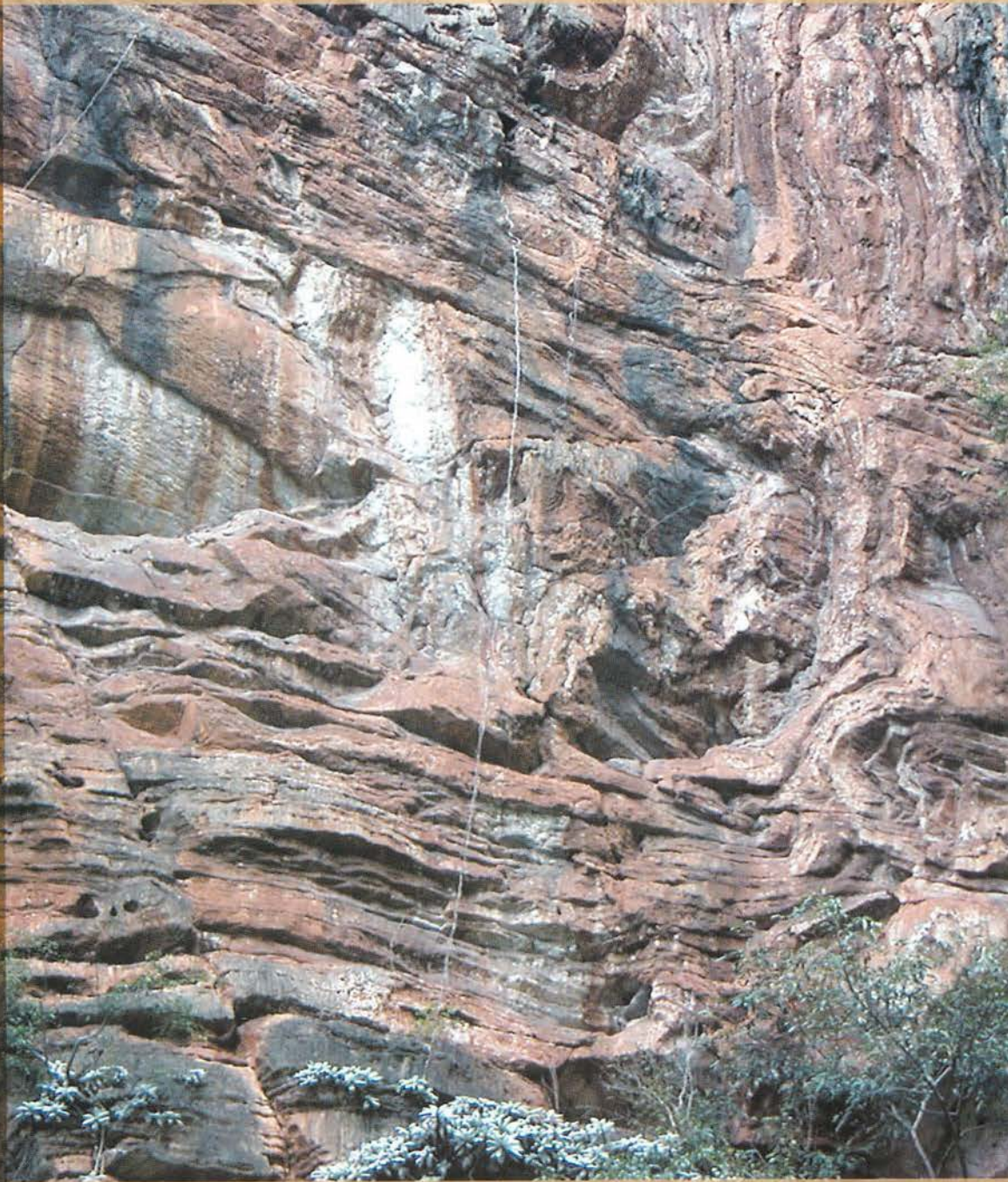




PERSATUAN GEOLOGI MALAYSIA

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# PERSATUAN GEOLOGI MALAYSIA

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The Society has a membership of about 600 earth scientists interested in Malaysia and other Southeast Asian regions. The membership is worldwide in distribution.

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# CATATAN GEOLOGI GEOLOGICAL NOTES

## Some early recollections of geology at the University of Malaya: 2, Transition Singapore to Kuala Lumpur

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The Carr-Saunders Commission on the future of Tertiary education in Malaya recommended that the University of Malaya should be completely moved to Johore Bharu across the causeway, and the Johore government provided land for the new campus to serve both Malaya and Singapore (then a single country). However, the university council rejected this recommendation and decided upon a two-way split. The Bukit Timah campus was to be maintained and to be known as the 'University of Malaya in Singapore' and a completely new campus in Pantai Valley, at the end of Bangsar Road west of Kuala Lumpur, was to be known as the 'University of Malaya in Kuala Lumpur'. The University of Malaya, as it came to be known after the separation of Singapore, continues to expand in Pantai Valley. The University of Singapore, so designated after the separation, later moved to a site on Kent Ridge, formerly the site of British Army officers' quarters.

The overall Vice-Chancellor was Sir Alexander Oppenheim, an eminent mathematician, former professor and head of that department, who commuted between both campuses. He stayed at the on-campus Vice-Chancellor's house in Singapore, and *pro tem* maintained a bungalow in the Government chalets behind the museum in the Lake Gardens of Kuala Lumpur, later demolished when the modern museum was built.

Frederick Mason was principal, in charge of the Pantai Valley campus, and "Sandy" Sandoshen was in charge of the Bukit Timah campus. The central focal point of the Pantai Valley campus was to be an artificial lake, which quickly became known as "Mason's folly", well named in view of the subsequent silting-up disasters which keep on happening to it, even up to the present day. The campus site originally was part of a large rubber plantation, alienated for the purpose of building an academic institution. There were stringent legal conditions imposed, such that only students, masters and fellows, and the Vice-Chancellor could be housed on campus. Adjacent land was acquired in section 12 (later farther afield) from the Petaling Jaya authorities for the purpose of building academic staff houses. The condition imposed on this land was that it could not be re-sold. This is why today the University is the custodian of extremely valuable real estate on which a large number of staff houses and flats were built. Initially the campus was in the country well outside of Kuala Lumpur, but Petaling Jaya has quickly grown to surround it. The active surrounding development rapidly caused Mason's Folly to silt up and trees grew upon it. Many of the original rubber trees have survived. They have returned to nature, but around the Vice-Chancellor's house one may still hear the explosion of a pod as the beautiful seed is projected far from the mother plant. Wild monkeys still persist in this oasis of nature,

Footnote: Part 1 of this saga appeared in *Warta Geologi*, Volume 25, No. 3, May-June, 1999, only recently published.

cooler at night than the surrounding built-up Petaling Jaya.

First year geology classes were to begin in Kuala Lumpur in 1959, making use of rather ugly black wooden sheds at the Technical College in Gurney Road (Fig. 1). Biology classes were conducted in the Victoria Institution. The nascent library was temporarily housed at the Technical College. Beda Lim was transferred from Singapore and he told me he initially set up his camp bed between the stacks until the on-campus library was ready. There was a feeling amongst us that the university was not yet ready to be in operation; but indeed students had been enrolled and they daily commuted from one side of Kuala Lumpur to the other. Of course, there were no great traffic problems then. Only the Arts and Engineering Faculty buildings were ready and in use. The administrators, including Sir Alexander Oppenheim and the Registrar, Mr. Foo Yeow Yoke, occupied a section of the Arts Faculty buildings above the concourse.

Nothing was quite ready, but it was an ideal opportunity for Pichamuthu to banish Sambe S. Gouda from Singapore. Upon transfer to Kuala Lumpur, each staff member was allocated a hired lorry in which to transport personal effects. Sambe Gowda as usual was somewhat lost with regulations, and transported all the university furniture from his house in Dunearn Road (it had to be sent back to Singapore). He properly also took with him all the first year teaching collections. One day Pichamuthu showed me a feature article in the Straits Times "Professor Gouda leads an expedition to Batu Arang". Of course, he was not a professor. Pichamuthu was absolutely furious. "He's done it to me again", he said. I knew who the "he" referred to, for Pichamuthu never could bring himself to voice his name.

After my confirmation as permanent on the academic staff, I became a member of the Kuala Lumpur Faculty of Science and rarely missed a meeting because of the attraction of commuting monthly to Kuala Lumpur for meetings with expenses paid. I usually drove to Paya Lebar Singapore airport, where all-day parking was free and flew up for the day (Nothing now is free in Singapore!). Malaysia-

Singapore Airlines used Dakota (DC3) planes and the Kuala Lumpur airport was at the end of Sungai Besi Road. On a few occasions I drove up and stayed overnight, usually putting up with Cyril Skinner (Malay studies) in his newly constructed university house near the present-day staff club (Fig. 2). On other occasions I stayed overnight with Mike Swift (Malay Studies), or with Tony Berry (Zoology), who was a fellow in the First Residential College (Fig. 3). A drive from Singapore to Kuala Lumpur took a good 12 hours, with my car being searched by the police going in and leaving each town. But I was always successful in reaching my destination before the evening curfew was imposed. I have a very vivid memory of the delightful smell of fresh bread wafting from the bakeries along Pudu Road. It was a great indicator that the long journey was nearly over. However, I have no recollections of what actually transpired at the faculty meetings, held in a meeting room on the first floor of the Arts Building (Fig. 4).

The Science Faculty academic personalities of Pantai Valley became known to me through these meetings. Rayson Huang (Chemistry), Thong Saw Pak (Physics), Christie Eliezer (Maths), John Hendrickson (Zoology) and Duncan Poore (Botany) were the occupants of the inaugural chairs. The academic staff occupied *pro tem* rooms in the Arts Building. Chemistry was the first to move out into their permanent building, which continues to be in use today, but of course with numerous subsequent extensions. The front of the building has a concrete trellis containing the shapes of volumetric flasks, beakers and other chemical paraphernalia, the result of a collusion between Rayson Huang and the architect. But they have recently been painted over and the original building is now in the shadow of a newer taller one.

Although it was a pioneering University, not yet with a properly set-up campus, there was an eminent assemblage of academicians, never since rivalled at the University of Malaya. Huang, an organic chemist, was later to become Vice-Chancellor of the University of Hong Kong. Eliezer was later to carve out his international reputation in Australia. But Senior Lecturer





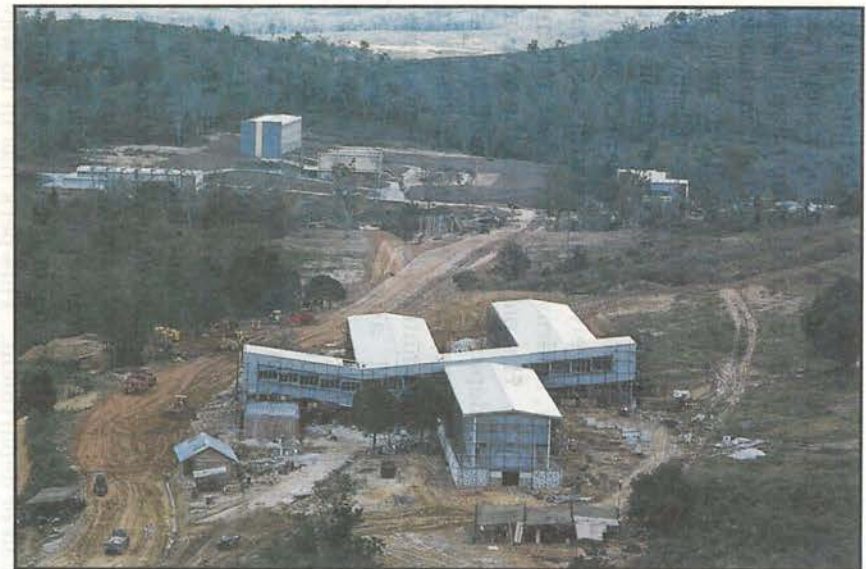
**Figure 1.** First Kuala Lumpur Geology Department at the Technical College, Gurney Road.



**Figure 2.** Newly built academic staff houses, Jalan 12/5, Petaling Jaya.



**Figure 3.** First Residential College already occupied. The lake was not yet in existence.



**Figure 4.** Agriculture Faculty in the foreground. Road linking it to the Science Faculty under construction. The Arts Faculty was in use.

Skyrme was already an internationally recognized mathematician and soon departed to take up the chair in Birmingham. Lord Medway (later to become the Earl of Cranbrook) added class to the Science Faculty as well as being a distinguished biologist. Vice-Chancellor Sir Alexander Oppenheim, set the example and continued his mathematics research while travelling extensively in his chauffeured car (When off duty, he drove a very modest ancient Morris Minor). His papers topped the annual mathematics department list of publications! In those early days, there was one professor in a department, appointed because of his academic reputation, and automatically head of department. This leadership has disappeared from the University of Malaya and today the heads of departments are appointed to be administrators. They frequently are not professors, are not qualified to and are not expected to offer academic leadership. This undoubtedly is the main cause of decline. The present glorification of administration is well displayed by the allocation of an official car to a professor **only** if he is the administrative head of department. This perk has in no way advanced the academic stature of the university.

I attended the first graduation convocation of the university in Kuala Lumpur. It was held in the most unacademic of venues — the Chinwoo indoor stadium, set on the hill behind the Methodist Church. It was followed by a reception around the swimming pool (Figs. 5 & 6). Nobody fell in despite being encumbered by academic robes! Accompanied by my friends Ian McLean (Physics), Roger Smart (Maths.) and Dennis Keane (English), we left Singapore in my car before dawn and arrived in time for the late afternoon ceremony. I remember being seated on a concrete bench in close proximity to Malaysia's first Yang di Pertuan Agong (king).

That night we squatted with Malcolm Wicks (Maths.) in a house rented by the university from the Petaling Jaya authorities. It was at the far end of Jalan Tanjong (5/4) on the lower slopes of Bukit Gasing. Petaling Jaya had recently been extensively cleared of forest and rubber estate to make a vast mosquito-infested desert. Jalan Gasing led directly across the Federal Highway (a minor road then, leading

only to Sungei Way) onto Jalan Universiti. Traffic was so sparse that there were no traffic lights at the junction. In recollection this is impossible to now imagine, for the Federal Highway has become dysfunctional because of an excess traffic density. In the evening we visited the Bukit Bintang Park, famous for its open-air taxi dancing ronggeng arena. However we were there for the striptease show and the main performer was the delightful Rose Chan.

Next morning Malcolm Wicks drove us to the Selangor Club for breakfast on the verandah overlooking the Padang, which has survived to the present-day, albeit reduced in size and without cricket and rugby. Later we went to the Merlin Hotel (now the Concorde), the recently opened first modern hotel of Kuala Lumpur, where we met Alistair Lamb (History). It was a great honour to be introduced by him to Han Suyin, who was then a doctor at the Johore Bharu hospital. It was the film of her book "A many splendoured thing", which I saw in Trinidad that drew me to the Far East. Han Suyin was married to a special branch police officer, and her book "And the rain my drink" gave a brilliant though imaginative account of life in a Chinese new village during the Malayan emergency, which had not yet come to an end.

Soon after his return from home leave, Pichamuthu transferred to Kuala Lumpur, leaving Tony Leow and myself in Singapore with the senior students. I immediately moved into the professor's comfortable air-conditioned office. Pichamuthu was now planning his retirement in two years time. He bought a new Morris Ambassador car to eventually ship back to Mysore, employed a driver, and he and his wife transferred by road. However, Pichamuthu hated speed and constantly observed the speedometer, never allowing the driver to exceed 30 mph. The journey took two days and upon arrival his driver immediately resigned. Later, when he had retired to Bangalore, he informed me that the purchase was a mistake for the model was not yet being built in India.

Engineering was the first faculty building to be ready on the Pantai Valley campus, and Professor Gray and George Low were transferred permanently from Singapore (Fig. 7). Alistair



Lamb, Len Young and Mary Turnbull of history were transferred to serve under the new professor John Bastin. Tony Berry and Satwant Singh Dhaliwal were both transferred to serve under the new Professor of Zoology, John Hendrickson, who was also master of the First Residential College. However soon after this Len and Mary left for the University of Hong Kong, where Len was eventually to become Professor of History. Mary, of course, continued to write on aspects of the recent history of Malaysia and Singapore. Alistair took up an academic position in Australia. Both Cyril Skinner and Mike Swift were permanently

transferred to Kuala Lumpur, but Cyril frequently flew down to Singapore for teaching duties. On such occasions he stayed at the Dalvey Road mess. Soon after this both Cyril and Mike resigned to take up academic positions in Australia at Monash University. Robert Ho was soon promoted to the Chair of Geography and gave an inaugural address in which he emphasized that "winter" fell in the tropics at night. This is no longer true because of pollution. There used to be many mornings in which temperatures fell to 68°F (20°C) and students walking to lectures in the mornings commonly wore leather jackets or woollen sweaters.



