr. S.C. Kumar by the President, Dr. Mohamad Ayob.

Having announced the new Council Members for the year 1982/83, the President thanked all Council Members, members and all organisations concerned for their kind cooperation and efforts in organising the various activities of the Society in the past year.

The new President, Dr. T.T. Khoo, then took over the chair and thanked the last Council for their good work and hoped that members will again give their fullest cooperation in the forthcoming Society's activities.

There being no other business, the meeting was adjourned at 6.50 p.m.

Mohamad Ali Hasan

AGM & ANNUAL DINNER 1982

27 April 1982



GSM pix - G. H. Teh & C. P. Lee

ANNUAL DINNER

The 1982 Annual Dinner was held in the Lotus Room, Hotel Merlin, Kuala Lumpur at 8.00 p.m. after the Annual General Meeting. In spite of the heavy rain and the flash floods which followed naturally, enough members and guests braved through these hazards to fill up 4 tables of a sumptuous Chinese dinner. During the Dinner, the new President, Dr. T.T. Khoo presented a small gift to the Immediate Past-President, Dr. M. Ayob, as a token of appreciation from the Society for his invaluable leadership and guidance of the Society for two successful years which saw the flourishing of activities. The downpour in no way dampened the spirit of the rather small but comfortable group which sat down to Dinner. The food was good but the company was even better.

CAPTIONS TO FIGURES (AGM, PRESIDENTIAL ADDRESS, ANNUAL DINNER)

AGM

- Fig. 1 Outgoing President, Mohd Ayob, chairing the AGM 1982, flanked by T.T. Khoo and L.S. Chin (on his left) and Mohd. Ali Hasan (on his right).
- Fig. 2 A section of members at the AGM studying the various reports handed out.

Presidential Address

- Fig. 3 Dr. Mohd Ayob delivering his Presidential Address

Young Geoscientist Award

- Fig. 4 C.S. Kumar receiving the Young Geoscientist Award 1980 from Mohd Ayob

Annual Dinner

- Fig. 5 New GSM President, T.T. Khoo, with an appetising joke before dinner
- Fig. 6, 7, 8, 9 Dinner is served - however, eating is pulsated by discussions, jokes, observations and listening.

BERITA PERSATUAN
(NEWS OF THE SOCIETY)

THE GSM COUNCIL 1982/83

President:	Dr. Khoo Teng Tiong (Universiti Malaya)
Vice- President:	Mr. Leong Khee Meng (Carigali-BP)
Hon. Secretary:	Mr. Tan Boon Kong (Universiti Kebangsaan Malaysia)
Asst. Hon. Secretary:	En. Mohd. Ali Hasan (Universiti Malaya)
Treasurer:	Mr. Chin Lik Suan (Datuk Keramat Smelting)
Editor:	Dr. Teh Guan Hoe (Universiti Malaya)
Immediate Past Pres.:	Dr. Mohd. Ayob (Petronas)
Councillors (2-year):	En. Abdul Aziz Hussin (Universiti Teknologi Malaysia)
	Mr. Khoo Kay Khean (Geological Survey Malaysia)
	Mr. Michael P.S. Leong (Petronas)
	Mr. Yeoh Gaik Chooi (ESSO Production Malaysia)
(1-year):	En. Abdul Malik Abdul Rani (ESSO Production Malaysia)
	En. Ahmad Said (Petronas)
	Mr. Choo Mun Keong (Malaysian Mining Corporation)
	Mr. Gan Ah Sai (Geological Survey Malaysia)

MESSAGE FROM THE PRESIDENT

PROGRAMME FOR 1982/83 AND FUTURE ACTIVITIES OF THE GEOLOGICAL SOCIETY OF MALAYSIA

The Geological Society of Malaysia was officially established on 10th January 1967 and so now the Society is in its 15th year of operation. Since its formation the support and cooperation of members and various bodies from all sectors have enable the Society to register steady growth and also organize activities relevant to the aims of the Society.

Activities and Problems

For the past years the main activities of the Society are the organization of technical talks, seminars and even international conferences which provided opportunities for members (and also non-members) to meet and discuss geology and the publication of papers of interest, news and other matters. In these two activities it appears that we have been doing quite well and to the satisfaction of members.

The provision of forums for discussion and publications are two activities which geological societies or associations throughout the world aim to do. These activities are, of course, essential and our Society should continue to carry out these activities and seek ways to improve on the qualities. However, the Society should also be active in other

directions which lead to promotion of geosciences as well. Furthermore, many members of the Society would like to see the Society be more active in seeking ways to alleviate the problems faced by the geoscience profession in the country. The large group represented by student and associate members of the Society also justifiably felt that their needs have not been sufficiently catered for. These are some of the problems we have to consider in drawing up the programme for the coming year and also the plans for the future.

