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Geological Society of Malaysia

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The Society was founded in 1967 with the aim of promoting the advancement of earth sciences particularly in Malaysia and the Southeast Asian region.

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

Contacts between granite and volcanic rocks from Tanjung Beruntun, Tioman Island

AZMAN A. GHANI
Department of Geology
University of Malaya
Kuala Lumpur
Malaysia

Abstract: The contact between granitic and volcanic rocks at Tanjung Beruntun, Tioman shows that the granite is epizonal. The presence of blocks of volcanic rocks with various shapes and sizes suggests that they were stoped from the roof of the granitic magmas. The contacts are characteristically very angular and appear to be joint-bounded block.

INTRODUCTION

Volcanic lava and pyroclastics are volumetrically important in southeastern Johore. Two types of volcanic rocks that occur abundantly in this part of Peninsular Malaysia are felsic lava and pyroclastics. This paper will report the interaction between the volcanic lava and the granitic magma in the eastern part of the Tioman Island. The island is the largest of the islands off the east coast of west Malaysia and ranks next in size to Pulau Langkawi and Penang, the two largest ones on the west coast. The island is the most northerly of a chain of three islands, the other two to the southeast, being Pemanggil and Aur islands. Detailed work on the geology of Tioman Island was given by Bean (1972). Later in 1974 Khoo published a short article related to geomorphology and geology of the Tioman area.

TECTONIC SETTING

Tioman Island is underlain by igneous and metamorphic rocks (such as metavolcanics) (Bean, 1972; Khoo, 1974). The igneous rocks in the island consist of gabbro, diorite and granite, felsic volcanic and pyroclastic rocks

(Fig. 1). A granite sample from Tioman Island was found to give a K-Ar age of 74 ± 2 Ma (Bignell and Snelling, 1972) which may suggest that the rock is no younger than Late Cretaceous. Bean (1972) also showed that the host rocks (including volcanics) in the area as probably of Triassic age. Published geological map of Tioman Island by Bean (1972) shows that the granitic rocks in the island are of Jurassic age. Rocks of volcanic origin of pyroclastic and interbedded flows, occupy an area of 20 km² in a narrow belt around the north, east and southeast coast of Tioman Island. Pyroclastic rocks exhibit broad variation in both colour and texture. The main pyroclastic type is an agglomerate containing blocks of various types up to 0.5 m in diameter. Bean (1972) noted a good example of graded bedding in one of the exposures but most of the material exhibit no evidence of sorting.

FIELD OCCURRENCE

The outcrop of interest is located at the middle of Pasir Panjang beach on the western part of Tioman Island. This area is dominated by felsic volcanics intruded by granitic veins and dykes. The volcanic rocks are fine grained

and darker than the granitic rocks. The contact consists of the angular volcanic blocks of various sizes (10 cm–0.5 m) enclosed in the granitic host (Figs. 2a, 2b and 2c). The granitic rocks sometimes form a 'dyke-like' structure up to a meter thick (Figs. 3a, 3b). The volcanic blocks are distributed in a random manner throughout the granitic host. Contacts between the volcanic enclaves and their granitic host are frequently sharp. This type of contact shows how angular

blocks of volcanics were stoped from the roof of a granitic plutons. In extreme cases felsic volcanics formed a banded structure in the granitic rock (Fig. 4). The width of the felsic volcanic bands range from 10 to 15 cm and can be up to 1 m long. Occasionally the volcanic bands form a "schlieren like" structure in the granitic rock. It clearly indicated that the volcanic magma has stretched their shape into thin wisps which are narrow in the granitic magma.