**Figure 5.** Tea after first graduation ceremony, Chinwoo Stadium. Yang di Pertuan Agong and Raja Permaisuri Agong.



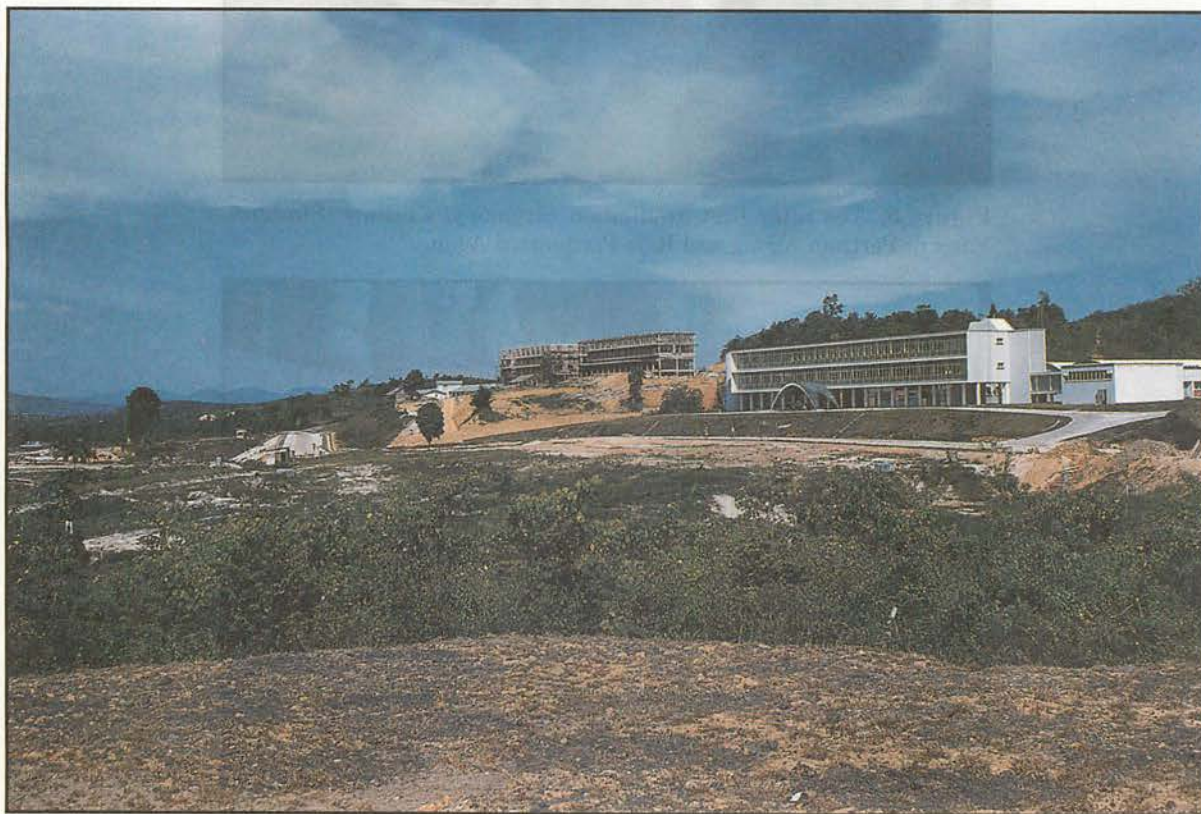
**Figure 6.** First graduation convocation at Chinwoo Stadium. Left: Roger Smart (Maths.), centre: Malcolm Wicks (Maths.), right: George Low (Engineering).



In January 1960 Tony and I finally packed the remainder of the geological materials in the Dalvey Road Estate building onto lorries and closed the department for good (Earlier this year I rediscovered the department building — now reverted once again to the happy status of being a private dwelling). Before our departure, I had the foresight to order from Schmidt Scientific in Robinson Road all their remaining Leitz teaching polarizing microscopes. I later received a reprimand from Professor Pichamuthu for doing so without his permission. But he very soon thereafter realized the wisdom of my action. Our own personal effects were also transported by road to Kuala Lumpur. Upon my arrival in Petaling Jaya, I had the conventional three nights free accommodation in the Majestic Hotel, across from the Railway Station. This wonderful heritage building later fell into disuse, was rescued by a group of senior architects to become the Art Museum. Regretfully, it is again in disuse and in great danger for survival. I was allocated the temporary use of Pichamuthu's house in Section

12 while he and his wife were on home leave in India. This was the "best" arrangement that the Registrar, Foo Yeow Yoke, could offer me. We all came to dislike him, but there was no point in going to his office with a complaint. He would habitually throw his arm around your shoulder with his standard response "leave it with me, I will look after you". You then came to know that you were doomed!

The new Science Faculty buildings in Pantai Valley were not yet complete (Figs. 8 & 9). I was given a staff room in the Arts Faculty building above the concourse, not far from the Vice-Chancellor's office, and we met frequently for morning coffee. It was there that I first met K.T. Joseph and George Moir, then both in the Agriculture Faculty, and our friendship has endured till today. Many readers may not be aware that these were the days before pocket calculators or Xerox machines. They were the days of slide rules, and Oppenheim personally favoured an abacus. Indeed he frequently gave talks to schools on the use and advantage of



**Figure 7.** Engineering Faculty built, Second Residential College under construction, no lake (Mason's Folly) yet.





Figure 8. Chemistry Department under construction.



Figure 9. First Geology/Mathematics Department under construction.



Figure 10. Chemistry and Geology/Mathematics Departments near to completion. The lake was not yet filled.



Figure 11. Second Residential College still under construction. The lake was now beginning to be formed.

the abacus. With Oppenheim's encouragement, I bought my own, but never found it easy for division. My neighbour in the Arts Faculty building was the Professor of Indian Studies. He used to sing his tutorials in Urdu, but I never complained for it must be the most mellifluous of tongues.

Sambe Gowda was in rather low spirits, for he knew that Pichamuthu had recommended that his contract not be renewed. Rayson Huang, the Dean of Science, gave a Christmas party for all the staff on the roof of the newly opened Chemistry Department (Fig. 10). Sambe had a few glasses of his favourite Guinness Stout, which made him even more depressed and I recollect that Tony Leow and I had to physically restrain him from throwing himself off the roof. Soon after that he returned to India and we heard that he later went to Nigeria.

The First Residential College was integrated, meaning that students were not segregated by gender. Although nothing untoward happened, the press continually attacked the concept and exaggerated any event beyond all proportion. Nevertheless newly matriculated students were subjected to the indignity of excessive 'ragging' by their seniors and Oppenheim came down hard on the offenders. The Second Residential College was built some time later (Fig. 11), and by that time it was decided that colleges would not be

integrated. Today there are many residential colleges dispersed throughout the campus, but the university is not wholly residential and a fleet of university buses ferry off-campus students after lectures to various districts of Petaling Jaya.

In addition to being a good Vice-Chancellor, Sir Alexander could also be very entertaining in the staff common room. One morning I asked him if staff rooms in the soon-to-be completed buildings would be air-conditioned. "Definitely not", he replied, "we have a strict rule that staff will not be air-conditioned. However I am prepared to provide basins of iced water in which to immerse the feet. It is well known that body temperature can be controlled through the feet. There is a further advantage that you can show great hospitality by providing a basin of iced water to each guest who enters your room". Later, of course, we got our own back on Oppenheim. The hot and humid climate rapidly promoted the active growth of fungus that ate away the blooming on the internal lenses of microscopes (and, of course cameras), eventually causing complete degradation. In geology each staff member needs a microscope, and these expensive instruments required air-conditioning. No way could be found from excluding the staff member from the same benefits. This annoyed Sir Alexander, but he was gracious in defeat.

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*Manuscript received 13 November 2002*



# CATATAN GEOLOGI GEOLOGICAL NOTES

## Morphology and chemistry of sphene from Noring granite, Stong Complex, North Kelantan and Perhentian Kecil syenite, Besut, Terengganu

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**Abstract:** Textural study of the accessory sphene in the Noring granitic magma shows that the mineral crystallized early compared to the sphene from the Perhentian Kecil syenitic magma which show a late crystallization texture. The granitic sphene has perfect euhedral shape whereas those from syenitic magma usually are anhedral to subhedral. All sphenes plot in the igneous field on the Al-Ti-Fe diagram which confirms the magmatic origin of the mineral.

### INTRODUCTION

Early crystallizing accessory sphene from both Noring and Perhentian Kecil syenite plutons are investigated here in terms of their morphology, texture and major elements chemistry.

### GENERAL GEOLOGY

The Noring granite is part of the Stong Complex located in northeast Peninsular Malaysia. The granite was dated as Cretaceous (Bignell and Snelling, 1977; Cobbing *et al.*, 1992) and was emplaced into metasedimentary rocks comprising sillimanite gneisses and calc-silicate gneisses. Singh *et al.* (1984) grouped the complex as part of the Eastern Granitic Belt of Peninsular Malaysia. They showed that on the grounds of textural and mineralogical composition the Berengkat tonalite and Noring granite are similar to those from the Eastern Belt. The Noring granite, the biggest component of the Stong Complex, formed as an oval-shaped pluton and consists of two facies i.e. Terang and Belimbing facies. The Belimbing facies

consists of hornblende biotite granodiorite and is distinctively pink coloured. Detailed geology of the Complex is given by Suraya Tulot and Rozi Umor (2001) and Nur Huda Jamin and Rozi Umor (2001).

The Perhentian Kecil syenite forms a circular outcrop at the central part of Perhentian Kecil Island. Although from the map, it appears to intrude the surrounding granitic body, field evidence shows that the Perhentian granite is relatively younger than the Perhentian Kecil syenite (Azman and Khoo, 1998; Azman, 2001). The pluton consists of a variety of igneous rocks ranging in composition from syenitic to monzonitic and even gabbroic rocks. The monzonitic rocks can be found at Tanjung Batu Nisan about 10 m from the contact between Perhentian Kecil syenite and Perhentian granite. In terms of percentage the syenitic rock totalled almost 90% of the pluton. Epidote nodules and veins (thickness from 2 to 5 cm) can be seen throughout the pluton. The gabbroic rocks are found as boulders mainly at Kampung Pasir Hantu and Pasir Patani and they usually contain hornblende as the main mafic phase. The

mineralogy of this rock is similar to appinitic rocks described elsewhere (Pitcher and Berger, 1972; Wright and Bowes, 1979).

### WHOLE ROCK GEOCHEMISTRY

Geochemistry of the Noring pluton shows that it is metaluminous (ACNK between 0.88 to 0.97) (Shand, 1943) with  $\text{SiO}_2$  ranging from 62.51 to 70.46% (Cobbing *et al.*, 1992) whereas the Perhentian Kecil syenite is more basic, characterized by rocks with  $\text{SiO}_2$  from 46.8 to 65.9%. Both rocks can be classified as I-type according to Chappell and White (1974) and both are metaluminous with ACNK values less



Figure 3. Euhedral sphene in the Noring granite.

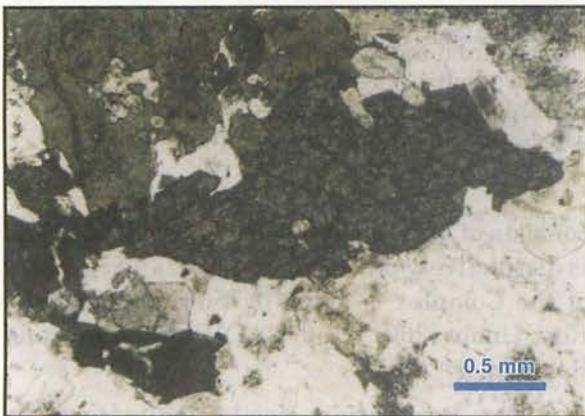


Figure 1. Subhedral sphene in the Perhentian Kecil syenite. Note the associated clouded apatite at the margin of the crystal.

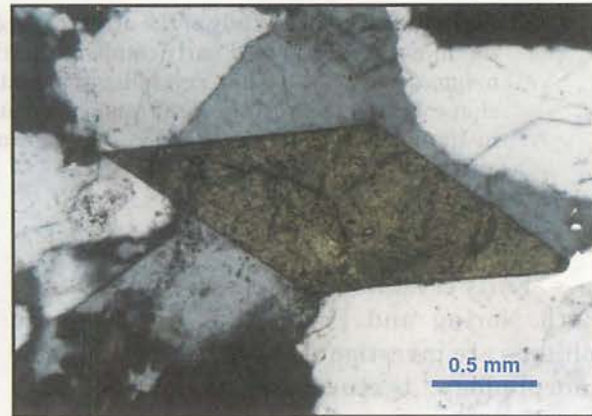


Figure 4. Individual euhedral sphene from the Noring granite.



Figure 2. Anhedral sphene associated with hornblende in the Perhentian Kecil syenite.



Figure 5. Two perfectly euhedral sphene crystals in the Noring granite associated with hornblende.



than 1. All rocks from both plutons generally have high alkali content, with  $\text{Na}_2\text{O}+\text{K}_2\text{O}$  ranging from 8.16 to 9.93% for the Perhentian Kecil syenite and 7.82–8.71 for the Noring granite.

### PETROGRAPHY AND SPHENE TEXTURE

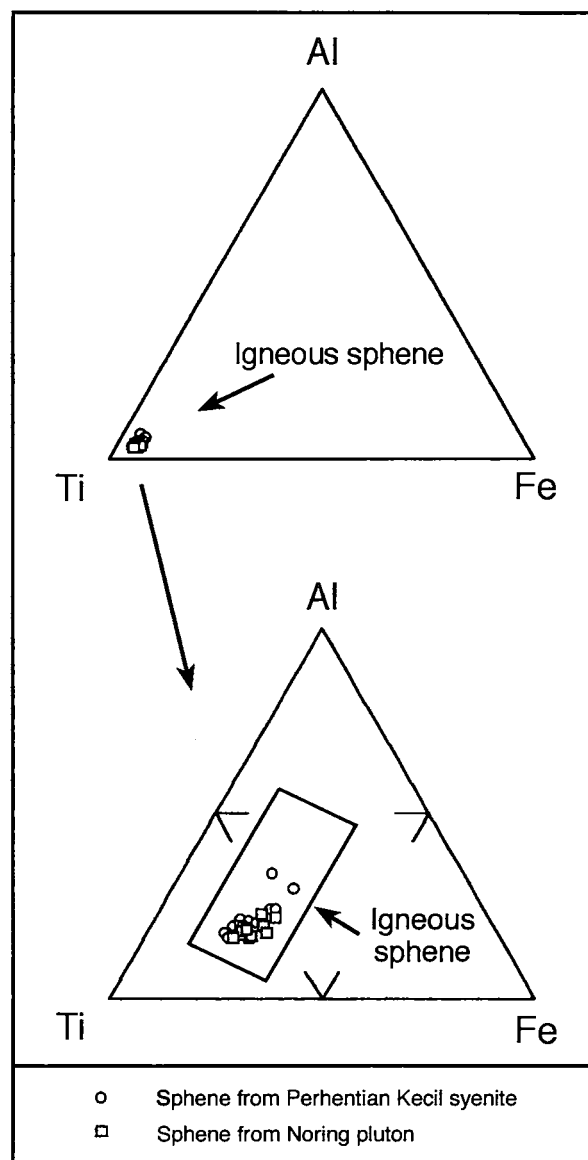
The essential minerals in both the Perhentian Kecil syenite and Noring granite are similar, namely, K-feldspar, plagioclase, hornblende, pyroxene, quartz, biotite, sphene, epidote, apatite, zircon and magnetite (Azman and Kamarul Hadi, 2000). In both plutons sphene is the main accessory mineral. In the Perhentian Kecil syenite, sphene is usually associated with hornblende-biotite clots and the shape is anhedral to subhedral (Figs. 1 and 2). In the Noring granite sphene is either associated with the hornblende-biotite clot (Fig. 3) or occur as individual crystals (Fig. 4) which are mostly euhedral (Figs. 3, 4 and 5). Inclusion of apatite is rather common for the sphene from both plutons, but the apatite from Perhentian Kecil syenite sometimes has a clouded core. The sphene from the Noring granite is less fractured compared to those from the syenite.