At the AGID *Geoscience Education In Developing Countries Workshop* held in November 1981 in Manila and the recent GSM *Geoscience Education Workshop* held in Kuala Lumpur recently, it became increasingly clear that geoscience societies especially in developing countries have an important role to play in geoscience education by the provision of training courses, refresher courses and continuing education programme. This will be particularly welcomed by geoscientists working in places which do not subscribe to a wide selection of publications or do not have any internal training programme to improve their skills and expertise.

Another area in geoscience education which the Society has an urgent obligation is to enlighten students in secondary schools on the nature and scope of the geoscience and profession. At present geology is not taught in schools and it is believed that this effort will encourage more better students to pursue careers in geosciences. Hopefully this will contribute towards the advancement of geosciences in the country.

Participants of the earlier mentioned Workshops also felt that more geoscience should be introduced into the secondary school curriculum and this is one other area the Society should look into. With more knowledge of the geosciences it is felt that the students will become better informed citizens with better appreciation of the nature and problems of the earth we live in such as the environment, natural hazards and energy problems.

At present there is no legislation regulating the geological profession and this has contributed much to the disadvantage and problems faced by practicing geoscientists. Professional Members were admitted to the Society since last year. However, the proposed Mineral Engineers Act or by what other name it will be called, has been moving very slowly, if at all, towards Parliament during the past year. Clearly, the Society should renew its efforts to get the proposed regulating legislation moving. At present, many geoscientists are working under the unjust stigma of non-recognition for their work which they are professionally qualified to do. The success of geoscientists in locating hidden mineral deposits in the much hailed Central Belt Project, and in Pahang Trenggara and the discovery of hydrocarbon deposits deep into the bowels of the earth below the sea are loud testimony to the skill and expertise of geoscientists in exploration work and it ought to be heard.

The needs of student members coincide with those of associate members in many areas. Basically, these members would like to know more about various aspects of geology and one activity which they may be more interesting is field meetings to areas of geological interest, industrial plants using rock materials, mines and others. We certainly would like to hear from student and associate members on what kind of activities they wish the Society to organize for them.

Programme for 1982/83

Considering the aims of the Society, the requirements of members and the future of geosciences in the country the Council this year will be working on the programme shown in Fig. 1 with possible further additions. GEOSEA V will be in the process of organization this year and will be held in early 1984. The first circular will be issued by mid-year. The first phase of the Geoscience Education Project i.e. the Workshop was held on the day of the recent AGM and the next phase will be the preparation of career guidance pamphlets for distribution to secondary school students. Technical Talks and the Malam (Geological Evenings) will be held as usual. We shall try to organize field meetings also with student and associate members in mind. In addition to the Warta Geologi and Bulletin, we plan to publish the report on the recently held Geoscience Education Workshop sometime this year. There will be a Training Course on 'Rock as Construction Materials' (Rockcon) from 22 November to 2 December 1982 and the first circular has been sent to all members. In addition another Training Course on Industrial Minerals - Identification, Analysis and Utilization (Indusmin) will be organized and will probably be held in 1983. The Seminar programme will consist of a Rockcon Symposium, Economic Geology Seminar and the annual Petroleum Geology Seminar in 1982 and possibly an Indusmin Seminar in 1983. It appears that we have a rather busy programme and your support and cooperation will ensure that the programme will be carried out successfully.