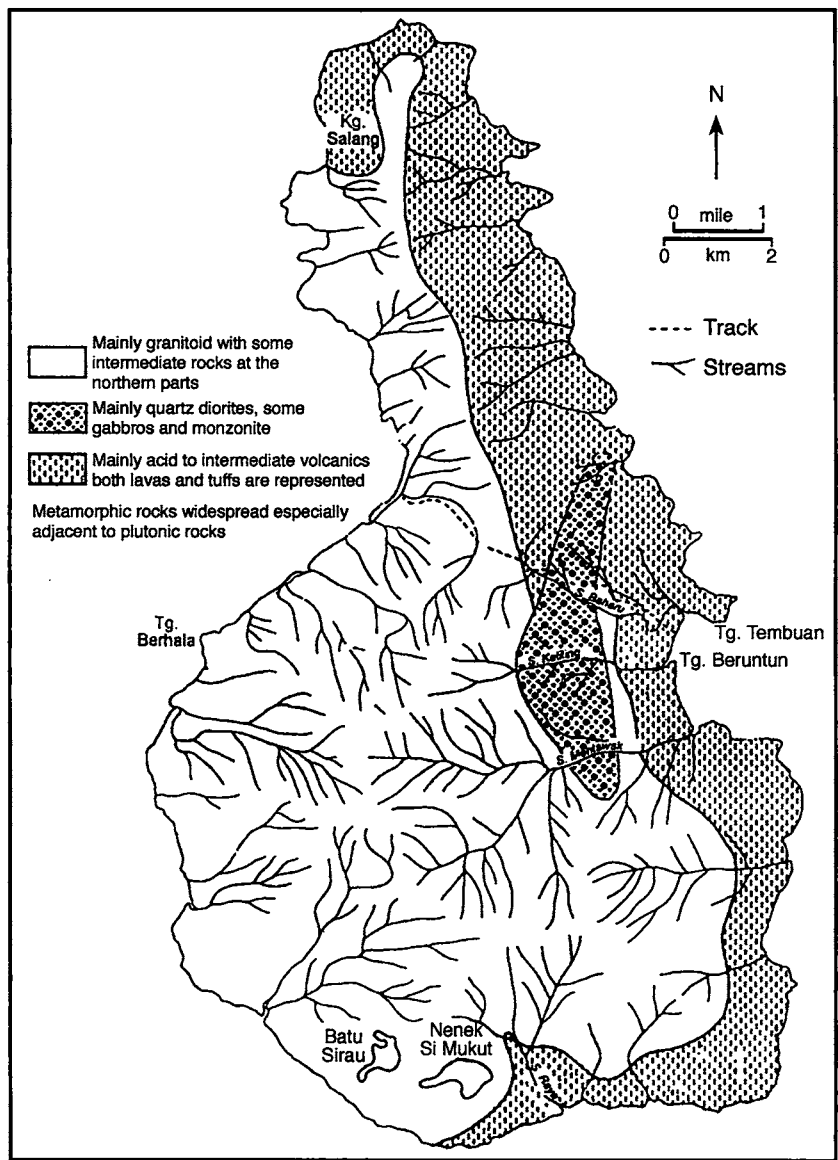
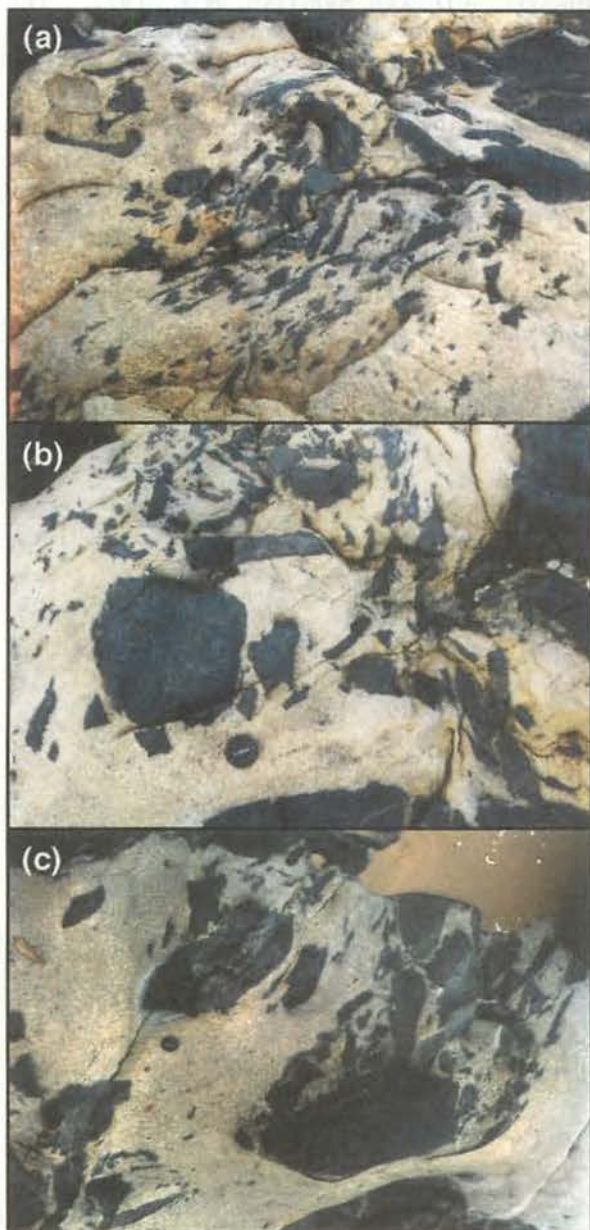
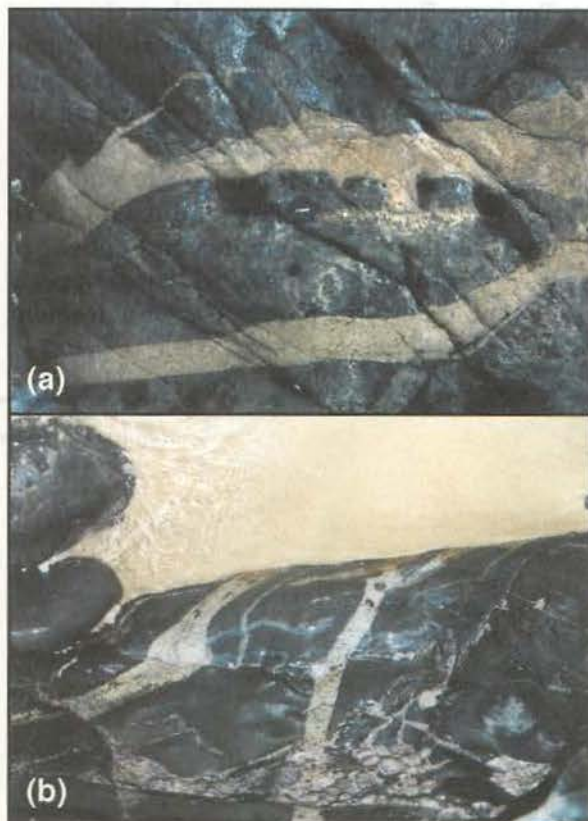