### SPHENE GEOCHEMISTRY

The composition of the sphene has been determined using an electron microprobe located at the University of Manchester. All samples used were highly polished thin sections coated with 20 nm carbon film. The instrument (modified Cambridge Geoscan) was running under the following conditions: 3 nA specimen current on cobalt metal with count time of 40 liveseconds.

Analyses of sphene are given in Table 1. In general the sphene from the Noring granite and the Perhentian Kecil syenite plutons are very similar. The sphene from Perhentian Kecil syenite contain 25.7–27.4% CaO, 1.42–2.13 FeO and 0.63–2.4% BaO whereas those from Noring granite contains 25.62% CaO, 1.59–2.18 FeO and 0.98–2.87. However the slight variations between the sphenes is that the Noring granite

sphene has lower BaO and  $\text{Al}_2\text{O}_3$  compared to the Perhentian syenite sphene. Both CaO and BaO are relatively lower compared to other sphenes from calc alkaline granites. On an Al-Ti-Fe diagram which discriminates between igneous and secondary sphene in the Victoria Range granitic rocks, South island New Zealand (Tulloch, 1979) all the analysed sphenes fall into the igneous field of this diagram (Fig. 6).



**Figure 6.** Al-Ti-Fe diagram for the sphenes from both Noring granite and Perhentian Kecil syenite. Note that all the samples plot in the igneous field of sphene of Tulloch (1979).

**Table 1.** Geochemical analyses of sphene from Perhentian syenite and Noring granite.

<b>Sphene from Noring granite</b>													
Analyses	1	2	3	4	5	6	7	8	9	10	11	12	
SiO <sub>2</sub>	30.02	28.58	30.20	29.83	29.83	29.60	29.84	29.61	29.28	29.21	29.48	29.41	
TiO <sub>2</sub>	35.59	34.19	32.70	35.56	35.86	35.08	34.81	35.49	34.34	34.01	33.92	34.87	
Al <sub>2</sub> O <sub>3</sub>	1.53	1.21	1.73	1.34	1.48	1.39	1.67	1.32	1.40	1.48	1.34	1.22	
Cr <sub>2</sub> O <sub>3</sub>	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FeO	1.60	1.83	1.87	1.73	1.71	1.67	2.18	1.94	1.71	1.97	2.10	1.59	
MgO	0.12	0.05	0.00	0.01	0.08	0.08	0.05	0.03	0.19	0.00	0.03	0.04	
CaO	27.41	25.62	25.08	26.88	27.04	25.87	26.51	26.29	25.69	25.64	25.89	26.17	
Na <sub>2</sub> O	0.19	0.21	0.16	0.12	0.31	0.37	0.11	0.23	0.25	0.13	0.06	0.02	
K <sub>2</sub> O	0.06	0.13	0.29	0.10	0.13	0.37	0.09	0.03	0.13	0.01	0.07	0.03	
BaO	0.98	2.23	1.67	1.48	1.63	1.84	1.71	1.73	2.03	2.87	2.20	2.38	
Total	97.49	94.04	93.71	97.04	98.07	96.27	96.97	96.67	95.03	95.31	95.08	95.73	
Formula based on 4 Oxygen													
Si	0.81	0.80	0.84	0.82	0.81	0.82	0.82	0.81	0.82	0.82	0.83	0.82	
Ti	0.72	0.72	0.69	0.73	0.73	0.73	0.72	0.73	0.72	0.72	0.72	0.73	
Al	0.05	0.04	0.06	0.04	0.05	0.05	0.04	0.05	0.05	0.05	0.04	0.04	
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
Fe	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.05	0.05	0.04	
Mg	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	
Ca	0.79	0.77	0.75	0.79	0.78	0.77	0.78	0.78	0.77	0.77	0.78	0.78	
Na	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00	
K	0.00	0.01	0.01	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Ba	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	
<b>Sphene from Perhentian Kecil syenite</b>													
Analyses	1	2	3	4	5	6	7	8	9	10	11	12	13
SiO <sub>2</sub>	29.35	30.39	29.97	29.82	29.72	29.83	29.64	29.20	29.41	29.07	29.81	30.05	29.26
TiO <sub>2</sub>	35.16	35.43	36.06	36.68	35.74	34.24	36.18	34.93	35.91	35.03	33.16	34.59	34.51
Al <sub>2</sub> O <sub>3</sub>	1.37	1.66	1.36	1.31	1.41	2.58	1.54	1.87	1.66	1.60	2.21	1.85	1.56
Cr <sub>2</sub> O <sub>3</sub>	0.00	0.14	0.14	0.00	0.12	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	1.81	1.55	1.42	1.57	1.55	1.66	1.52	1.99	1.59	1.70	2.13	2.07	1.86
MgO	0.00	0.07	0.09	0.00	0.01	0.06	0.17	0.08	0.11	0.11	0.08	0.43	0.04
CaO	26.46	27.43	27.42	27.44	27.06	27.27	27.38	26.28	27.16	26.71	26.78	27.07	25.68
Na <sub>2</sub> O	0.05	0.18	0.27	0.07	0.23	0.10	0.13	0.18	0.19	0.15	0.23	0.20	0.09
K <sub>2</sub> O	0.06	0.03	0.07	0.08	0.01	0.06	0.02	0.03	0.00	0.03	0.01	0.06	0.06
BaO	2.11	2.37	1.60	0.86	2.02	1.30	0.65	1.24	0.63	1.30	1.35	0.83	1.78
Total	96.36	99.25	98.39	97.81	97.86	97.12	97.23	95.80	96.65	95.71	95.77	97.16	94.83
Formula based on 4 Oxygen													
Si	0.80	0.81	0.80	0.79	0.79	0.80	0.80	0.80	0.80	0.80	0.82	0.81	0.81
Ti	0.72	0.71	0.72	0.74	0.72	0.69	0.73	0.72	0.73	0.72	0.68	0.70	0.72
Al	0.04	0.05	0.04	0.04	0.05	0.08	0.04	0.06	0.05	0.05	0.07	0.06	0.05
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.04	0.03	0.03	0.04	0.04	0.04	0.03	0.05	0.04	0.04	0.05	0.05	0.04
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Ca	0.78	0.78	0.78	0.79	0.78	0.79	0.79	0.77	0.79	0.79	0.79	0.78	0.77
Na	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.02	0.03	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02



## CONCLUSIONS

1. The sphene from Noring granite is euhedral compared to sphene from Perhentian Kecil syenite. This suggests that the sphene in the granitic magma formed early in the crystallization history compared to the sphene from syenitic magmas which formed rather late.
2. The sphene from both plutons have a similar chemical compositions and plot in the igneous field sphene of Tulloch (1979).

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# PERTEMUAN PERSATUAN MEETINGS OF THE SOCIETY

## Ceramah Teknik (Technical Talk)

### SATURDAY MORNING WITH LADY GEOLOGISTS

**8 March 2003**

*Geology Department  
University of Malaya*

### Report

This half day seminar was organized by the Young Geologists' Working Group of Geological Society of Malaysia. This event was organized on 8 March 2003 at Geology Department, University of Malaya. The purpose of this seminar is to bring together lady geologists from various organisation to share their knowledge and experience with local geological experts, researchers, academicians and students. Lady geologists also had played significant role in nation development. It happens that this event fall on the same day as International Women Day. This event also as a platform for lady geologists in improving their confidence in presentation, public speaking and answering questions, skills which were not taught directly during undergraduate level.

The presentation basically is divided into two session; one session on the conservation geology while the other more on engineering geology. The first session mainly discussed on how to preserve our geological heritage at the same time the geological material also needed to be exploited for country development. It need many parties and authorities involvement. Both of the presenters of this session had presented very good case on the need to preserve our valuable geological heritage. The second session basically deals with slope stability and instability. The session had covered all aspect of slope from the assessment, design, mode of failure and one of the remedial solution.

The papers presented in this seminar and the presenters are as follow:

- Kinta Valley Karst: managing our heritage  
by Ros Fatimah Muhammad (*Universiti Malaya*)
- Geologi pemuliharaan: kajian kes Kompleks Migmatit Stong  
by Tanot Unjah (*Universiti Kebangsaan Malaysia*)
- The importance of geological input and engineering properties of rock in slope stability analysis  
by Haryati Awang (*Universiti Teknologi Mara*)
- Some case studies on slope failure in Malaysia  
by Siti Hafidzah Sheikh Ismail (*DPI Konsult Sdn. Bhd.*)
- Environmental friendly slope protection system  
by Aniza Abdul Rahman (*Modern Plaza Sdn. Bhd.*)



An active discussion session followed the presentation. Approximately 25 participants were involved in this seminar. However, the participation increase suddenly during the tea break.

The Young Geologists' Working Group is look forward to organize such an event should there are any lady geologists who like to share their experience and knowledge with others.

Abd Rasid Jaapar  
 Chairman  
 Young Geologists' Working Group  
 Geological Society of Malaysia



## **SATURDAY MORNING WITH LADY GEOLOGISTS**

**8 March 2003**

*Geology Department*

*University of Malaya*

### **Abstracts of Papers**

## **Some case studies on slope failure in Malaysia**

SITI HAFIDZAH SHEIKH ISMAIL

DPI Konsult Sdn. Bhd.

Slope failure is one of those tragic event that leaves a bad memory to the victim. The study area falls within Selangor and Pahang, and the general geology for the study areas are intrusive granite (acidic) with the age of Late Triassic and basalt of Early Pleistocene age. Generally, the case studies can be divided into three different categories of slope such as slope failure in the cut slope, fill slope and rock slope area. The failures of the cut slope mainly influenced by the existence of clay material, etc. The slope failure in the fill slope mainly caused by different factors that leads to the low shear strength and finally, disaster while the slope failure in the rock slope basically deals with unstable colluvium and structural features such as joints that may cause more excessive failure.

For each type of slope, the study on the groundwater level, structural features, lithology, compactibility of the soil, grade of weathering, etc. were carried out. All the failed slopes for these case studies are fresh and not yet rectify. In conclusion, to set-up a safe slope is not only playing with numbers but the main issues is what you see at side.

## **Geologi pemuliharaan: kajian kes Kompleks Migmatik Stong**

TANOT UNJAH

Institut Alam Sekitar dan Pembangunan (LESTARI)  
Universiti Kebangsaan Malaysia

Batuan Kompleks Migmatik Stong merupakan batuan yang satu-satunya terbentuk melalui proses injeksi magma di Kelantan dan merupakan salah satu daripada dua yang terdapat di Malaysia. Kehadiran batuan ini menunjukkan kepelbagaian yang tinggi dari segi hasil aktiviti dalaman dan luaran. Berdasarkan kajian terhadap kepelbagaian fitur dalaman dan luaran batuan Kompleks Migmatik Stong mempunyai nilai saintifik dan estetik tinggi. Kajian khas di geotapak batuan leukogranit Kenerong mendapati batuan ini mempunyai 6 kepelbagaian batuan, 4 kepelbagaian struktur dan 7 kepelbagaian geomorfologi dan fitur rupabumi. Kepelbagaian batuan terdiri daripada syis kuarza biotit, leukogranit, granit, granodiorit, granit feldspar alkali dan granitoid kaya kuarza. Kepelbagaian struktur pula terdiri daripada telerang, kekar, sesar dan zenolit manakala kepelbagaian geomorfologi dan fitur rupabumi dicirikan oleh lembah curam, cerun, air terjun, tebing curam, bongkah igneus membulat, fitur pengelupasan dan fitur lubang periuk. Kehadiran fitur rupabumi tebing curam di geotapak ini telah membentuk air terjun yang tertinggi di Asia Tenggara. Keseluruhan batuan Kompleks Migmatik Stong

dicadangkan untuk dipelihara sebagai Taman Geologi Kompleks Migmatik Stong manakala Geotapak leukogranit Kenerong ini telah dicadangkan dipelihara sebagai tapak terpelihara di bawah Akta Perhutanan (1982).

## **Environmental friendly slope protection system**

**ANIZA ABDUL RAHMAN**

**Modern Plaza Sdn. Bhd.**

With much occurrence of slope failures, earth/slope retention solutions has become necessity. Many methods have been used in finding solutions to earth/slope retention matters, including the application of concrete structures, such as reinforced concrete, as well as pre-cast concrete products. To-date, several pre-cast concrete products has been introduced into the market with added values that seemed to have toned-down the rigid concrete-look of the walling system, such as shapes that could also be applicable under the category of landscaping. However, we have yet to find a retaining wall system that not only retains the earth/slope and has landscaping potentials, but is also environmental-friendly. This paper is trying to introduce the Betoflor, retaining wall system, a patented retaining wall product that fits the criteria of an environmental-friendly retaining wall system that has the esthetic value.





## Ceramah Teknik (Technical Talk)

### Upstream of the petroleum industry: is there a future for professionals in oil and gas?

JOHN G. KALDI

#### Laporan (Report)

Professor John G. Kaldi, Director, National Centre for Petroleum Geology and Geophysics, University of Adelaide, Australia, gave the above talk on 25th April 2003 (Friday) at the Department of Geology, University of Malaya at 5.00 pm. It was well attended by over 40 participants, the majority being students.

#### Abstrak (Abstract)

This talk addresses the continuum between tertiary education and the petroleum industry. The key challenge to maintaining a robust petroleum industry is ensuring an adequate supply of well-trained professionals. Education of students in petroleum is more critical than ever, as the work force in the oil and gas industry is aging, and employee numbers are dwindling through attrition. There are not enough students in the "pipeline" to meet the opportunities being provided by rapidly developing technologies in the fields of Petroleum Geoscience and Engineering. Universities are being challenged to provide not only well-educated and highly motivated graduates, but also ones able to "hit the ground running". Unfortunately, as industry's need for qualified professionals increases, most departments are finding their funding from traditional sources diminishing markedly. Can Universities remain viable by being opportunistic with regards to industry's needs? Because most oil and gas companies no longer cover their training needs or research with in-house expertise, practical, industry-focussed training and research could be an important role for Universities

to play. Universities must provide courses and degrees that are relevant and taught by dynamic and enthusiastic scientists who stay in touch with industry problems by undertaking applied contract research. As funding for education from government sources decreases, companies must apply the same carefully planned investment strategies toward their future human reserves as is done for their in-ground resources. Many companies are already aware of this and are willing to engage and invest in the Universities. For their part, Universities must be willing to make substantial changes to traditional formats of degrees, courses and research, while maintaining educational integrity. Students need to be aware and actively involved in their career development throughout their studies. In short, the general academic ethos should be in balance with industry needs.

G.H. Teh



## **Annual General Meeting & Annual Dinner 2003 — Laporan (Report)**

The Annual General Meeting on Saturday 26 April 2003, held at the Geology Department, University of Malaya, was called to order by the President, Abdul Ghani Rafek, at 2.45 pm.

At the start of the meeting there were only 15 participants, and the first matter of the day was to get someone to record down the minutes of the AGM as both the Secretary, Ahmad Tajuddin Ibrahim and the Assistant Secretary, Ismail Yusoff, were absent. After some deliberation, K.K. Liew, volunteered to record the minutes of the AGM.

C.S. Hutchison noted that this is the third time the Secretary has not appeared at the start of the AGM. He advised the President to bring this up at the next Council Meeting and sound the Secretary a warning and impress on all Council Members the importance of the AGM.

C.S. Hutchison then asked members to refer to Appendix I of the Secretary's Report showing the attendance of Council members at Council Meetings for the past year. He pointed out that the interested Councillors are again those present at the AGM, namely, Ghani Rafek, C.P. Lee and G.H. Teh.

On the President's Report, members commented on the overlap with the Secretary's Report. They feel that the President's Report should only highlight the main activities and should be more visionary in nature in particular the future challenges and directions of the Society. Closer working relationships between GSM and IGM should be fostered and more younger members should be brought into the Council.

On the Secretary's Report, the attendance of Council Members at Council Meetings was again brought up again as it reflects the Council Members' commitment to the Society. C.S. Hutchison proposed that internal communication within GSM be improved to ensure that external talks are promptly communicated to members.

The Assistant Secretary's Report should provide a list of professional bodies and libraries having exchange arrangements with GSM and the Society's Publication List should be more comprehensive.

The Editor reported that the Society's publications have been brought up to date.

On the Treasurer's and Honorary Auditor's Report, M.K. Choo suggested that the book-keeping practice should reflect the yearly income and expenditure, following standard accounting practices and that part-time professional accounting service is required to improve the Society's accounting system.


On Other Business, K.K. Liew proposed redefining the vision, mission, strategies and activities of the Society and the need to have a permanent secretariat. C.S. Hutchison proposed a cost-benefit analysis before setting up the permanent secretariat. An EGM was proposed for November 2003 to provide status up-dates and action plans.