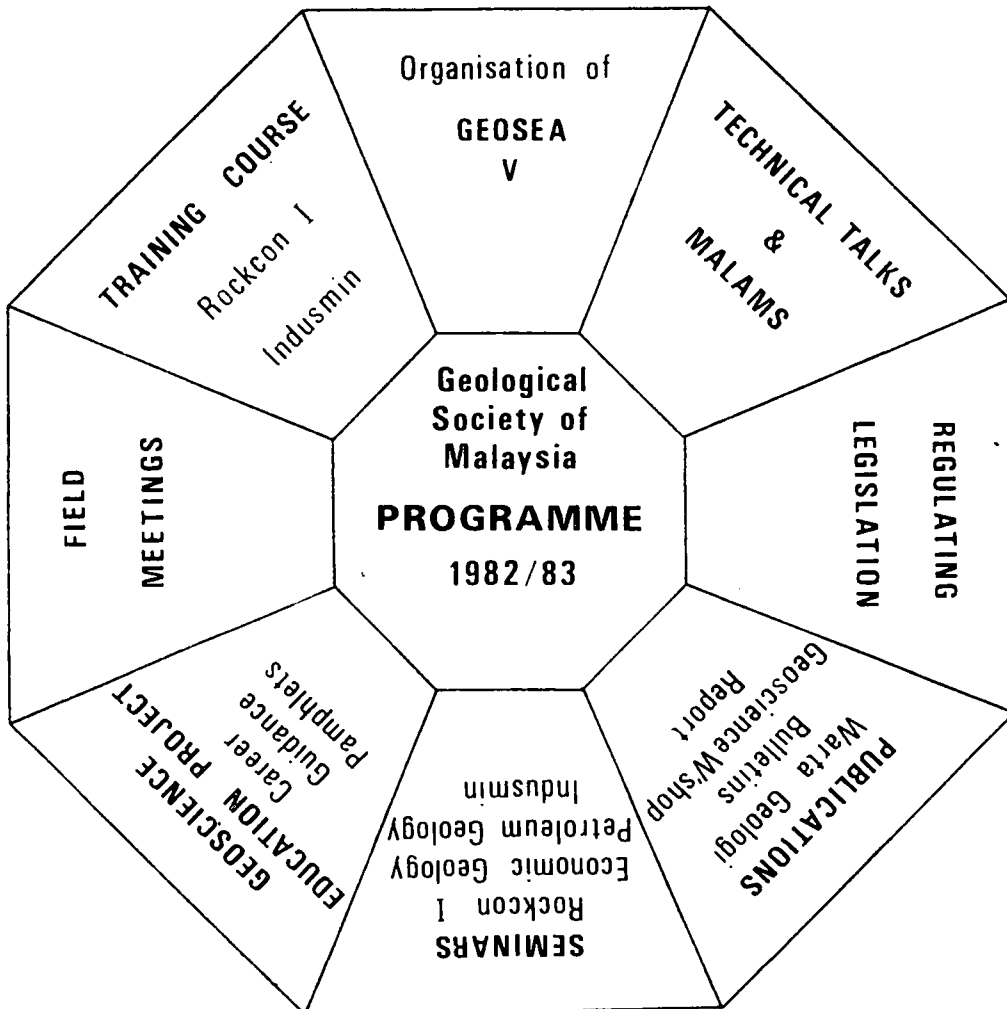


Fig. 1

Future activities

Like the New Economic Policy of the country, the future plans and activities of the Society, in my opinion, should also be based on the concept of the 'expanding cake'. There must be activities to cater for the interest of all groups of members in the Society and these groups have interest which do not exactly coincide. Preferably there should be no increase in activities of interest to one group at the expense of another. Therefore, the necessity to have the 'expanding cake'. The promotion of geosciences need be all round.

To have the 'expanding cake', it means we have to increase our activities and to date we have been able to cope with the increase in activities due to the willingness of Council members and members of the Society to work in their free time unselfishly. The brunt of these labours are, however, borne by the Council Members. It is, therefore, important that the working strength of the Council should be maintained and continues support and cooperation by members and bodies in all sectors are necessary to ensure a higher level of activities.

The activities of the Society are largely funded by kind donations from the industries and non-financial support of local universities and government sectors. Membership subscriptions are at present not enough to cover the costs of publications, operation and other activities of the Society. Inasmuch as we hope for continued support from the sources mentioned, we must also seriously think of ways to have increased levels of activities without becoming too much of a 'burden' on our staunch supporters. Cutting publication cost without sacrificing quality, holding activities with other organizations similarly interested in the particular activities and organization of projects which are at least self-supporting are some of the ways. Suggestions from members will be most appreciated on this matter.

Forecasts for the future

After posing some serious questions for members to think about, it will be appropriate to end this by some light-hearted forecasts of the future of the Society. As most forecasts are not remembered when wrong but will repeatedly be mentioned if proven right, I shall venture one here.

The method I will be using will neither be based on scientific charts, trends and histograms nor the non-repeatable methods of counting rice grains, interpreting bone oracles and shuffling cards. These methods are for the experts or maybe for the believers. I shall be using the time-honoured Chinese horoscope of animal signs. Everyone can dabble in this 'game' as long as one knows or can imagine how a particular animal behaves.

The founders of the Society had by coincidence or choice, knowingly or unknowingly, chosen the most challenging year of the whole 60-year horoscope cycle to establish the Society - the year of the Fire Horse. This year is dreaded by Chinese believers and this is the year birth rate takes a nose-dive because a Fire Horse child can be rather unmanageable and uncontrollable. On the other hand (a common phrase of geologists!) a Fire Horse child can also have distinctive and excellent qualities. But the risk of this gamble is too great even for highly reputed gamblers like the Chinese.

Before proceeding further, it is necessary to clarify that this method of forecasting can be applied for people as well as countries and also Societies, of course. For example, the U.S. is a Monkey (Declaration of Independence) and Russia is a Snake (Bolshevik Revolution) and it is remarkable that these two great powers have taken on characteristics of these two animal signs. Like the Monkey, the U.S. is innovative, open and adventurous (putting man on the moon, for example) and like the Snake, Russia is studious, secretive and mysterious (at least to many people).

What are the endowments of a Fire Horse which are so much feared for humans? A Fire Horse is believed to have a great store of energy and will power. He is a thrill-seeker, with gifts of ingenuity and resourcefulness. He is easily distracted and volatile. His personality is multi-faceted and leads several lives or have several professions. These characteristics in a way reflect the Society. The Society is multi-faceted having gone into promoting various 'professions' such as petroleum, geotechnical and economic minerals. The Society is easily distracted by various pulls and demands from different quarters. On the whole the endowments are propitious for a Society like ours.