Figure 1. Map showing location of the study area and general geology of Tioman Island.



Figures 2(a,b,c). Photographs showing various shapes and sizes of volcanic blocks (black) in the granitic rocks.



Figures 3(a,b). The granitic magmas forming 'dyke-like' structures in the volcanic rock.



Figure 4. Banded structure in the granitic rock resulted from "drawn out" of the volcanic blocks in the granitic magmas.

CONCLUSION

Occurrence of the volcanic-granite contacts at Tanjung Beruntun suggest that this area represents the top of the granitic magma chamber and the magmas crystallised at high level. The presence of blocks of volcanic rocks with various shapes and sizes suggests that the granitic magmas intruded through the volcanic joints. The contacts are characteristically very angular and appear to be joint-bounded block. This evidence suggests that stoping played a part in the emplacement of the granitic magma.

REFERENCES

- BEAN, J.H., 1972. Geology, petrography and mineral resources of Pulau Tioman, Pahang. *Map Bulletin* 5, Geol. Surv. Malaysia, 92p.
- BIGNELL, J.D. AND SNELLING, N.J., 1977. The geochronology of Malayan granites. *Overseas Geology and Mineral Resources*, 47, 1-72.
- KHOO, T.T., 1974. A glimpse at the geology of Pulau Tioman. In: Lee, D.W., Stone, B.C., Ratnasabapathy, M. and Khoo, T.T. (Eds.), *The Natural History of Pulau Tioman*. Merlin Samudera Tioman, 5-17.

Manuscript received 27 February 2003

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The following applications for membership were approved:

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Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi, Selangor. |

PETUKARAN ALAMAT (Change of Address)

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

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| <p>1. Michael C. Friederich
84 Jolimont St., Sherwood QLD 4075,
Australia.</p> | <p>3. Azli Abu Bakar
Petronas Carigali Sdn. Bhd., Level 15,
Tower 2, Petronas Twin Towers, KLCC,
50088 Kuala Lumpur.</p> |
| <p>2. Norzita Mat Fiah
35, Jalan Muhibbah 9, Taman Muhibbah,
43000 Kajang, Selangor.</p> | |

GSM

CURRENT ADDRESSES WANTED

The GSM is seeking the addresses of the following members. Anyone knowing the new address please inform the Society.

- | | |
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| <p>1. Cik Aruha Azmi
Lot 3441 Jalan PKNS, Kg. Melayu Subang,
Shah Alam.</p> | <p>2. Cik Siti Aishah Osman
Pusat Penyelidikan Arkeologi, Universiti
Sains Malaysia, 11800 Pulau Pinang.</p> |
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PERTAMBAHAN BAHARU PERPUSTAKAAN (New Library Additions)

The Society has received the following publications:

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| <p>1. Natural History Research, vol. 7, no. 2,
2003.</p> <p>2. Journal of the Natural History Museum &
Institute, Chiba, vol. 7, no. 2, 2003.</p> <p>3. Journal of the Natural History Museum &
Institute, Chiba, sp. issue 5, 2002.</p> <p>4. Bulletin of the National Science Museum,
vol. 28, 2003.</p> <p>5. AAPG Explorer, Jul & Aug, 2003.</p> <p>6. Monthly statistics on Mining Industry in
Malaysia, March & April 2003.</p> <p>7. Geologica Belgica, vol. 5, nos. 3-4, 2002.</p> | <p>8. Bulletin of the American Museum of
Natural History, no. 275, 2003.</p> <p>9. American Museum Novitates nos. 3384-
3387 (2002); nos. 3388, 3390, 3394, 3395,
3397, 3398, 3402, 3403, 3404, 3405, 3407
(2003).</p> <p>10. Bulletin of the Geological Survey of Japan,
vol. 53, nos. 7/8 & 9/10, 2002.</p> <p>11. Episodes, vol. 26, no. 2, 2003.</p> <p>12. Seminar on site investigation practice,
Armada Hotel, Petaling Jaya, 9.6.03.</p> <p>13. Journal of Geosciences, Osaka City
University, vol. 46, 2003.</p> |
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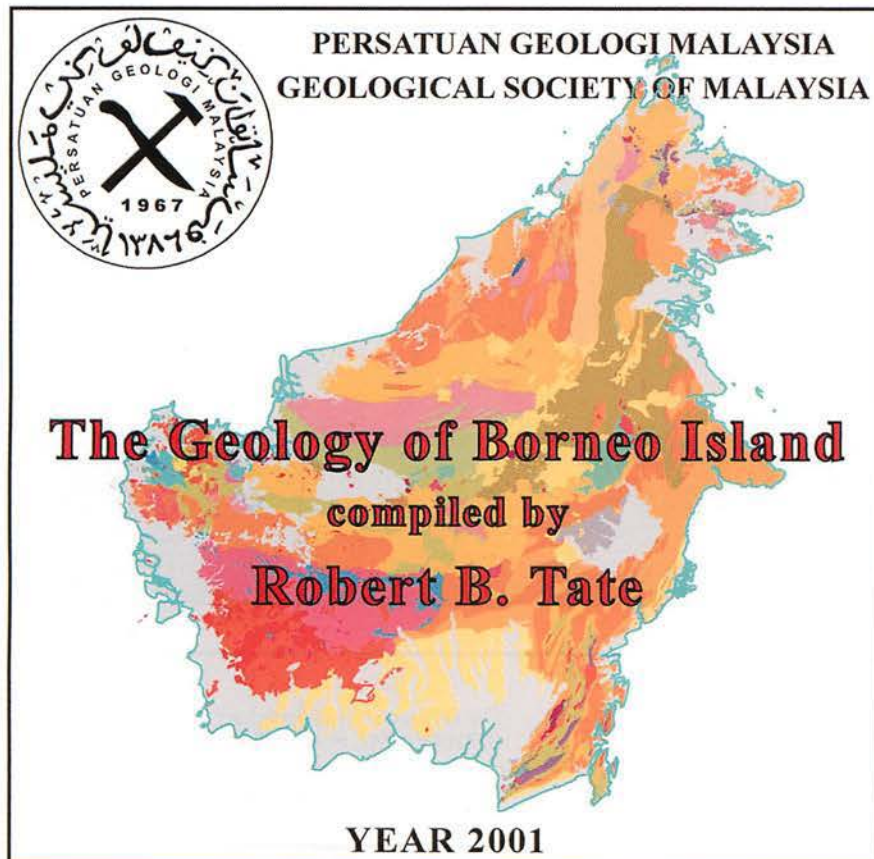
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KALENDAR (CALENDAR)

2003

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)

September 21-24

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

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS (40th Annual Meeting), Glenwood Springs, Colorado, USA. (Contact: Tom Fails, 4101 E. Louisiana #412, Denver, CO 80246. Tel: +1-303 759 9733; Fax: +1-303 759 9731; E-mail: thomgeol@aol.com; Website: www.aipg.org/www.aipg.org/)

October 5–8

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS (International Conference & Exhibition), London, UK. (Contact: AAPG Convention Department, P.O. Box 979, Tulsa, OK 74101-0979, USA. Tel: +1-918 560 2679; E-mail: Website: www.aapg.org)

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@mttech.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: convene@aapg.org; Website: 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; 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: +1-814 863 1739; Fax: +1-814 863 8724; Website: www.outreach.psu.edu/C&I/WRI/)

July 4-9

INTERNATIONAL PALYNOLOGICAL CONGRESS (11th), Granada, Spain. (Contact: Technical Secretary. E-mail: eurocongres@eurocongres.es; Website: 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; To request the First Circular, send e-mail to: 32igc@32igc.org or visit the Congress Website: 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 or 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.

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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)

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; Website: meeting.seg.org)

November 7-10

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Denver, Colorado, 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/meetings/index.htm>)

December 13-17

AMERICAN GEOPHYSICAL UNION (Fall Meeting), 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>).

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- Bulletin 2** (Dec 1968). 152 p. Bibliography and Index of the Geology of West Malaysia and Singapore by D.J. Gobbett. Price: RM5.00.
- Bulletin 3** (Mar 1970). 146 p. Papers in Geomorphology and Stratigraphy (with Bibliography supplement). Edited by P.H. Stauffer. Price: RM5.00.
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