The meeting was adjourned after the President announced the new Council for 2003/2004. The members present then proceeded to Eastin Hotel for the Annual Dinner 2003.

G.H. Teh



**Annual General Meeting &  
Annual Dinner 2003**




1. Continuation of the minutes of the previous AGM (2001)

The minutes of the 22<sup>nd</sup> AGM were passed on the proposal of K. Paramanathan and seconded by I.ew Kit Kiang with the following amendments or corrections:

Page 2, Editor's Report, para 2, line 1: amended to... to give the Council three months to clear the backlog...

Page 2, Treasurer's and Honorary Auditor's Report, para 1, line 2: amended to... An printing still unused should be recovered.

2. Matters Arising

- 1. President's Report
  - i. There is a slow rise in membership.



## PERSATUAN GEOLOGI MALAYSIA GEOLOGICAL SOCIETY OF MALAYSIA

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### MINUTES OF THE 36<sup>TH</sup> ANNUAL GENERAL MEETING (2001/2002)

Minutes of the 36<sup>th</sup> Annual General Meeting held at the Meranti Room, Eastin Hotel, Petaling Jaya at 6.00 PM on the 26<sup>th</sup> April 2002.

Present:

Abdul Ghani Rafek (Chairman)	S. Paramanathan
Ahmad Tajuddin Ibrahim (Secretary)	Liew Kit Kong
Abdul Rahim Samsudin	Lee Chai Peng
Chin Lik Suan	Abd. Rasid Jaapar
Wan Fuad Wan Hassan	T. T. Khoo
Ng Tham Fatt	J. J. Pereira
Tan Boon Kong	Low Keng Lok
Teh Guan Hoe	Choo Mun Keong
P. Loganathan	Chu Ling Heng
C. S. Hutchison	Fateh Chand
Mohd Shafeea Leman	Michael Lau
Nik Ramli Nik Hassan	K. N. Moorthy
Jimmy Khoo	Gan Lay Chin
Che Noorliza Lat	Ismail Yusoff

#### 1. Confirmation of the minutes of the previous AGM (2001)

The minutes of the 35<sup>th</sup> AGM were passed on the proposal of S. Paramanathan and seconded by Liew Kit Kong with the following amendments or corrections:

Page 3, Editors' Report, para 3, line 1 : amended to ...to give the Council three months to clear the backlog...

Page 3, Treasurer's and Honorary Auditor's Report, para 1, line 3 : amended to ...Art Printing still unused should be recovered.

#### 2. Matters Arising

##### 1. President's Report

- i. There is a slow rise in memberships,



- ii. To improve the situation the Council has tried to increase the number of activities outside the Klang Valley. Efforts are under way to reactivate regional representative to organise more activities,
- iii. The task force to look into the declining memberships was not necessary and efforts have already been taken to promote members among students,

## 2. Treasurer's and Honorary Auditor's Report

- i. The prepaid printing cost (RM100,000.00) has been recovered.

## 3. President's Report.

The president thanks everyone involved in making the various activities a success. He reported the successful organisation of the two major conferences i.e. the Annual Geological Conference 2001 in Pulau Pangkor and the Petroleum Geology Conference 2001 in Kuala Lumpur. He thanked Assoc. Prof. Dr. Mohd Shafeea Leman (UKM) and Mr. Nordin Ramli (PETRONAS) the respective organising chairman and their committees for their effort.

He reported satisfactory response and support from members to all the activities organised and recorded appreciations to all Working Group Chairmen for their hard work.

He also reported that the decrease in memberships has been arrested and that overall the Society is in a sound condition. To improve the situation the Council organised activities outside the Klang Valley. The task force to look into the declining memberships issue was not convened as such and steps were also taken to promote student memberships. The Society is also trying to get active regional representatives the get the various activities going throughout the country.

The Council also decided not to continue with the idea of having our own building for now.

Members commented that the President's and Secretary's report should not overlap. The Presidents should cover more important issues pertaining to the Society.

Members also asked about the use of the Geology Department, University of Malaya's library, requesting that a letter be sent to the Head of the department for better accessibility to the library by members.

K. K. Liew suggested that Council explore new visions for the good of the Society.

K. L. Low proposed the report to be accepted seconded by J. J. Pereira.

#### 4. Secretary's Report.

The Secretary reported the co-option of Dr. Nik Ramli Nik Hassan into the Council to fill up the vacancy for the 1-year councillor. He also reported a very small increase in the total memberships of the Society coming mainly from local memberships.

Both the Annual Geological Conference and the Annual Petroleum Geology Conference were successfully organised. The Working Group for the Promotion of Geoscience to the Public organised a public lecture and exhibition at the Maktab Rendah Sains MARA Jasin, Melaka for schools in the southern part of the peninsula. It was well attended by more than 500 students and teachers. With the assistance of the Working Groups a total of 3 seminars, 1 forum and 15 technical talks were organised.

Abd. Rasid Jaapar suggested a bar chart showing changes in memberships for at least 3 years be included in the future report. T. T. Khoo commented that sales of publications report should be done by the Assistant Secretary.

Fateh Chand proposed that the report be accepted and was seconded by T. T. Khoo.

#### 5. Editor's Report

The Editor elaborated on the report. Every effort has been made to publish the backdated issues of the publications and he reported that all the delayed Bulletins and Wartas are ready formatted and are in the final proof stage.

M. K. Choo requested that current issues of the Warta be published as scheduled without any further delay while the back issues are being produced. The Meeting wanted a bar chart for the schedule of the publication of Wartas and Bulletins to be produced and mailed to all members in three months. All the publications are to be brought up to date in six months.

Jimmy Khoo complained that papers presented at the Annual Geological Conference 1996 in Kota Kinabalu have not been published.

The Council was reminded by the Meeting to look into this delay in publications seriously.

S. Paramanathan proposed the report be accepted and was seconded by J. J. Pereira.

#### 6. Treasurer's and Honorary Auditor's Report

The Treasurer reported that the net current asset has increased from the previous year's RM630,139.53 to RM694,863.27. The prepaid printing cost of RM100,000.00 has been recovered. The fixed assets have increased from

RM44,1000.95 to RM55,889.95. The excess of income over expenditure for the year is reasonably healthy at RM20,719.88.

M. K. Choo suggested changing the book-keeping practice to reflect the yearly income and expenditure apart from the current practice of recording the actual receipts and payments. He also suggested that a part time accounts clerk should be employed to help improve the accounting. The audit fee should be removed and lumped together as honorarium.

C. S. Hutchison commented that the increase in honorarium paid should have a footnote to explain it.

T. T. Khoo wanted to know what happened to the interest for the Young Geologist's Award Fund. The money was donated by a few members and should be kept as a separate account.

C. S. Hutchison proposed that the report be adopted and was seconded by L. C. Gan.

## 9. Other Business

The meeting suggested that the Election Officer be appointed from among the senior members and the election process to follow strictly the constitution.

## 10. Announcement of New Council (2002/2003)

President	:	Abd. Ghani Rafek (UKM)
Vice-President	:	Mohd Shafeea Leman (UKM)
Secretary	:	Ahmad Tajuddin Ibrahim (UM)
Assistant Secretary	:	Ismail Yusoff (UM)
Treasurer	:	Lee Chai Peng (UM)
Editor	:	Teh Guan Hoe (UM)
Councillors (2-years)	:	Abdul Rahim Samsudin (UKM)
		Chow Weng Sum (JMG)
		Nik Ramli Nik Hassan (Foradex)
		Ibrahim Abdullah (UKM)
Councillors (1-year)	:	Tan Boon Kong (UKM)
		Liew Kit Kong (PETRONAS Carigali)
		Abd Rasid Jaapar (Consultant)
		Wan Fuad W Hassan (UKM)
Immediate Past President	:	Ibrahim Komoo (UKM)

The meeting was adjourned at 8.47 pm.



## Agenda 3

### Laporan Presiden Tahun 2002-2003

Penganjuran dua persidangan, dua seminar, dua puluh ceramah teknik dan satu peraduan fotografi merupakan satuimbangan positif kegiatan Persatuan Geologi Malaysia bagi tahun 2002-2003. Pada kesempatan ini penghargaan Persatuan kepada semua ahli dan pihak yang telah memainkan peranan dan menyumbang dalam menjayakan kegiatan Persatuan dirakamkan.

Persidangan Tahunan Geologi 2002 yang diadakan di Kota Bharu, Kelantan pada 26-27 Mei, 2002 dihadiri 165 peserta dan menyaksikan pembentangan 58 kertas kerja. Y.A.B. Dato' Nik Abdul Aziz Nik Mat, Menteri Besar Kelantan merasmikan persidangan tersebut. Semua kertas kerja diterbitkan dalam Buletin No. 45, Persatuan dan diedarkan pada semua peserta semasa Persidangan. Tahniah diucapkan kepada Dr. Ismail Yusoff, pengerusi persidangan dan jawatankuasa beliau atas kejayaan ini.

Persidangan Geologi Petroleum dan Pameran 2002 yang diadakan di Kuala Lumpur juga menerima sambutan yang sangat menggalakan. Hampir 400 peserta menghadiri persidangan tersebut di mana 45 kertas kerja, termasuk satu ucapatama dibentangkan. Sebanyak 18 syarikat terlibat dengan pameran yang diadakan sempena persidangan tersebut. Tahniah dan syabas diucapkan kepada En. Ali Md. Shariff, pengerusi persidangan dan jawatankuasa beliau atas kejayaan penganjuran persidangan tersebut.

Kegiatan kumpulan kerja persatuan memperlihatkan satu tren yang sangat memberangsangkan. Seminar Geofizik anjuran Kumpulan Kerja Geofizik sudah menjadi satu kegiatan tahunan. Pada tahun lepas, seminar tersebut diadakan di USM, Pulau Pinang. Forum bersama Kumpulan Kerja Geologi Kejuruteraan dan Hidrogeologi dengan Institusi Jurutera Malaysia juga diteruskan. Bagi kedua-dua kegiatan ini, prosiding yang mengandungi semua kertas kerja penuh disediakan.

Persatuan Geologi Malaysia merupakan ahli Gabungan Persatuan-Persatuan Sains dan Teknologi Malaysia (COSTAM). Penglibatan ahli persatuan dalam kegiatan COSTAM mempertingkatkan kepentingan dan peranan geologi. Setiausaha Persatuan, Dr. Ahmad Tajuddin Ibrahim telah mewakili Persatuan dalam penganjuran Simposium A, Kongres Kebangsaan Sains dan Teknologi Malaysia 2002. Untuk tahun 2003, satu modul sains bumi diwujudkan bagi kali pertama dalam kongres tersebut. Prof. Dr. Ibrahim Komoo (bekas presiden persatuan) dijemput membentangkan ucapatama pada kongres 2003 yang dijadualkan pada 23-25 September 2003.

Usaha mengekalkan dan menambahkan keahlian Persatuan menunjukkan kejayaan. Keahlian Persatuan bertambah kepada 503 berbanding 429 pada tahun sebelumnya. Berkaitan dengan ini dan usaha memperluaskan kegiatan Persatuan, beberapa wakil negeri juga telah dilantik.

Persatuan Geologi Malaysia telah berjaya menjalankan beberapa kegiatan bagi tempoh 2002-2003. Penyertaan ramai ahli Persatuan, kerjasama dengan persatuan lain dan penambahan ahli baru merupakan tanda-tanda yang baik bagi perkembangan dan kemajuan Persatuan. Pada kesempatan ini Persatuan merakamkan penghargaan kepada semua ahli dan pihak yang telah terlibat dan memberi sokongan dalam menjayakan kegiatan Persatuan.

## Agenda 4

**SECRETARY'S REPORT****1. The Council**

Members of the Council of the Geological Society of Malaysia for the period 27<sup>th</sup> April 2002 to the 26<sup>th</sup> April 2003 are as follows:

President	:	Abd. Ghani Rafek (UKM)
Vice-President	:	Mohd Shafeea Leman (UKM)
Secretary	:	Ahmad Tajuddin Ibrahim (UM)
Assistant Secretary	:	Ismail Yusoff (UM)
Treasurer	:	Lee Chai Peng (UM)
Editor	:	Teh Guan Hoe (UM)
Councillors (2-years)	:	Abdul Rahim Samsudin (UKM) Chow Weng Sum (JMG) Nik Ramli Nik Hassan (Foradex) Ibrahim Abdullah (UKM)
Councillors (1-year)	:	Tan Boon Kong (UKM) Liew Kit Kong (PETRONAS Carigali) Abd Rasid Jaapar (Soils & Foundations Sdn Bhd) Wan Fuad W Hassan (UKM)
Immediate Past President	:	Ibrahim Komoo (UKM)

**2. Council Meetings**

Council Meetings were held almost monthly throughout the 2002/2003 session. A total of 10 Council Meetings have been held. Attendances of Council Members at these meetings are satisfactory as shown in Appendix 1. Dr. S. Paramanathan was co-opted into the Council to fill up the vacancy for the 1-year councilor following the resignation of Tan Boon Kong towards the end of 2002.

**3. Memberships**

The total memberships of the Society as at 31<sup>st</sup> December 2002 is at 503 showing an increase of 17.2% over the previous year's total of 429. In reality however, this big increase is mainly due the increase in the number of student members from 93 in the previous year to 154 in 2002, an increase of 14.9%. Appendix 2A shows the breakdown of the memberships according to classes and regions. Appendix 2B gives the comparison in membership numbers for three years, from 2000 to 2002.



# GEOLOGICAL MAP OF BORNEO

Persatuan Geologi Malaysia  
Geological Society of Malaysia

compiled by  
**Robert B. Tate**  
Year 2002

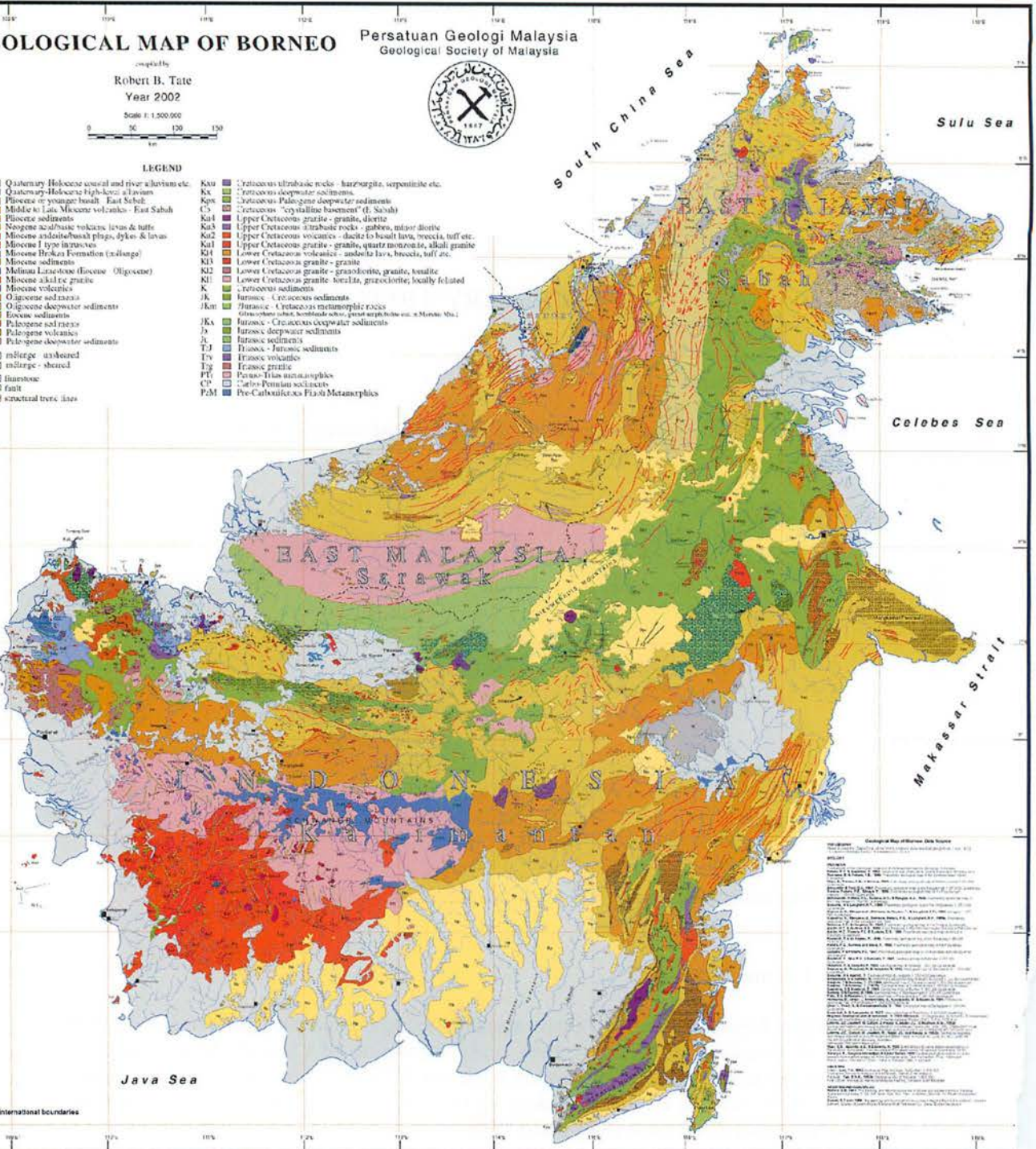
Scale 1:1,500,000  
0 50 100 150  
km



## LEGEND

- Q Quaternary Holocene coastal and river alluvium etc.
- Nv Quaternary-Holocene high-level alluvium
- Pi Pleistocene or younger beach - East Sabah
- Nv(d) Middle to Late Miocene volcanics - East Sabah
- Np Paleogene sediments
- Np(v) Neogene acid/basic volcanics lavas & tuffs
- Nm(a,b) Miocene and/or basal plugs, dykes & lavas
- Nm(i) Miocene I type intrusives
- Nm(B) Miocene Bekau Formation (sandstone)
- Nm Miocene sediments
- Ml Midium Lutetian (Eocene Oligocene)
- Mi Miocene alkali-granite
- Nv(v) Miocene volcanics
- Po Oligocene and tuffs
- Po(v) Oligocene deepwater sediments
- Eo Eocene sediments
- Pp Paleogene and tuffs
- Pp(v) Paleogene volcanics
- Ps Paleogene deepwater sediments
- rS1 ridge - unshored
- rS2 ridge - shored
- Is limestone
- f fault
- st structural trace lines