This Fire Horse, which the founders have got for us, can certainly be a vehicle to bring us to our desired objectives provided we keep it fueled and going in the right direction. This can be achieved with the support and cooperation of every member and also the 15 members collectively called the Council which the membership put on the Fire Horse must ensure that it does not go astray or stops moving.

GSM EVENTS FOR 1982-84 - ORGANISATION BRIEFS

ROCKCON - Training Course on Rock as Construction Material

Date: Nov 22 - Dec 2, 1982.

Venue: Dept. of Geology, University of Malaya, Kuala Lumpur.

Organising Chairman: Mr. Tan Boon Kong (U.K.M.)

Organising Secretary: Dr. Yeap Ee Beng (U.M.)

ECONOMIC GEOLOGY SEMINAR 1982

Date: Mid October 1982

Venue: Leading hotel in Kuala Lumpur

Organising Co-Chairman: Mr. Andrew Spykerman (MMC)

Mr. Wong Yoke Fah (Valdun)

PETROLEUM GEOLOGY SEMINAR 1982

Date: December 1982

Venue: Leading hotel in Kuala Lumpur

Organising Chairman: Mr. Michael P.S. Leong

Committee member: Mr. Abdul Malik Rani

THAI-MALAYA BORDER CORRELATION SEMINAR

Organising Chairman: Mr. Khoo Kay Khean

GEOSCIENCE EDUCATION PROJECT/VOCATIONAL GUIDANCE

Project Chairman: Mr. Mohamad Ali Hasan

GEOSEA V 1984

Date: Commencing April 2 1984

Venue: Federal Hotel, Kuala Lumpur.

Organising Chairman: Dr. Khoo Teng Tiong

Organising Vice-Chairman: Mr. Leong Khee Meng

Organising Committee: B.K. Tan, E.B. Yeap, C.H. Yeap, Ismail Mohd. Noor, S. Paramanathan, Koh Tuck Wei, Aw Peck Chin, Syed Sheik Almashoor, G.H. Teh, S. Sandrasegaram, Y.F. Wong.

Co-Sponsor: Universiti Kebangsaan Malaysia

Co-operating bodies: Geological Survey Malaysia, Chamber of Mines, (initial list) Ministry of Primary Industries, local Universities, PETRONAS, Geological Survey Thailand, DMR Thailand, IUGS.

GSM EDITORIAL ADVISORY BOARD 1982/83

The following have been appointed/reappointed as members of the Board for 1982/83:

P.C. Aw

C.K. Burton

K.R. Chakraborty

Y.C. Chow

David Lee

N.S. Haile

K.F. Ho

K.F.G. Hosking

C.S. Hutchison

T.T. Khoo

N. Muangnoichareon

M.M. Purbo Hadiwidoyo

P.H. Stauffer

B.K. Tan

H.D. Tjia

C.H. Yeap

TRAINING COURSE ON ROCK AS CONSTRUCTION MATERIALS —



Construction is one of the major activities of developing countries in Southeast Asia. All successful constructions need suitable construction materials be it a humble low-cost home or a gigantic hydroelectric power scheme. The most common material for all major and sound constructions is rock or the products derived from it. As such it is important that those involved in construction, as engineers, planners and geotechnical professions, should have a good knowledge of rock as construction materials.

Aims of the Course

The aims of the course are to help professionals and semi-professionals involved in the construction industry

- a) to understand the properties and characteristics of rock when used as construction materials,

- b) to know the requirements of rock materials including gravel, sand and soil for different types of construction,
- c) to locate, select, and extract from sources of rock material, and
- d) to enable professionals of different disciplines, such as civil engineers and geologists, involved in construction to understand each other better.

Programme

The Course will consist of

- a) 7 days of lectures and other classroom work,
- b) 1 day of practical demonstrations, and
- c) 2 days of field studies.

In addition to the above, participants will be required to attend a one day specialist symposium on the subject to be held in conjunction with the training course. This is to enable participants to interact and learn from leading experts in the field.

Syllabus

The syllabus of the course includes the following topics:

1. Classification of construction materials
2. Engineering use and requirements of construction materials
3. Location and selection of material sources
4. Economic aspects
5. Material sampling
6. Material testing
7. Building stones
8. Rock excavation
9. Sands, gravels and soil
10. Crushed rock aggregates - requirement for highways
11. Deficiencies in highway materials and their treatment
12. Cement and concrete
13. Clay and bricks
14. and other topics

Course materials

An AGID book on '*Rock as construction materials*', which contains chapters on various topics mentioned in the syllabus written by leading experts in the field, will be used for reference. In addition manuals on rock testing and other notes will be distributed for further guidance.

Instructors

The instructors will be professional and academic staff from the University of Malaya, the National University of Malaysia, Government Departments and local industries. In addition up to three internationally distinguished lecturers are expected to guide and instruct in the Course.

Entry requirements

Participants must have at least a good working knowledge of both spoken and written English which will be the language of the Course. No formal tertiary qualifications are required but it will be advantageous to have qualifications in geosciences, engineering, materials science, physics or chemistry.

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. 4 (Jul-Aug 1982)
- WARTA GEOLOGI, Vol. 8, No. 5 (Sep-Oct 1982)
- WARTA GEOLOGI, Vol. 8, No. 6 (Nov-Dec 1982)
- WARTA GEOLOGI, Vol. 9, No. 1 (Jan-Feb 1983)
- WARTA GEOLOGI, Vol. 9, No. 2 (Mar-Apr 1983)
- WARTA GEOLOGI, Vol. 9, No. 3 (May-Jun 1983)

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

Nationals from Asean nations and neighbouring countries are welcome to participate.

Class size

There is a limit to the number of participants for the Course. The Course Director will determine the size of the class, the participants to be admitted and other matters relating to the Course.

Cost

The fee for the course is tentatively \$600 (Malaysian) or US\$275. The fee includes course materials, snacks and refreshments, lunch, registration fee for the specialist symposium, and local transport for field visits.

For further details write to:

The Organizing Secretary ROCKCON
Geological Society of Malaysia
c/o Dept. of Geology
University of Malaya
Kuala Lumpur 22-11,
MALAYSIA

ECONOMIC GEOLOGY SEMINAR 1982 - CALL FOR PAPERS

The Economic Geology Seminar 1982 is being planned by the Geological Society of Malaysia for mid-October 1982 and will be held at a leading hotel in Kuala Lumpur.

The proposed seminar, the second one in the Economic Geology series, will examine the progress of Economic Geology in the ASEAN region in general, and Peninsular Malaya, Sabah and Sarawak in particular, with their extensive Central Belt Project and mineral clearance programmes.

With the realization that energy and mineral resources are non-renewable and limited in amounts and the need for planned exploitation, it is hoped that the Seminar will bring together a large number of geologists in their various specialized fields from the government, public and private sectors, with papers on relevant and related topics for presentation and discussion.

People wishing to present papers at this Seminar are requested to inform the Organising Co-Chairman before 31st August 1982. Abstracts should be submitted before 15th September 1982.

Papers delivered at the Seminar will be considered for publication in the Society's Bulletin series.

Prof. Neville S. Haile last week (early March). Prof. Haile was the First (and Founding) President of the G.S.M., while Professor and Head of the Geology Department at U.M. (1967). He was also Chairman of the Pro-Tem Committee that organized the Society during 1966. Prof. Haile is now working with Robertson Research Corp. at their head offices in Wales, and was in Kuala Lumpur as organizer of the CCOP Workshop on Paleomagnetism in East and Southeast Asia (March 1-5).

Mr. Harvey C. Olander is currently in K.L. for a short visit (March 10-15). He was the Second President of the G.S.M. (1968), while with ESSO Exploration in K.L. After leaving the area in 1972, he became an apple farmer in Washington State, U.S.A. Unfortunately he and his apple trees were in the path of the 1980 Mt. St. Helens volcanic eruption! He survived but the trees did less well. Mr. Olander as a result came back to petroleum geology and is currently with ARCO International in Los Angeles.

It should be noted that these three persons are the only Presidents of the Society who no longer are resident in Malaysia, with the exception of Mr. Richard Murphy (President 1973).

I hope you find this 'alignment' of some interest.

Yours astronomically,

Signed P.H. Stauffer

c/o Robertson Research
International Limited
'TY'N-Y-COED', LLANRHOS,
LLANDUDNO, GWYNEDD,
NORTH WALES, LL30 ISA.

19 March, 1982.

Dr. G.H. Teh
Editor, Geol. Soc. Malaysia.

Dear Guan Hoe,

I have just received my copy of Bulletin 14 of G.S.M. & am writing to congratulate you on an excellent production. The papers are extremely interesting and the illustrations excellent. It's very encouraging to receive such a high-quality publication & see how well G.S.M. is from recent Warta Geologi and circulars.

With all best wishes. Please convey my congratulations and good wishes to the Council.

Yours sincerely,

Signed Neville Haile

YOUNG GEOSCIENTIST PUBLICATIONS AWARD 1980 - CITATION

The recipient of the 1980 Young Geoscientist Publications Award is Mr. S. Chandra Kumar, a tutor with the Geology Department, University of Malaya, Kuala Lumpur.

His publication entitled, "The gabbroic suite and associated hornfelses of Bukit Kemuning, Trengganu, Peninsular Malaysia" was published in the Bulletin of the Geological Society of Malaysia, No. 13, December 1980.

The timely publication of Mr. Kumar's paper coincides with a mineral clearance programme in Trengganu carried out by the Geological Survey of Malaysia to systematically map together with geochemical sampling approximately 4,000 square kilometres of the state. This publication will no doubt be essential reading to those involved in the Project.