- Kau Tertiary ultrabasic rocks - harzburgite, serpentinite etc.
- Ka Tertiary deepwater sediments
- Kp(v) Paleogene deepwater sediments
- C5 Tertiary "crystalline basement" (S. Sabah)
- Kat Upper Cretaceous granite - granite, diorite
- Ka3 Upper Cretaceous ultrabasic rocks - gabbro, minor diorite
- Ka2 Upper Cretaceous volcanics - dacite to basalt lava, breccia, tuff etc.
- Ka1 Lower Cretaceous granite - granite, quartz monzonite, alkali granite
- K4 Lower Cretaceous volcanics - andesite lava, breccia, tuff etc.
- K3 Lower Cretaceous granite - granite
- K2 Lower Cretaceous granite - granodiorite, granite, tonalite
- K1 Lower Cretaceous granite - tonalite, gneiss/diorite, locally foliated, Cretaceous sediments
- JK Jurassic - Cretaceous sediments
- JK(v) Jurassic - Cretaceous metamorphic rocks (Gabbro/diorite, hornblende gabbro, peridotite, orthopyroxene, etc. in Murud, etc.)
- JKa Jurassic - Cretaceous deepwater sediments
- Jd Jurassic deepwater sediments
- Jf Jurassic volcanics
- TJ Triassic - Jurassic sediments
- Tv Triassic volcanics
- Pg Triassic granite
- PT Permian - Triassic siltstones
- CP Carboniferous-Permian siltstones
- P-M Pre-Cambrian to Cambrian Felsic Metamorphics



Geological Map of Borneo (Title Page)

1. INTRODUCTION

1.1. Purpose and Scope

1.2. Basis of the Map

1.3. Acknowledgements

1.4. Author's Address

2. GEOLOGICAL HISTORY

2.1. Geology of Sarawak

2.2. Geology of Kalimantan

2.3. Geology of Irian Jaya

2.4. Geology of Brunei Darussalam

3. TECTONIC HISTORY

3.1. Tectonic Framework

3.2. Tectonic Evolution

3.3. Tectonic Features

4. CONCLUSIONS

5. REFERENCES

6. APPENDICES

6.1. Appendix 1: List of Geological Formations

6.2. Appendix 2: List of Geological Formations (continued)

6.3. Appendix 3: List of Geological Formations (continued)

6.4. Appendix 4: List of Geological Formations (continued)

6.5. Appendix 5: List of Geological Formations (continued)

6.6. Appendix 6: List of Geological Formations (continued)

6.7. Appendix 7: List of Geological Formations (continued)

6.8. Appendix 8: List of Geological Formations (continued)

6.9. Appendix 9: List of Geological Formations (continued)

6.10. Appendix 10: List of Geological Formations (continued)

7. INDEX

7.1. Index

## Explanation of Legend

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Q	Quaternary Holocene coastal and river alluvium etc.	JK	Jurassic - Cretaceous sediments	rS1	ridge - unshored
Nv	Quaternary-Holocene high-level alluvium	JKa	Jurassic - Cretaceous deepwater sediments	rS2	ridge - shored
Pi	Pleistocene or younger beach - East Sabah	Jd	Jurassic deepwater sediments	Is	limestone
Nv(d)	Middle to Late Miocene volcanics - East Sabah	Jf	Jurassic volcanics	f	fault
Np	Paleogene sediments	TJ	Triassic - Jurassic sediments	st	structural trace lines
Np(v)	Neogene acid/basic volcanics lavas & tuffs	Tv	Triassic volcanics		
Nm(a,b)	Miocene and/or basal plugs, dykes & lavas	Pg	Triassic granite		
Nm(i)	Miocene I type intrusives	PT	Permian - Triassic siltstones		
Nm(B)	Miocene Bekau Formation (sandstone)	CP	Carboniferous-Permian siltstones		
Nm	Miocene sediments	P-M	Pre-Cambrian to Cambrian Felsic Metamorphics		
Ml	Midium Lutetian (Eocene Oligocene)				
Mi	Miocene alkali-granite				
Nv(v)	Miocene volcanics				
Po	Oligocene and tuffs				
Po(v)	Oligocene deepwater sediments				
Eo	Eocene sediments				
Pp	Paleogene and tuffs				
Pp(v)	Paleogene volcanics				
Ps	Paleogene deepwater sediments				



# New publications from the Geological Society of Malaysia

## **Geological Map of Borneo**

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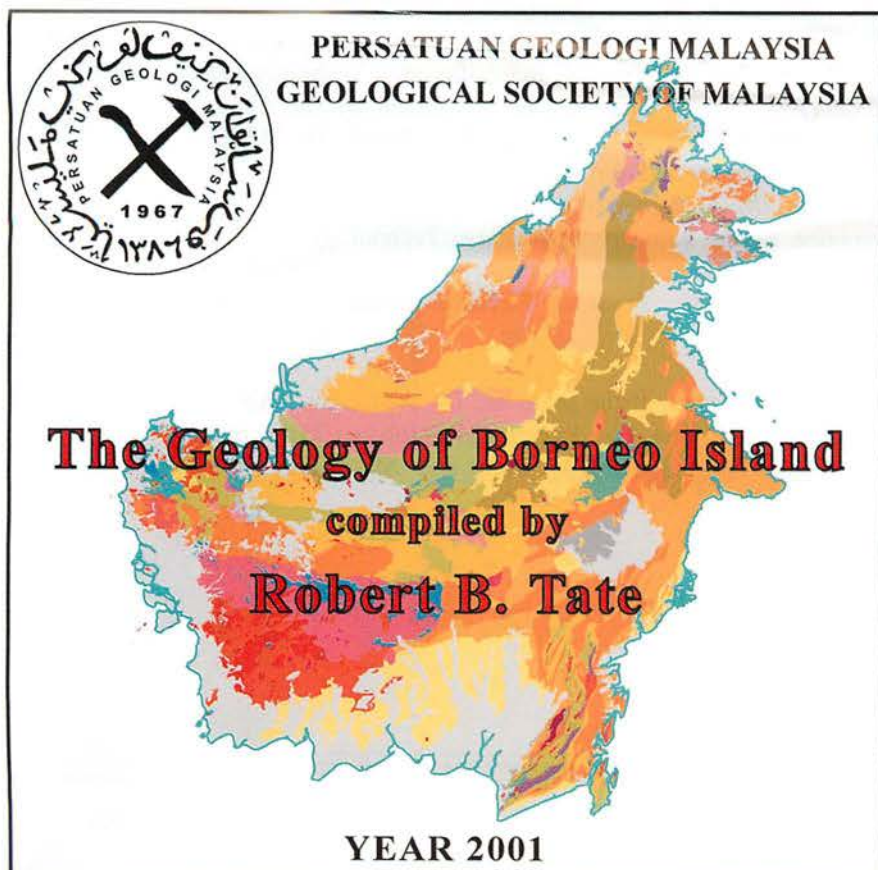
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other recent publications.



## **The Geology of Borneo Island**

*compiled by*

**Robert Tate**

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#### 4. Society Activities

The Annual Geological Conference 2002 was successfully held at the Renaissance Hotel, Kota Bharu, Kelantan Darul Naim on the 26 – 27 May 2002. The Organising Committee was chaired by Dr. Ismail Yusoff. The Conference was honored by the presence of the Y.A.B. Dato' Nik Abdul Aziz Nik Mat, the Menteri Besar of Kelantan who officiated the opening of the Conference. The Y.A.B. Menteri Besar also gave a dinner to all the participants at his official residence on the 26<sup>th</sup>. May 2002. A total of 165 participants attended this Conference .

The Annual Petroleum Geology Conference and Exhibition 2002 was held at the Istana Hotel, Kuala Lumpur on the 15-16 October 2002. It was officiated by the Y. Bhg. Dato' Shamsul Azhar Abbas, Vice President E & P Business, PETRONAS. Mr. Ali Md. Shariff of PETRONAS chaired the organizing committee. One keynote paper, 24 oral papers and 20 poster papers were presented. 400 participants attended this Conference. 18 companies took part in the exhibition. As usual this Conference was well supported by the petroleum and their related service companies.

The Society is also involved as a co-organiser of the Persidangan Warisan Geologi (LESTARI UKM is the main organiser) which will be held just before our Annual Geological Conference 2003 in Kuching, Sarawak.

The Society with the cooperation of the various Working Groups, organizations and individuals were able to organize a total of 2 conferences, 2 seminars, 19 technical talks and a photographic competition.

The Society has also embarked on an initiative to "redefine" itself which has been entrusted to Dr. Liew Kit Kong with the aim of finding ways and means of improving the effectiveness of the Society and revitalizing the Society. A workshop for this purpose was held on the 15<sup>th</sup> March 2003 attended by Council Members.

The Society is a member of the Confederation of Scientific and Technological Associations in Malaysia (COSTAM) being represented on its council by Dr. Abdul Ghani Rafek and Dr. Ahmad Tajuddin Ibrahim. Dr. Abdul Ghani Rafek. Dr. Abdul Ghani Rafek is also one of its honorary auditor. At the Malaysian Science and Technology Congress (MSTC) 2002 (MSTC is one of the annual main activities of the Science & Technology Promotion of the Ministry of Science, Technology and the Environment, Malaysia), Dr. Ahmad Tajuddin Ibrahim represented the Society on its Steering Committee and Symposium A (Physical Sciences, Engineering and Technology) Organising Committee.

Currently the Society representatives for some of the states are Dr. Abdul Hadi Abdul Rahman (USM)(Penang), Mr Mohammed Hatta Abd. Karim (JMG)(Johore), Mr. Mohd Nadzan (JMG)(Pahang), Dr. Felix Tongkul (UMS)(Sabah) and Mr. Alex Unya (JMG)(Sarawak).

## 5. Extraordinary General Meeting (EGM)

An EGM was called for on the 28<sup>th</sup> October 2002 in relation to the delayed Society's Publications and the conduct of the Editor. The EGM was however aborted because two of the signatories of the letter requesting for the EGM were not Members of the Society on the date they signed the letter and another was not a Member at all.

## 6. Acknowledgements

The Society is indeed very much indebted to the generous sponsorships and cooperation received either in kind or otherwise from the many companies, organizations, professional societies, government departments, universities, institutions and individuals. We would like to record our special appreciation to the Head of the Department of Geology, University of Malaya, Kuala Lumpur where the Society is housed and where most of our activities were held. Our thanks also goes especially to all the academic and general staff of the Department of Geology, University of Malaya, the Geology Programme, Universiti Kebangsaan Malaysia and Jabatan Mineral & Geosains Malaysia, without their support most of the Society activities would not be possible. To all others involved, the Society would like to record our sincere appreciation and would hope for their continued support to help us continue to promote geoscience.

Appendix 1

### Attendance of Council Members at Council Meetings

No	Name	9/5	11/6	9/7	13/8	10/9	23/10	7/1	18/2	18/3	15/4
1	Abdul Ghani Rafek	O	X	X	X	X	O	X	X	X	X
2	Mohd Shafeea Leman	X	O	O	X	O	O	O	X	X	X
3	Ahmad Tajuddin Ibrahim	X	O	X	X	X	O	O	O	X	X
4	Ismail Yusoff	X	O	X	X	X	O	X	X	O	O
5	Lee Chai Peng	X	X	O	X	X	X	X	X	X	X
6	Teh Guan Hoe	X	X	X	X	X	X	X	X	X	X
7	Wan Fuad W Hassan	X	X	O	X	X	X	X	O	X	X
8	Abd Rasid Jaapar	X	X	X	O	O	X	O	X	O	X
9	Liew Kit Kong	X	O	O	X	X	O	O	O	O	X
10	Tan Boon Kong	X	X	X	X	X	X	O	-	-	-
11	Abdul Rahim Samsudin	X	X	O	X	X	X	X	O	O	X
12	Ibrahim Abdullah	X	O	O	X	O	O	X	O	O	O
13	Chow Weng Sum	X	X	X	O	X	X	X	O	X	X
14	Nik Ramli Nik Hassan	X	X	O	X	O	O	X	X	O	X
15	Ibrahim Komoo	O	O	O	X	O	O	O	O	O	O
16	S. Paramanathan	-	-	-	-	-	-	-	X	O	O

X – Present

O – Absent

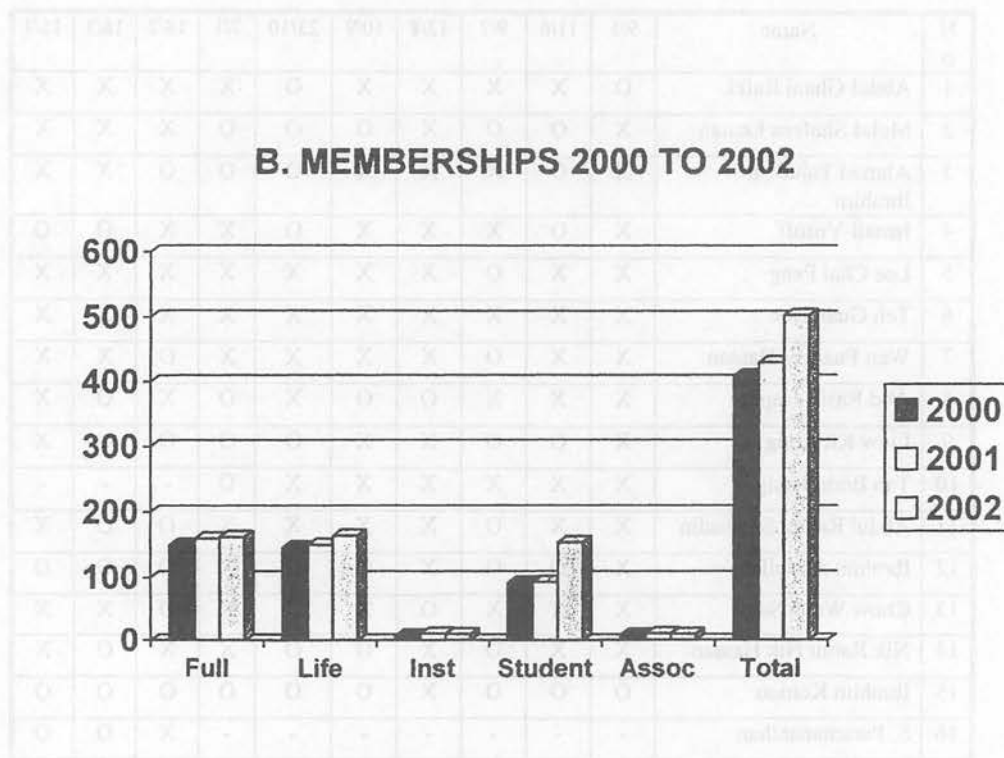
- - resigned/not yet co-opted



## Appendix 2

**A. MEMBERSHIPS FOR 2002**

Country	Full	Life	Institutional	Student	Associate	Honorary	Total
Australia	2	12	1	2			17
Brunei	1	1					2
Canada		2					2
Europe	5	8	1			1	15
Hong Kong		1					1
Indonesia	1	6					7
Japan	1	1					2
Middle East	2	3					5
Philippines		2					2
Singapore	2	4	1				7
Thailand		2					2
USA	4	10					14
Malaysia	144	112	7	152	10	2	427
<b>TOTAL</b>	<b>162</b>	<b>164</b>	<b>10</b>	<b>154</b>	<b>10</b>	<b>3</b>	<b>503</b>