In the words of the Nominations Board, Mr. Kumar's paper has been described as "a well-written paper with good supporting geochemical and petrographical data and containing mature discussions. A worthy contribution to Malaysian geology".

Signed Khoo Kay Khean
Chairman,
Award Nominations Board 1981.

The above was read at the Society's AGM
at Hotel Merlin, Kuala Lumpur
on 24th April 1982.

PROFESSIONAL MEMBERSHIP VETTING COMMITTEE

K.W. Choy has resigned from the Professional Membership Vetting Committee since he has migrated to Australia. T.W. Koh has been co-opted into the Committee as replacement.

The Committee now comprises:

T.T. Khoo (Chairman)
G.H. Teh
Y.F. Wong
M.K. Choo
L.S. Chin
T.W. Koh

NOMINATIONS COMMITTEE

The following have been appointed as members of the Nominations Committee:

Michael P.S. Leong (Chairman)
B.K. Tan
C.H. Yeap
S. Paramanathan (Reserve)

NEWS HIGHLIGHTS OF THE SOCIETY, MEMBERS

The Malaysian Geological Society- A Quiet Accomplishment

An often-mentioned name amidst the circle of Malaysian geologists, the Geological Society of Malaysia is now 14 years strong and continues to progress steadily.

Established in 1967, this non-profit making organisation aims at promoting the advancement of earth sciences, particularly in South East Asia, and to disseminate information on geology to fellow-geologists and those doing geology-related jobs.

With 500 members throughout Malaysia and overseas to boast of, the Society holds technical talks at least twice a month and conducts seminars

quarterly. The Petroleum Geology Seminar has been an annual feature for the past five years.

Monetary grants of a minimal sum are occasionally awarded to geology students working on a particular project and the Society has also been active in organising field trips both in Malaysia and overseas.

Geological maps of Malaysia and publications are also produced and these include the bi-monthly "WARTA GEOLOGI" and the academic journal, "Buletin Persatuan Geologi Malaysia" published twice a year.

Affiliated to the Geological Societies of other countries, and



President of the society, Dr. Mohd Ayob, delivering his keynote address during a seminar.

Located at the Geology Department of the University of Malaya, applications for membership are open to geology graduates and those doing work connected to geology. Subscription is \$25.00 per year.

The Society operates financially with the help of subscriptions of members as well as donations from various institutions and individuals.

President of the Society is PETRONAS Exploration Manager, Dr Mohd Ayob. This is his second term as President of the Society.

NEW HEADS OF GEOLOGY DEPARTMENTS

As from March 1st 1982, Mr. Syed Sheik Almashoor, was appointed Head, Department of Geology, Universiti Kebangsaan Malaysia. The former Head, Associate Professor Ismail Md. Noor, was at the same time promoted to Deputy Dean in the new Faculty of Physical and Applied Sciences.

At the Department of Geology, University of Malaya, Associate Professor B.K. Tan, was appointed Head of the Geology Department as from 1st April 1982. Professor C.S. Hutchison remains as Professor of Applied Geology while Professor P.H. Stauffer continues as Professor of Pure Geology. Dr. K.R. Chakraborty was also recently made an Associate Professor in the same department.

MEMBERS IN AUSTRALIA

Choy Kam Wai and Eric S.C. Toh are the more recent of a number of G.S.M. members who have migrated to Australia. To our knowledge, the following distinguished members have settled down in Australia: Mr. Lee Whye Kwong (a former G.S.M. President), Dr. Chan Siew Hung (formally with Universiti Malaya).

EDITOR'S NOTE

The Society kicks off its fifteenth year of existence with renewed vigour, as expected of a Fire Horse, under a new President, in Dr. T.T. Khoo, who has spared no effort in quickly getting down to marshalling the Council and members towards actively organising the Society's events/programmes for the year and in particular the preliminary organisation of the prestigious GEOSEA V in 1984.

Since its formation in January 1967 right up to today, the Society has had twelve Presidents. Besides changes in personalities in the various Councils, the style, contents and format of the Society's two publications, the Newsletter (first appearing in July 1966) and the Bulletin, have also undergone much evolution or metamorphosis with time. There is now more participation by members in the production of our publications, especially the WARTA. The WARTA of a particular 2-month period, will give, as complete as possible, a coverage of the Society's events during that time (including other items of interest of the wide spectrum of Geoscience).

With the continued committed participation and contributions from members, the Society will definitely march on with its significant, yet 'quiet accomplishment'.

At this juncture, it is only appropriate that we thank all contributors, members of the Editorial Advisory Board and reviewers who have helped to maintain the high quality of the Society's publications for the past year, with their valuable contributions, and we hope to perform just as well, if not better, in the new year.

KEAHLIAN (MEMBERSHIP)

The following have joined the Society:

Full Membership

1. T.R. Bultman, Exxon Production Research Co., P.O. Box 2189, Houston, Texas 77001, USA.
2. D.J. Harrison, Robertson Research, 10E-17E, 5th Floor, Block 6, Ayer Rajah Industrial Estate, Singapore.
3. Sukhdarshan Singh, 15, 24A, Jalan Raja Alang, Kuala Lumpur.
4. Lee Meang Sun, Dynamo Project, 3rd Floor, Komplek Kewangan, Jalan Raja Chulan, Kuala Lumpur.
5. Amran Ahmad, MMC, 4129A, Jalan Tengku Ismail, Kota Bharu, Kelantan.
6. R. Hillen, Geological Survey Malaysia, P.O. Box 1015, Ipoh, Perak.
7. Wahyu Sumata, Geological Research & Development Centre, Jln. Diponegoro 57, Bandung, Indonesia.
8. R.G. Hollamby, NL Petroleum Services, 1807 Shaw Centre, Scotts Road, Singapore 0922.
9. Sangad Bunopas, Geological Survey Division, Dept. of Mineral Resources, Rama VI Road, Bangkok 4, Thailand.
10. Shaharin b. Ibrahim, Jabatan Fizik, Universiti Pertanian Malaysia, Serdang.
11. Surendra Singh, School of Physics, Universiti Sains Malaysia, Penang.
12. U Ko Ko, c/o U.P.T. Bangka, Dinas E & G Pusat Pangkalpinang, Indonesia.
13. Dwight Kirk Cromer, 24A Lim Teck Boo Road, Singapore 1953.
14. Yusoff Bin Johari, Geological Department, Petronas Carigali, Tingkat 6, Wisma Peladang, Jalan Bukit Bintang, Kuala Lumpur, P.O. Box 2407.
15. Stefan Jerry Melnick, c/o Core Laboratories (M) Sdn. Bhd., 223, Jalan Segambut, Kuala Lumpur.
16. Chan Chee Kit, 24A Lim Teck Boo Road, Singapore 1953.

Student Membership

1. Zahari b. Muda, c/o Department of Geology, University of Malaya, Kuala Lumpur.
2. Mohammad Yamin b. Ali, c/o Department of Geology, Universiti Kebangsaan Malaysia, Kuala Lumpur.
3. Latif Anwar, c/o Department of Geology, Universiti Kebangsaan Malaysia, Kuala Lumpur.
4. Ibrahim Husui, c/o Department of Geology, Universiti Kebangsaan Malaysia, Kuala Lumpur.
5. Mohammad Tajri Kamaruzzaman, c/o Department of Geology, Universiti Kebangsaan Malaysia, Kuala Lumpur.
6. Mat Jusoh Seman, c/o Department of Geology, Universiti Kebangsaan Malaysia, Kuala Lumpur.
7. Yong Siew Kee, c/o Department of Geology, University of Malaya, Kuala Lumpur.
8. Cheah Swee Siang, U.K.M.S., L.B. 62, Kota Kinabalu, Sabah.
9. Thi Lip Kah, 21 Jalan Kuchai Lama, Batu 4½, Jalan Kelang, K. Lumpur 21-16.
10. Yeoh Kim Hock, 32-A, Jalan Horley, Kuala Lumpur 06-22.
11. Yong Chee Hong, 73-C, Jalan Union, Sentul, Kuala Lumpur.

Institutional Membership

1. Nanyang Technological Institute, Technical Services, Library, Upper Jurong Road, Singapore 2263.
2. Amoco Production Co. (International), Post Office Box 4381, Houston Texas 77210.

BERITA - BERITA LAIN

(OTHER NEWS)

EMPLOYMENT OPPORTUNITIES FOR GEOLOGISTS

MUD LOGGERS

Four (4) mud loggers are required by N.L. Petroleum Services (Baroid). Candidates must have a degree in Geology.

The work will be in Malaysia, and the office base probably also in Malaysia. Starting assignment will be four months of training before doing mud logging.

Those interested should write directly to:

N. Zorba
NL Petroleum Services
1807 Shaw Centre,
Scotts Road,
SINGAPORE 9122.

PART-TIME GEOLOGY DEMONSTRATIONS NEEDED

Several vacancies exist for part-time demonstrators in practical classes at the Department of Geology, University of Malaya for the 1982/83 session.

Any person possessing a recognised degree in geology is eligible to apply. Minimum qualification required is B.Sc in Geology.

The work is part-time. Since there are many different classes, the hours can often be arranged to suit personal conveniences. Practical classes, conducted in Bahasa Malaysia, are of 2-hour or 3-hour duration.

Practical classes are for the following:

- (i) An Introduction to Geological Maps
- (ii) An Introduction to Minerals, Rocks and Fossils
- (iii) Invertebrate Paleontology
- (iv) Geology for Engineers

Demonstrators are paid by the hour rate of \$12.50 per hour. Persons holding full-time jobs elsewhere (especially government agencies) must have the written permission of their respective employers.