**B. MEMBERSHIPS 2000 TO 2002**

## Appendix 3

## Society Activities 2002/2003

No	Date	Event/Speaker/Venue
1	15 May 2002	<b>Technical Talk 1</b> : <i>Malam Jurutera III</i> organized by the Engineering Geology & Hydrogeology Working Group at the Department of Geology, University of Malaya, Kuala Lumpur.
2	26-27 May 2002	<b>Conference 1</b> : <i>Annual Geological Conference 2002</i> at the Renaissance Hotel, Kota Bharu, Kelantan.
3	25 June 2002	<b>Technical Talk 2</b> : <i>Preliminary study on hazard zonation mapping in karst terrain</i> by Prof. Jeong Hwan Kim, Seoul National University at the Department of Geology, University of Malaya, Kuala Lumpur. <b>Technical Talk 3</b> : <i>The importance of geology in the urban development of Hong Kong</i> by Prof Chris J. N. Fletcher, applied Geoscience Centre, University of Hongkong at the Department of Geology, University of Malaya, Kuala Lumpur.
4	29 June 2002	<b>Technical Talk 4</b> : <i>Issues hindering exploration and mineral development in Malaysia</i> by Mr. Teoh Lay Hock, TOR Minerals (M) Sdn. Bhd., Ipoh organized by the Institute of Geology Malaysia with collaboration of Economic Geology Working Group at the Department of Geology, University of Malaya, Kuala Lumpur.
5	4 July 2002	<b>Technical Talk 5</b> : <i>The contribution of fossils to the creation – evolution debate</i> by Dr Kurt Wise, Bryan College, Dayton, Tennessee, USA co-organised with the Department of Science and Technology Studies, University of Malaya and Graduates Christian Fellowship of Malaysia at the Department of Geology, University of Malaya, Kuala Lumpur.
6	13 July 2002	<b>Seminar 1</b> : <i>Seminar on Reflection on Geological Career</i> organized by the Young Geologists' Working Group at the Bangunan Geologi, Universiti Kebangsaan Malaysia, Bangi.
7	2 August 2002	<b>Technical Talk 6</b> : <i>Regional geological provinces of Brunei</i> by Herman H. Darman, Brunei Shell Petroleum at the Department of Geology, University of Malaya, Kuala Lumpur.
8	10 August 2002	<b>Technical Talk 7</b> : <i>Coal resources of Malaysia</i> by Ms. Azimah Bte Ali, Jabatan Mineral & Geoscience Malaysia co-organised with the Institute of Geology Malaysia and Institution of Mining and Metallurgy (Malaysian Section) at the Department of Geology, University of Malaya, Kuala Lumpur.
9	14 August 2002	<b>Technical Talk 8</b> : <i>Geological characteristics: their descriptions &amp; engineering significance</i> by Mr Ng Chak Ngoon, Subsurface Engineering Sdn Bhd., at the Department of Geology, University of Malaya, Kuala Lumpur.
10	16 August 2002	<b>Technical Talk 9</b> : <i>Doing science in a theistic universe</i> by Dr Robert C. Newman, Interdisciplinary Biblical Research Institute, Pennsylvania, USA co-organised with the Centre for

		Civilisation Dialogue, University of Malaya and Graduates Christian Fellowship of Malaysia at the Faculty of Science, University of Malaya, Kuala Lumpur.
11	21 August 2002	<b>Technical Talk 10 : Malam Geologis Muda VI</b> at the Department of Geology, University of Malaya, Kuala Lumpur.
12	7 September 2002	<b>Seminar 2 : Sumbangan geofizik dalam kajian sekitaran dan pemuliharaan</b> organized by the Geophysics Working Group at the Universiti Sains Malaysia, Pulau Pinang
13	11 September 2002	<b>Technical Talk 11 : Geology &amp; Tunnelling</b> Mr. Tan Boon Kong, Universiti Kebangsaan Malaysia at the Department of Geology, University of Malaya, Kuala Lumpur.
14	30 September 2002	<b>Technical Talk 12 : Electronprobe Microanalyzer (EPMA): Applications in Geology</b> by Dr. G. H. Teh, Department of Geology, University of Malaya at the Department of Geology, University of Malaya, Kuala Lumpur.
15	15-16 October 2002	<b>Conference 2 : Petroleum Geology Conference and Exhibition 2002</b> at the Istana Hotel, Kuala Lumpur.
16	17 December 2002	<b>Technical Talk 13 : Responses of the European estuarine incised valley systems to relative sea level rise,</b> <b>Technical Talk 14 : Tidal and brackish-water signature within the fluvio-estuarine sheet sandstone of the upper Cretaceous Mesaverde Group in Utah and Wyoming, USA.</b> Boths talks given by Dr Shuji Yoshida, University of Wyoming, USA at the PETRONAS, KLCC, Kuala Lumpur.
17	18 December 2002	<b>Technical Talk 15 : Process changes within thick, muddy incised valley systems: outcrop studies of the Lower Cretaceous Wealden Group in Isle of Wright, Southern England,</b> <b>Technical Talk 16 : Tidal and brackish-water signature within the fluvio-estuarine sheet sandstone of the upper Cretaceous Mesaverde Group in Utah and Wyoming, USA,</b> Boths talks given by Dr Shuji Yoshida, University of Wyoming, USA at the Department of Geology, University of Malaya, Kuala Lumpur.
18	22 February 2003	<b>Technical Talk 17 : Technique and role of geophysics in unraveling subsurface structure of the earth</b> by Dr. Abdul Rahim Samsudin, Universiti Kebangsaan Malaysia at the Geology Program, UKM Bangi.
19	8 March 2003	<b>Technical Talk 18 : Saturday morning with lady geologists</b> organized by the Young Geologists' Working Group at the Department of Geology, University of Malaya, Kuala Lumpur.
20	25 April 2003	<b>Technical Talk 29 : Upstream of the Petroleum Industry: Is there a Future for Professionals in Oil and Gas?</b> by Dr. John G. Kaldi, University of Adelaide, Australia at the Department of Geology, University of Malaya, Kuala Lumpur.



Table 1: Stock of Publications

Publication	Sales 2002	Stock Remaining
Mag. Geology of Borneo Island	10	950
CD Geology of Borneo Island	8	130
Annual Conference 2001 Proceedings	33	745
Annual Conference 2000 Proceedings	18	161
Malayan Stratigraphic Guide	7	759
Geological Evolution of SEA (GSE)	2	784
Rock and Mineral Prices	81	352
Stratigraphic Correlation	30	504
Stratigraphic Bulletin 67	0	4
Bulletin 45	27*	227
Bulletin 43	269*	331
Bulletin 41	81	-
Bulletin 37	3	114
Bulletin 36	2	129
Bulletin 35	2	170
Bulletin 32	2	170
Bulletin 31	2	170
Bulletin 29	2	170
Bulletin 28	2	170
Bulletin 27	2	170
Bulletin 26	2	170
Bulletin 25	2	170
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Bulletin 10	2	170
Bulletin 9	2	170
Bulletin 8	2	170
Bulletin 7	2	170
Bulletin 6	2	170
Bulletin 5	2	170
Bulletin 4	2	170
Bulletin 3	2	170
Bulletin 2	2	170
Bulletin 1	2	170
Warta 28(1-4)	2	170
Warta 27(1-6)	2	170
Warta 26(1-6)	2	170
Warta 25(4-6)	2	170

**Assistant Secretary's Report**

**Publications**

The council appreciates the Editorial Subcommittee for the hard works to bring the society publication up-to-date as well as preserve the standard of the publications. Warta 25 (4-6), Warta 26 (1-6), Warta 27(1-6) and Warta 28(1-4) have been distributed to all members.

The sale of the society publication shows better improvement compare to previous year. Bulletin 5 and 41 are sold out. Bulletin 16 is almost depleted. Ten (10) geological maps of Borneo Island prepared by Mr. Robert Tate has been sold. Starting from 2002, the proceeding for the society's Annual Geological Conference will be called Bulletin, therefore, the proceeding for 2002 annual conference had been named Bulletin 45. A calender for 2003 as usual containing photographs from the past photographic competitions was distributed to all members. The remaining stock and sales made during the year is as shown in Table 1. The society will continue to exchange the publications with various professional bodies and libraries throughout the globe.

\* - Includes free copies to members

Table 1: Stock of Publications

BULLETIN NO/PUBLICATION	SALES 2002	STOCK REMAINING
2	4	240
3	13	229
4	5	105
5	18	-
6	8	445
7	3	280
8	4	-
11	8	30
13	5	79
16	6	13
17	7	70
18	6	56
19	13	595
20	20	429
21	13	221
22	5	285
23	2	282
24	9	450
25	8	238
26	10	270
27	9	148
28	6	157
29	5	151
30	5	230
31	7	165
32	5	204
33	5	316
34	9	118
35	5	130
36	5	159
37	3	414
41	83	-
43	569*	231
45	573*	227
Abstracts(Bulletin 6)	0	4
Stratigraphic Correlation	20	201
Rocks and Mineral Poster	81	255
Geological Evolution of SEA (CSH)	2	384
Malaysian Stratigraphic Guide	7	759
Annual Conference 2000 Proceedings	18	161
Annual Conference 2001 Proceedings	22	342
CD Geology of Borneo Island	8	920
Map: Geology of Borneo Island	10	990

\* - Includes free copies to members

## Editor's Report 2002/2003

The Society's publications have been brought up-to-date. The latest *Warta Geologi* is Vol. 29 No. 1, Jan-Feb 2003. The remaining bulletin, Bulletin 44, has also been brought up-to-date.

Throughout the year the Editorial Subcommittee was kept busy bringing out the following:

- (1) Bulletin 45, which contained papers presented at the Annual Geological Conference 2002 (held at Kota Baru, 26–27 May 2002).
- (2) Petroleum Geology Conference & Exhibition 2002 Programme and Abstracts of Papers (held at Hotel Istana, Kuala Lumpur, 15–16 October 2002).
- (3) GSM Calendar 2003
- (4) Circulars for the Annual Geological Conference 2003, Petroleum Geology Conference & Exhibition 2003.

The GSM Photographic Competition 2002 attracted 26 entries. The judges were impressed with the higher standard of the photographs.

The Editor is grateful to the Editorial Subcommittee members, in particular A.K. Fan and T.F. Ng for their tireless efforts and dedication to bring the Society's publications back on stream. The reviewers of papers are thanked for their contributions. Last but not least we are grateful to authors of papers for their valuable contributions and support for the Society's publications

G.H. Teh  
Editor



## HONORARY TREASURER'S REPORT 2002

The society's net current asset has decreased from RM 694,891.62 to RM 470,072.34 in 2002 with a deficit for the year amounting to RM 186,390.93. This big drop is mainly due to the significant increase in expenditure from RM 52,797.85 in 2001 to RM 227,134.55 in 2002 with a corresponding drop in income from RM 73,514.58 to RM 40,743.62 for the period. The increased expenditure is mainly from the huge printing bill for the numerous issues of *Warta* (RM 20,205.00) and *Bulletin* (RM 53,056.00) which has come out. The other major expenditures are for the Petroleum Geology Conferences (RM 60,408.24) and the Annual Geological Conferences (RM 25,141.09) of 2001 and 2002. The income from the Petroleum Geology Conference 2001 has not been included in this year's accounts as it has not been closed yet.

We would like to express our thanks to all our generous donors whose contributions have kept the society going and also to our Hon. Auditor, Mr. Lee Sia Fatt for auditing the society's accounts.

Lee Chai Peng  
Hon. Treasurer

### NOTES ON ACCOUNTS

1. The big difference in deposits and prepayments between 2002 and 2001 is because of the prepayments for 3 conferences in 2001 which have subsequently been closed by 2002.
2. The RM 8,388.50 is held in trust for the Evaluation Formation Working Group to finance their activities.
3. The RM 38,800.00 in printing and stationery: bulletin for 2001 is the balance of the RM 100,000.00 prepayment after paying the printing bill for 2001.  
Breakdown for printing and stationery for 2002 is: Miscellaneous including GSM calendar (RM 7000.00), paper and envelopes etc. totalling RM 12,356.90; *Warta Geologi* 5 issues totalling RM 20,205.00; *Bulletin* (Vol.43 at RM 59,600 and Vol. 45 at RM 32,256.00) minus balance of prepayment (RM 38,800.00 from 2001) giving RM 53,056.00.
4. Postage has increased to RM 9,805.53 for 2002 from RM 3,697.44 in 2001 due to increase in mailing of publications.

PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)

BALANCE SHEET AS AT 31 DECEMBER 2002

	<u>2002</u>	<u>2001</u>
	RM	RM
PLANT AND EQUIPMENT	50,300.86	55,918.30
CURRENT ASSETS		
Fixed deposits with licensed bank	351,201.85	495,734.99
Cash and bank balances	57,936.72	66,267.81
Deposits and prepayments:	10,632.91	76,970.52
	<u>419,771.48</u>	<u>638,973.32</u>
NET CURRENT ASSETS	<u>470,072.34</u>	<u>649,891.62</u>
FINANCED BY:		
ACCUMULATED FUND		
Balance brought forward	644,516.58	623,828.20
(Deficit) / Surplus for the year	<u>(186,390.93)</u>	<u>20,716.73</u>
	458,125.65	644,544.93
Young geoscientist award	3,142.83	3,142.83
Evaluation formation working group	8,388.50	8,388.50
Student loan	415.36	15.36
Printing and stationery: bulletin	-	38,800.00
	<u>470,072.34</u>	<u>694,891.62</u>

## Agenda 10.

**COUNCIL FOR 2003/2004**

President	:	Abd. Ghani Rafek (UKM)
Vice-President	:	Mohd Shafeea Leman (UKM)
Secretary	:	Ahmad Tajuddin Ibrahim (UM)
Assistant Secretary	:	Low Keng Lok (LKL Technology)
Treasurer	:	Ahmad Nizam Hasan (CADENCE)
Editor	:	Teh Guan Hoe (UM)
Councillors (2-year)	:	Tan Boon Kong (UKM) Liew Kit Kong (PETRONAS Carigali) Zakaria Mohamad (JMG) Lee Chai Peng (UM)
Councillors (1-years)	:	Abdul Rahim Samsudin (UKM) Chow Weng Sum (JMG) Nik Ramli Nik Hassan (Foradex) Ibrahim Abdullah (UKM)
Immediate Past President	:	Ibrahim Komoo (UKM)

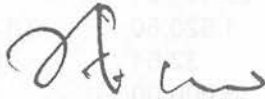


PERSATUAN GEOLOGI MALAYSIA  
GEOLOGICAL SOCIETY OF MALAYSIA

**AUDITORS' REPORT TO THE MEMBERS OF  
PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)**

We have audited the financial statements in accordance with approved auditing standards.

In our opinion, the financial statements give a true and fair view of the state of affairs of the Society as at 31 December 2002 and of its income and expenditure and balance sheet for the year ended on that date.



S. F. LEE & CO. (AF: 0670)  
Chartered Accountants



LEE SIEW FATT  
(1179/9/04J)  
Chartered Accountant

Kuala Lumpur

Date : 07 APR 2003

PERSATUAN GEOLOGI MALAYSIA  
(GEOLOGICAL SOCIETY OF MALAYSIA)

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 2002

INCOME	2002 RM	2001 RM
Entrance fees	340.00	390.00
Fixed deposits interest	19,472.85	27,524.77
Subscription	16,090.56	15,690.21
Sales of publications	2,039.94	2,016.57
Petroleum Geology Conference 2000: donation	-	24,356.26
Xerox	1,342.27	171.99
Annual Geological Conference 2000	-	2,704.78
Sales of CD	1,458.00	660.00
	<u>40,743.62</u>	<u>73,514.58</u>
EXPENDITURE		
Professional fee	787.00	783.00
Annual Geological Conference 2001 & 2002	25,141.09	-
Annual dinner	1,620.80	2,126.11
Bank charges	32.64	190.17
Book prize	3,000.00	-
Honorarium	18,725.20	17,914.00
Langakawi project	-	68.00
Petroleum Geology Conference 2001 & 2002	60,408.24	-
Photo competition	2,300.00	2,600.00
Postages	9,805.53	3,697.44
Printing and Stationery		
- Miscellaneous	12,356.90	8,313.20
- Warta Geologi	20,205.00	19.80
- Bulletin	53,056.00	-
Promotion of Geoscience	2,722.10	-
Refreshment	1,547.62	1,461.80
Souvenirs	-	871.00
Speakers' account	2,464.23	2,853.68
Subscription to Professional bodies	100.00	200.00
Sundry expenses	2,033.55	2,735.70
Telefax	925.45	1,232.15
Telephone	671.68	771.05
Working groups	3,642.43	747.60
Depreciation on plant and equipment	5,589.09	6,213.15
	<u>227,134.55</u>	<u>52,797.85</u>
(Deficit) / Surplus for the year	<u>(186,390.93)</u>	<u>20,716.73</u>

## BERITA-BERITA PERSATUAN NEWS OF THE SOCIETY

### KEAHLIAN (Membership)

The following applications for membership were approved:

#### Full Members

- |  |  |
|--|--|
| 1. Jess B. Kozman<br>No. 4510, Lorong Chong Khoon Lin 6, Ukay Heights, 68000 Kuala Lumpur. | 4. Mohamad Zaki Ibrahim<br>8 Jalan Cempaka, 5012/3 Bandar Sri Damansara, 52200 Kuala Lumpur. |
| 2. Roziyahisham Abdul Mahid<br>15 Jalan 59, Kajang Perdana, 43000 Kajang.                  | 5. Mahisham Ibrahim<br>No. 1, Lorong Berlian 2, Taman Batu Tiga, Shah Alam.                  |
| 3. Mohd Fairuz Mohamad Isa<br>9-1-8 Jalan 2/38B, Taman Segambut SPPK, 51200 Kuala Lumpur.  |  |

#### Student Members

- |   |   |
|---|---|
| 1. Osama A. Twaiq<br>Program Geologi, Fakulti Sains 7 Teknologi, Universiti Kebangsaan Malaysia, Bangi. | 2. Ibrahim Z. Qudsi<br>Program Geologi, Fakulti Sains & Teknologi, Universiti Kebangsaan Malaysia, Bangi. |
|---|---|

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### PETUKARAN ALAMAT (Change of Address)

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

- |   |  |
|---|--|
| 1. Wong Chaw Bin<br>RRIM-Consult Corporation, Level 13, Bangunan Getah Asli, 148, Jalan Ampang, 50450 Kuala Lumpur. | 2. Hee Kong Hin<br>Exxon Mobil Development, 12450 Greenspoint Dr, Houston, Tx. 77060, USA. |
|---|--|

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## PERTAMBAHAN BAHARU PERPUSTAKAAN (New Library Additions)

The Society has received the following publications:

1. SOPAC: Proceedings of the 31st session, 2002.
2. *Geologica Belgica*, vol. 5, nos. 1–2, 2002 & vol. 6, nos. 1–2, 2003.
3. Geological Survey of Japan, Bulletin vol. 53, nos. 4, 5, 6, 2002.
4. *Earth Science Frontiers*, vol. 9, no. 3 & 4, 2002.
5. *Geoscience*, vol. 16, no. 4, 2002.
6. *Journal of Shijiazhuang, University of Economics*, vol. 25, no. 5, 2002.
7. *Acta Geoscientia Sinica*, vol. 23, nos. 5 & 6, 2002; vol. 24, no. 1, 2003.
8. *Episodes*, vol. 26, no. 1, 2003.
9. *Acta Palaeontologica Sinica*, vol. 41, nos. 3 & 4, 2002; vol. 42, no. 1, 2003.
10. *Palaeontological Abstracts*, vol. 17, nos. 3 & 4, 2002.
11. *Acta Micropalaeontologica Sinica*, vol. 19, nos. 3 & 4, 2002.
12. *Tin International*, vol. 76, no. 1, 2003.
13. *AAPG Bulletin*, vol. 86, nos. 9–11, 2002.
14. A directory of environmentally sound technologies for the integrated management of solid, liquid & hazardous waste for small island developing states (SIDS) in the Pacific Region, 2002.
15. *AAPG Explorer*, February, March & April 2003.
16. Geological Survey of New South Wales: Quarterly notes no. 114, 2003.
17. Berliner Geowissenschaftliche Abhandlungen, Reihe A, Band 211–214 (2001) and 215 (2002).
18. Berliner Palaobiologische Abhandlungen, Band 1 (2002).
19. Monthly statistics on mining industry in Malaysia, November & December 2002.
20. *Malaysian Mining Industry: Report & Statistics 2001*.
21. The University of Tsukuba, Institute of Geoscience, annual report no. 28, 2002.

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PERTUKARAN ALAMAT (Change of Address)

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

Hoo Kang Hin  
Kaxun Mohi Development, 12150  
Guanzhuang, Houston, TX 77060, USA

Wong Chew Bin  
HRM-Growth Corporation, Level 15,  
Bagan Cempaka, 118 Jalan Ampang,  
50450 Kuala Lumpur



## PHOTOGRAPHIC COMPETITION 2002

### RESULTS

A good response of 27 entries were received. Judging was held on the 28 March 2003 and the winners are listed below. An exhibition of the photographs was later held at the Museum, Geology Department, University of Malaya.

1st Prize (RM1,000):

LEE CHAI PENG

2nd Prize (RM500):

MOHD FAIRUZ MOHAMED ISA

3rd Prize (RM300):

LEE CHAI PENG

Consolation Prize (RM100 each):

*Zahari bin Lambak*

*Patrick Gou*

*Ros Fatimah Muhammad*

*Yong Kock Hui*

*Ros Fatimah Muhammad*

G.H. Teh  
Organiser



# Common Rocks of Malaysia

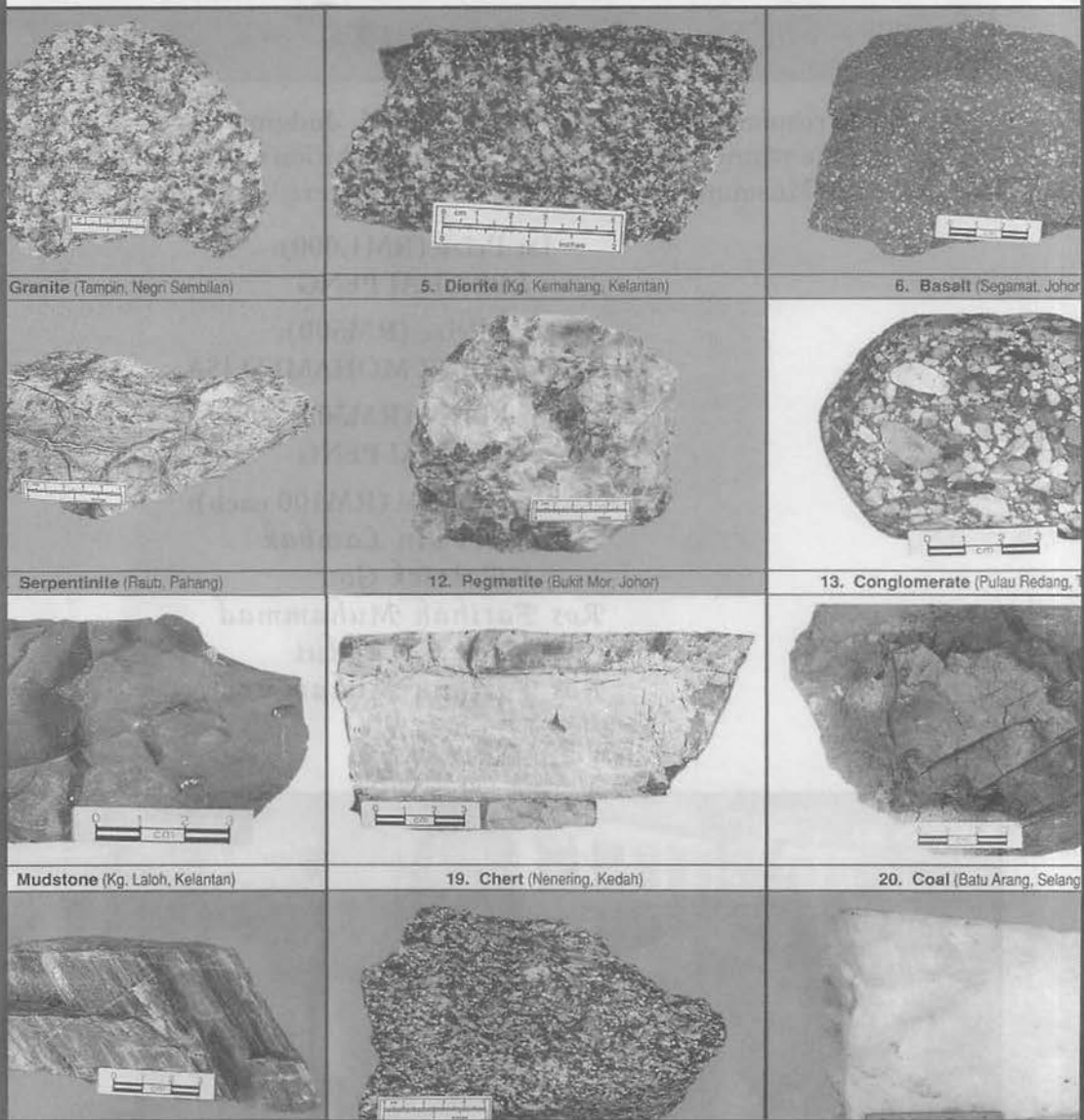
A full colour poster illustrating 28 common rocks of Malaysia. With concise description of the features and characteristics of each rock type including common textures of igneous, sedimentary and metamorphic rocks.

## Laminated

**Size:** 94 cm x 66 cm (42" x 26")

**Price:** Student members RM7.00 (one copy per member, subsequent copies RM10.00 each)  
 Members RM8.00 (one copy per member, subsequent copies RM10.00 each)  
 Non-members RM10.00 per copy

# COMMON ROCKS



Cheques, Money Orders, Postal Orders or Bank Drafts must accompany local orders. Please add 70 sen for postage. For foreign orders, please send your purchase order. We will invoice you in your own currency. Orders should be addressed to:

## ORDERS

The Hon. Assistant Secretary  
**GEOLOGICAL SOCIETY OF MALAYSIA**  
 c/o Dept. of Geology, University of Malaya  
 50603 Kuala Lumpur, MALAYSIA



# BERITA-BERITA LAIN OTHER NEWS

## KALENDAR (CALENDAR)

### 2003

#### May

**INTERNATIONAL SYMPOSIUM ON KARST AND HARD ROCK FORMATIONS**, Esfahan, Iran. (Contact: Dr. A. Afrasiabian, National Karst Study and Research Center, P.O. Box 15875-3584, Tehran, Iran. Tel: +98 21 7520474; Fax: +98 21 7533186)

#### May 11-14

**AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS AND SOCIETY FOR SEDIMENTARY GEOLOGY (SEPM)** (Joint Annual Meeting and Exhibition), Salt Lake City, Utah, USA. (Contact: AAPG Conventions Dept., P.O. Box 979, Tulsa, OK 74119, USA. Tel: +1-918 560 2679; Fax: 1-918 560 2684; E-mail: [convene@aapg.org](mailto:convene@aapg.org); Website: [www.aapg.org](http://www.aapg.org))

#### May 12-16

**GEOFLUIDS IV** (4th international conference on fluid evolution, migration and interaction in sedimentary basins and orogenic belts), Utrecht University, Utrecht, The Netherlands. Sponsored by Netherlands Institute of Applied Geoscience TNO-National Geological Survey. (Contact: Ms. J.M. Verweij, P.O. Box 80015, 3508 TA Utrecht, The Netherlands. Tel: +31-30 256 4600; Fax: +31-30 256 46 05; E-mail: [j.verweij@nitg.tno.nl](mailto:j.verweij@nitg.tno.nl); Website: [www.nitg.tno.nl](http://www.nitg.tno.nl)).

#### May 18-23

**COASTAL SEDIMENTS '03** (5th International Symposium on Coastal Engineering and Science of Coastal Sediment Processes), Clearwater Beach, Florida, USA. (Contact: Darlene K. Gregory, Conference Secretariat. Tel: +1-361 939 9004; Fax: +1-361 939 9355; E-mail: [dgregory@coastalsediments.net](mailto:dgregory@coastalsediments.net); Website: <http://www.coastalsediments.net/>)

#### May 18-24

**GEOLOGY OF INDUSTRIAL MINERALS, "BETTING ON INDUSTRIAL MINERALS"** (39th Forum), Sparks, Nevada, USA. Sponsored by the Nevada Bureau of Mines and Geology, Nevada Division of Minerals, and Nevada Mining Association. (Contact: Terri Garside, NBMG/MS 178, University of Nevada, Reno, NV 89557-0088; Tel: +1-775 784 6691, ext. 126; Fax: +1-775 784 1709; E-mail: [tgarside@unr.edu](mailto:tgarside@unr.edu); Website: [www.nbmg.unr.edu/imf2003.htm](http://www.nbmg.unr.edu/imf2003.htm))

#### May 19-23

**VII INTERNATIONAL SYMPOSIUM 'CULTURAL HERITAGE IN GEOSCIENCES, MINING AND METALLURGY: LIBRARIES-ARCHIVES-MUSEUMS'** "Museums and their collections", Leiden, The Netherlands. (Contact: Dr. Cor F. Winkler Prins, Nationaal Natuurhistorisch Museum, Postbus 9517, 2300 RA LEIDEN, The Netherlands. Tel: +37.71.5687643; Fax: +31.71.5687666; E-mail: [winkler@nmm.nl](mailto:winkler@nmm.nl)).

#### June 4-6

**FLUID INCLUSIONS** (17th Biennial European Current Research Conference), Budapest, Hungary. (Contact: Department of Petrology and Geochemistry, Budapest, Pázmány Péter sétány 1/C, Budapest H-1117, Hungary. Tel: +36-1 209 0555 ext. 8338; Fax: +36-1 381 2108; E-mail: [ecrofi17@geology.elte.hu](mailto:ecrofi17@geology.elte.hu); Website: [ecrofi17.geology.elte.hu/](http://ecrofi17.geology.elte.hu/))

#### June 7-12

**CLAY MINERALS SOCIETY (CMS) AND MINERALOGICAL SOCIETY OF AMERICA (MSA)**, "Classic Clay and Minerals" (Joint Meeting), Athens, Georgia, USA. (Contact: Paul A. Schroeder, General Chairman, Department of Geology, University of Georgia, Athens, GA 30602-2501, USA. Tel: +1-706 542-2652; E-mail: [schroe@gly.uga.edu](mailto:schroe@gly.uga.edu); Website: <http://www.gly.uga.edu/>)

**June 8-13**

*ALLUVIAL FANS* (International Conference), Sorbas, Almeria, Spain. (Contact: Martin Stokes, Department of Geology, University of Plymouth, Drake Circus, Devon PL4 8AA, UK. E-mail: [alluvialfans@plymouth.ac.uk](mailto:alluvialfans@plymouth.ac.uk); Website: [alluvialfans.net](http://alluvialfans.net))

**June 9-12**

*ORIGIN OF PETROLEUM, BIOGENIC AND/OR ABIOGENIC AND ITS SIGNIFICANCE IN HYDROCARBON EXPLORATION AND PRODUCTION* (Hedberg Conference sponsored by the American Association of Petroleum Geologists and Institute of Petroleum), London, UK. (Contact: Debby Boonstra, AAPG Education Dept., P.O. Box 979, Tulsa, OK 74101-0979; Fax: +1-918 560 2678; E-mail: [debby@aapg.org](mailto:debby@aapg.org); Website: [www.aapg.org/education/hedberg/london/index.html](http://www.aapg.org/education/hedberg/london/index.html))

**June 15-17**

*7TH ICOBTE — INTERNATIONAL CONFERENCE ON BIOGEOCHEMISTRY OF TRACE ELEMENTS*, Uppsala, Sweden. (Contact: George R. Gobran. Fax: 46 (18) 67 34 30; E-mail: [George.Gobran@eom.slu.se](mailto:George.Gobran@eom.slu.se) or [ICOBTE7@slu.se](mailto:ICOBTE7@slu.se); Website: <http://www.eom.slu.se>)