Anyone interested should contact the Head, Department of Geology, University of Malaya, or Mr. Mohamad Ali Hasan (Tel: 575466 ext. 226), Co-ordinator, c/o Department of Geology, University of Malaya, Kuala Lumpur.

Mohamad Ali Hasan

KALENDAR (CALENDAR)

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

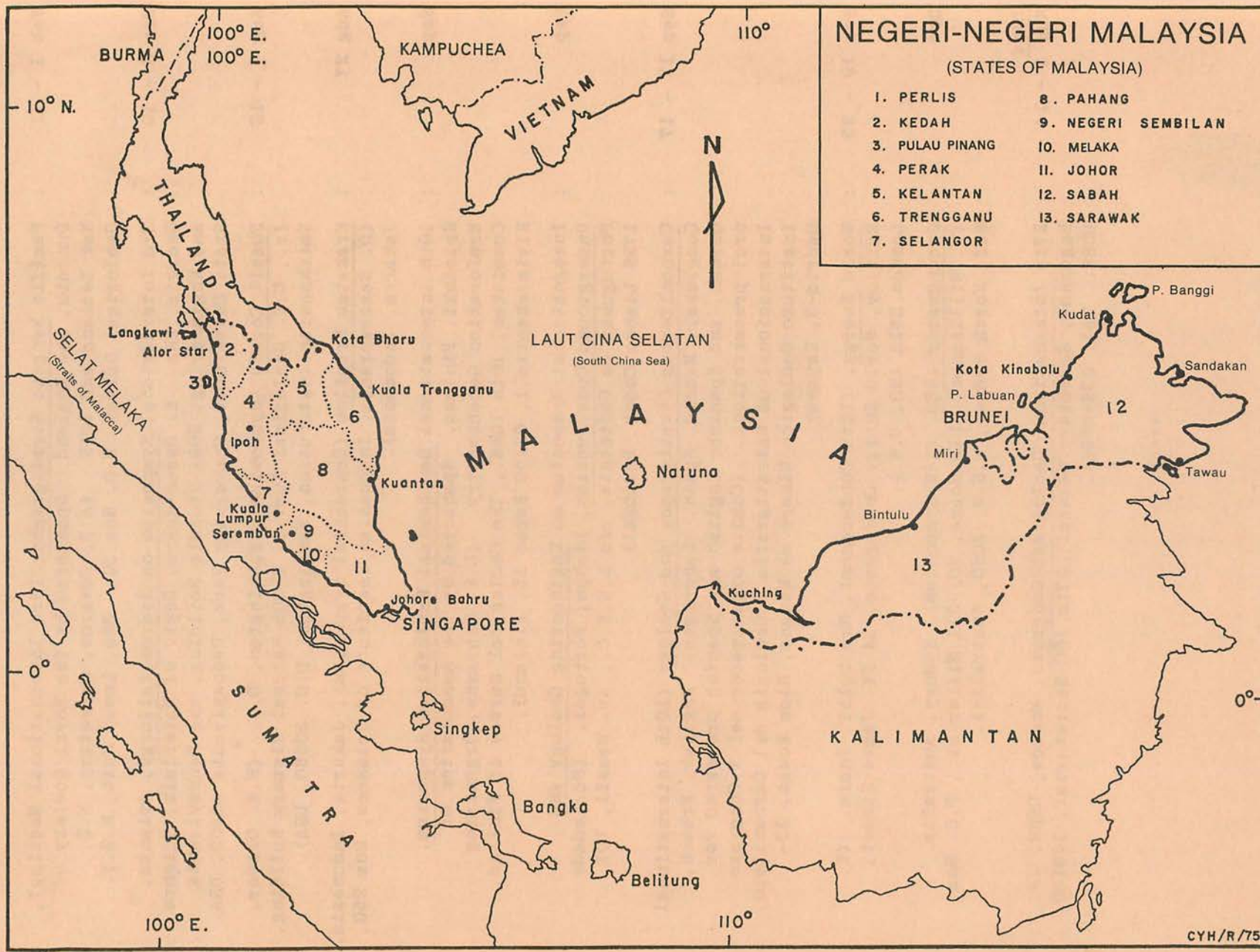
- May 5 - 7 : International Congress on the Environment and Geocancerology, Brussels, Belgium. (E.G. Peeters, Services Generaux de l'Institut European d'Ecologie et de Cancerologie, rue des Fripiers 24 bis, B-1000 Brussels, Belgium).
- May 7 - 20 : Recent crustal movements and phenomena associated with 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 OJU, 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 Metallogensis, (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, Dept. 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, 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, Highashi 1-1-3, Tatabe, 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, Pynhevsky 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, Baiwanzhuang, 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, Caiza 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, Dept. 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, Dept. 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, Perak, 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 Metamorphic Studies Group Meeting), London, U.K. (M. Brown, Metamorphic Studies Group, Department of Geology 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 - 388, 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, University 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, Washington, 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, 109180, USSR. Tel. 238-8588).



- ### 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 | |