**June 16-18**

*5TH INTERNATIONAL CONFERENCE ON THE ANALYSIS OF GEOLOGICAL AND ENVIRONMENTAL MATERIALS*, Rovaniemi, Finland. (Contact: Website: <http://www.gsf.fi/geoanalysis2003>)

**June 20-25**

*ROLE OF LIGHT ELEMENTS IN ROCK-FORMING MINERALS* (International Symposium), Nové Mestona, Czech Republic. (Contact: Dr. Milan Novák, Chairman, LERM, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic. Fax: +420-5 412112; E-mail: [mnovak@sci.muni.cz](mailto:mnovak@sci.muni.cz); Website: [sci.muni.cz/~lerm/index.htm](http://sci.muni.cz/~lerm/index.htm))

**June 22-27**

*KIMBERLITE* (8th International Conference), Victoria, British Columbia, Canada. (Contact: 8IKC, Conference, Secretariat, c/o Venue West Conference Services Ltd., 645 - The Landing, 375 Water Street, Vancouver, BC, Canada V6B 5C6. Tel: +1-604 681-5226; Fax: +1-604 681-

2503; E-mail: [8IKC@venuewest.com](mailto:8IKC@venuewest.com); Website: [www.venuewest.com/8IKC](http://www.venuewest.com/8IKC))

**June 30 - July 11**

*INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG)* (23rd General Assembly), Sapporo, Japan. (Contact: Dr. Kiyoshi Suyehiro, General Secretary of LOC XXIII General Assembly, Japan Marine Science and Technology Center (JAMSTEC), 2-15 Natsushima-cho, Yokosuka 237-0061, Japan. Fax: +81-468 66 5541; E-mail: [IUGG\\_service@jamstec.go.jp](mailto:IUGG_service@jamstec.go.jp); Website: [www.jamstec.go.jp/jamstec-e/iugg/index.html](http://www.jamstec.go.jp/jamstec-e/iugg/index.html))

**July 8-10**

*CARBONATE SEDIMENTOLOGISTS* (12th Bathurst Meeting), Dunham, UK. (Contact: Maurice Tucker or Moyra Wilson, Department of Geological Sciences, University of Durham, Durham DH1 3LE, U.K. Tel: +44-191 374 2524 or 2501; E-mail: [M.E.Tucker@durham.ac.uk](mailto:M.E.Tucker@durham.ac.uk) or [Moyra.Wilson@durham.ac.uk](mailto:Moyra.Wilson@durham.ac.uk); Website: [www.dur.ac.uk/bathurst.2003/](http://www.dur.ac.uk/bathurst.2003/))

**July 14-25**

*IGCP 450 MEETING AND FIELD EXCURSION (Proterozoic Sediment-hosted Base Metal Deposits of Western Gondwana: Intra and Intercontinental Correlation of Geological, Geochemical and Isotopic Characteristics, Southern Atlantic)*, Lubumbashi, D.R. Congo. (Contact: Dr. Jacques Cailteux, Organiser of the event, Groupe G. FORREST international, E.G.M.F., Lubumbashi, D.R. Congo. Fax: 243-23 42 275; Tel: 243-970 32 625; E-mail: [egmf@forrestrdc.com](mailto:egmf@forrestrdc.com))

**July 23-31**

*INTERNATIONAL ASSOCIATION FOR QUATERNARY RESEARCH (INQUA)* (16th Congress) "Shaping the Earth: A Quaternary Perspective", Reno Hilton, Reno, NV, USA. (Contact: Nick Lancaster, Desert Research Institute. Tel: +1-775 673 7304; E-mail: [nick@dri.edu](mailto:nick@dri.edu); Website: [www.dri.edu/DEES/INQUA2003/inqua\\_home/htm](http://www.dri.edu/DEES/INQUA2003/inqua_home/htm))

**July 30-31**

*GEODYNAMICS & METALLOGENY* (International Conference), Ulaan Bataar, Mongolia. Organized by the Mongolian National Group of the International Association on the Genesis of Ore Deposits (IAGOD) and co-

sponsored by IAGOD; post-conference expert fieldtrip 1–7 August 2003 to Oyu Tolgoi. (Contact: O. Gerel, E-mail: gerel@mtu.edu.mn)

#### August 9–21

*FIELD CONFERENCE IN URUMQUI, CHINA, IGCP-473 annual field conference in Urumqui with excursion to Chinese Tianshan and Altay (Xinjiang)*. Sponsored by the International Association on the Genesis of Ore Deposits (IAGOD). (Contact: Prof. Mao Jingwen, CAGS Beijing. E-mail: jingwenmao@263.net; Website: www.nhm.ac.uk/mineralogy/cercams/index.htm)

#### August 10–13

*GeoSciEd IV*, Calgary, Canada. (Contact: Website: www.geoscied.org)

#### August 18–21

*9TH INTERNATIONAL SYMPOSIUM ON THE ORDOVICIAN SYSTEM, 7TH INTERNATIONAL GRAPTOLITE, AND FIELD MEETING OF THE SUBCOMMISSION ON SILURIAN STRATIGRAPHY*, San Juan City, Argentina. (Contact: ISOS: Guillermo L. Albanesi. E-mail: galbanesi@arnet.com.ar or Matilde S. Beresi. E-mail: mberesi@labocricyt.edu.ar; IGC-SSS field meeting: Gladys Ortega. E-mail: gcortega@arnet.com.ar or Guillermo F. Aceñolaza. E-mail: acecha@unt.edu.ar)

#### August 26–30

*PRESENT STATE AND FUTURE EVOLUTION OF PALEOGENE STRATIGRAPHY, A symposium of the International Subcommission on Paleogene Stratigraphy*, Leuven, BELGIUM. (Contact: Noël Vandenberghe, Dept. Geografie-Geologie, Afd. Historische Geologie, KU Leuven, Redingestraat 16, B-3000 Leuven Belgium. E-mail: noel.vandenberghe@geo.kuleuven.be; Website: www.uni-tuebingen.de/geo/isp/news)

#### August 29 – September 3

*INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM* (21st of the Association of Exploration Geochemists), Dublin, Ireland. (Contact: Eibhlin Doyle, Secretary LOC. E-mail: eibhblindoyle@gsi.ie; Website: http://www.aeg.org/)

#### September 5–6

*TERRANE PROCESSES AT THE PACIFIC MARGIN OF GONDWANA* (International Conference), Cambridge, England. Sponsored by the British Antarctic Survey and the Geological Society. (Contact: Dr. Alan P.M. Vaughan, British Antarctic Survey, Cambridge CB3 0ET, England. Tel: +44-1223 221419; Fax: +44-1223 221646; E-mail: a.vaughan@bas.ac.uk)

#### September 7–11

*ENVIRONMENTAL GEOCHEMISTRY* (6th International Symposium), Edinburgh, Scotland, UK. (Contact: John Farmer, Dept. of Chemistry, The University of Edinburgh, Kings Buildings, West Mains Road, Edinburgh EH9 3JJ Scotland. E-mail: J.G.Farmer@ed.ac.uk; Tel: 0131-650-1000; Fax: 0131-650-4757)

#### September 8–12

*ORGANIC GEOCHEMISTRY* (21st International Meeting), Krakow, Poland. Sponsored by the European Association of Organic Geochemists. (Contact: IMOG 2003, Society of Research on Environmental Changes "Geosphere", Al. Mickiewicza 30, 30-059 Kraków, Poland. Fax: +48-12 623 78 28; E-mail: imog@imog.agh.edu.pl; Website: http://www.imog.agh.edu.pl)

#### September 8–12

*INTERNATIONAL CONGRESS ON ROCK MECHANICS "Technology Roadmap for Rock Mechanics"* (10th of the International Society for Rock Mechanics), Sandton (Gauteng-Johannesburg), South Africa. (Contact: Mrs. Karen Norman, The Conference Co-Ordinator, Technology Roadmap for Rock Mechanics, P.O. Box 61127, ZA-2107 Marshalltown, South Africa. Tel: +27-11 8341273 or 8341277; Fax: +27-11 833 8156 or 838 5923)

#### September 15–18

*INDUSTRIAL MINERALS AND BUILDING STONES — IMBS 2003*, Istanbul, Turkey. (Contact: Erdogan Yüzer, Maden fakültesi, Ayazaga Kampüsü, 80626 Maslak/Istanbul, Turkey. Tel/Fax: 90 212 285 61 46; E-mail: yuzer@itu.edu.tr)

#### September 15–19

*GROUNDWATER IN FRACTURED ROCKS* (International Conference of IAH), Prague, Czech Republic. (Contact: Jiri Krasny. E-mail: krasny@natur.cuni.cz)



**September 17-19**

**SEDIMENTOLOGY** (22nd Annual Meeting of the International Association of Sedimentology), Opatija, Croatia. (Contact: Davor Pavelic, IAS-2003, Institute of Geology, HR-10000 Zagreb, Sachsova 2, Croatia. Fax: +385 1 6144718; E-mail: dpavelic@yahoo.com; Website: www.igi.hr/ias2003)

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**AAPG INTERNATIONAL CONFERENCE EXHIBITION, "CROSSROADS OF GEOLOGY, ENERGY AND CULTURES"**, Barcelona, Spain. Sponsored by the American Association of Petroleum Geologists. (Contact: AAPG Convention Department, P.O. Box 979, Tulsa, OK, 74101-0979, USA. Fax: +1-918-560-2684; E-mail: convene@aapg.org; Website: www.aapg.org/)

**September 22-26**

**1ST INTERNATIONAL CONFERENCE — GROUNDWATER IN GEOLOGICAL ENGINEERING**, Ljubljana, Slovenia. (Contact: Slovene Committee of IAH, Andrej Juren, Kebetova 24, SI-1000 Ljubljana, Slovenia. E-mail: andrej.juren@siol.net or Nadja Zalar, E-mail: nadja.zalar@siol.net; Website: http://www.iah.org)

**September 28 - October 3**

**SOCIETY OF EXPLORATION GEOPHYSICISTS** (73rd Annual Meeting and International Exposition), Dallas, Texas, USA. (Contact: SEG Business Office, Tel: +1-918 497 5500; Fax: +1-918 497 5500; Fax: +1-918 497 5557; Website: seg.org/)

**October 4-9**

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**October 24-27**

**INTERNATIONAL SYMPOSIUM ON HYDROMETALLURGY — IN HONOR OF IAN RITCHIE**, Vancouver, British Columbia, Canada. (Contact: Courtney Young. Fax: 406 496 4133; E-mail: cyoung@mtech.edu; Website: cms.tms.org)

**November 2-5**

**GEOLOGICAL SOCIETY OF AMERICA** (Annual Meeting), Seattle, Washington, USA. (Contact: GSA Meetings Dept., P.O. Box 9140, Boulder, CO 80301-9140, USA. Tel: +1 303 447 2020; Fax: +1 303 447 1133; E-mail: meetings@geosociety.org; Website: http://www.geosociety.org/meeting/index.htm)

**December 8-12**

**AMERICAN GEOPHYSICAL UNION** (Fall Meeting), San Francisco, California, USA. (Contact: San Francisco, California, USA. (Contact: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009 USA. Tel: +1 202 462 6900; Fax: +1 202 328 0566; E-mail: meetinginfo@agu.org; Website: http://www.agu.org/meetings)

**2004****January 14-16**

**ASIAN MARINE GEOLOGY** (5th International Conference), Bangkok, Thailand. (Contact: Thanawat Jarupongsakul, Department of Geology, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand. Fax: +(662) 2185464-5; E-mail: thanawat@sc.chula.ac.th)

**March 27 - April 4**

**NATIONAL EARTH SCIENCE TEACHERS ASSOCIATION** (Annual Meeting), Atlanta, Georgia, USA. (Contact: NESTA, 2000 Florida Ave., N.W., Washington, D.C. 20009, USA. Tel: +1-202 462 69 10; Fax: +1-202 328 0566; E-mail: fireton@kosmos.agu.org)

**April 18-21**

**AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS AND SOCIETY FOR SEDIMENTARY GEOLOGY (SEPM)** (Joint Annual Meeting and Exhibition), Dallas, Texas, USA. (Contact: AAPG Conventions Dept., P.O. Box 979, Tulsa, OK 74119, USA. Tel: +1-918

560 2679; Fax: 1-918 560 2684; E-mail: [convене@aapg.org](mailto:convене@aapg.org); Website: [www.aapg.org](http://www.aapg.org))

#### May 17-21

**AMERICAN GEOPHYSICAL UNION AND CANADIAN GEOPHYSICAL UNION** (Joint Meeting), Montreal, Canada. (Contact: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009 USA. Tel: +1 202 462 6900; Fax: +1 202 328 0566; E-mail: [meetinginfo@agu.org](mailto:meetinginfo@agu.org); Website: <http://www.agu.org/meetings>)

#### June 27 - July 2

**WATER-ROCK INTERACTION** (11th International Symposium), Saratoga Springs, New York, USA. (Contact: Dr. Susan Brantley, Secretary General, Dept. of Geosciences, The Pennsylvania State University, 239 Deike Building, University Park PA 16802, USA. Tel: +1-814863 1739; Fax: +1-814863 8724; Website: [www.outreach.psu.edu/C&I/WRI/](http://www.outreach.psu.edu/C&I/WRI/))

#### July 4-9

**INTERNATIONAL PALYNOLOGICAL CONGRESS** (11th), Granada, Spain. (Contact: Technical Secretary. E-mail: [eurocongres@eurocongres.es](mailto:eurocongres@eurocongres.es); Website: [www.ugr.es/~bioveg/](http://www.ugr.es/~bioveg/))

#### August 20-28

**INTERNATIONAL GEOLOGICAL CONGRESS (32nd)**, "The Renaissance of Geology", Florence, Italy. (Contact: Ms. Chiara Manetti, Università degli Studi di Firenze, Dipartimento di Scienze della Terra, Via La Pira, 4, 50121 Firenze, Italy. Tel/Fax: +39-055 238 2146; E-mail: [cmanetti@geo.unifi.it](mailto:cmanetti@geo.unifi.it); To request the First Circular, send e-mail to: [32igc@32igc.org](mailto:32igc@32igc.org) or visit the Congress Website: [www.32igc.org](http://www.32igc.org))

#### August 27 - September 4

**VLADIVOSTOK-2004 INTERIM IAGOD CONFERENCE** (*Metallogeny of the Pacific Northwest: Tectonics, Magmatism & Metallogeny of Active Continental Margins*), Vladivostok, Khabarovsk, Magadan, Russian Far East, Russia. (Contact: Russian National IAGOD Group, Federal Far East Geological Institute, Far Eastern Branch of Russian Academy of Sciences, 159, Prospekt 100-letiya, Vladivostok, 690022, Russia. Tel: 7(4232)31-

87-50; Fax: 7(4232)31-78-47; E-mail: [iagodconf@fegi.ru](mailto:iagodconf@fegi.ru) or [fegi@online.marine.su](mailto:fegi@online.marine.su); Website: <http://www.fegi.ru/IAGOD/index.htm>)

#### September 11-19

**TECTONICS, MAGMATISM AND METALLOGENY OF ACTIVE CONTINENTAL MARGINS** (Interim International Conference on Metallogeny of the Pacific Northwest), Vladivostok, Russia. Sponsored by the Russian Academy of Sciences and The Society of Economic Geologists. (Contact: Far East Geological Institute, Far Eastern Branch of Russian Academy of Sciences, 159, Prospekt 100-letiya, Vladivostok, 690022 Russia. Tel: +7(4232)31-87-50; Fax: +7(4232)31-78-47; E-mail: [iagodconf@fegi.ru](mailto:iagodconf@fegi.ru) or [fegi@online.marine.su](mailto:fegi@online.marine.su); Website: <http://www.fegi.ru/IAGOD/>)

#### September 15-17

**SEDIMENTOLOGY** (23rd Annual Meeting of the International Association of Sedimentology), Coimbra, Portugal. (Contact: Rui Pena dos Reis, uiversidade de Coimbra, Dpto. Ciências da Terra, Largo Marquês de Pombal, 3014 Coimbra, Portugal; E-mail: [penareis@ci.uc.pt](mailto:penareis@ci.uc.pt))

#### October 10-15

**SOCIETY OF EXPLORATION GEOPHYSICISTS** (74th Annual Meeting and International Exposition), Denver, Colorado, USA. (Contact: Debbi Hyer, 8801 S. Yale, Tulsa, OK 74137, USA. Tel: (+1-918) 497 5500; E-mail: [dhyer@seg.org](mailto:dhyer@seg.org); Website: [meeting.seg.org](http://meeting.seg.org))

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*Cover photo: Wall of limestone hill, Gunung Rapat, Perak by T.F. Ng*

