
PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

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PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)

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G E O L O G I C A L N O T E S

Sapphires from Chenderiang, Perak*

K.N. Murthy, Geological Survey, Federal Headquarters, Kuala Lumpur.

During the course of a mine inspection, the writer discovered a few poor quality sapphire crystals associated with topaz in a pegmatitic host rock in the Chenderiang area. The sapphire crystals are dark to light blue, some are translucent to opaque and occur as hexagonal prisms. So far as the writer knows this is the first occurrence of sapphire crystals found insitu in pegmatites in Peninsular Malaysia.

F.T. Ingham and E.F. Bradford (1960) in "Geology and Mineral Resources of the Kinta Valley, Perak", reported that very poor specimens of sapphire have been found in a micaceous matrix in a tin mine at Chenderiang and minute crystals associated with tourmaline-corundum rocks have been reported from near Siputeh in Perak. There are records in the Geological Survey of traces of sapphire in the Sg. Raia in Perak and poor grade rubies have been uncovered at Chenderiang on rare occasions. Other localities where sapphires have been found by the writer as pebbles and minute crystals are from the discarded heavy minerals of the tin dressing sheds, at the mine holes and mine dumps at Batu Gajah, Pusing, Papan, Tekka, Pulai Kinta, Keramat Pulai, Gopeng, Pengkalan, Ampang, Tanjong Malim, Ulu Selim, Ulu Bernam and Kalumpang. In Pahang the presence of sapphires have been recorded by the writer (1974) at Bentong, Karak, Sg. Lembing and in the Sg. Reman area. Fitch (1952) reported blue spinels in the heavy mineral concentrate found in Anak Sungai Reman near Kuantan but the writer in his examination of some heavy mineral concentrates from the area found some minute crystals of sapphires. The writer believes that the blue spinels found by Fitch are probably sapphires.

Sapphires have been found in corundum-bearing veins in contact with limestone, and minute grains of sapphires occur in fine-grained veins consisting of muscovite, flucrite, blue tourmaline, schorl and spinel, traversing highly weathered phyllites or schists in contact with granitic rocks at Tekka (Perak). In Sg. Reman (Pahang) the sapphires are believed to have been derived from granitic rocks.

Since fine sapphires, rubies and other gemstones are known to have been associated with Tertiary basalts in Thailand, a search for sapphires and other minerals should be initiated in the areas around the Kuantan and Segamat basalts.

In the light of the recent discovery at Chenderiang, it is now known that at least some sapphires are associated with pegmatites.

It is recommended that pegmatitic areas, in and around Chenderiang, should be investigated in detail to see whether gem quality sapphires occur.

* Publication authorized by the Assistant Director-General, Geological Survey of Malaysia.

References

- Ingham, F.T. & Bradford, E.F., 1960. The geology and mineral resources of the Kinta Valley, Perak. Mem. No. 9 (New Series), Geological Survey of Malaysia, 307-308 p.
- Fitch, F.H., 1952. The geology and mineral resources of the neighbourhood of Kuantan, Pahang. Mem. No. 6, (New Series), Geological Survey of Malaysia, 144 p.
- Murthy, K.N., 1974. Sapphires from Bentong, Pahang. Warta Geologi, No. 49, June-July 1974. 2 - 3 p.
-

A Quaternary Fault in Peninsular Malaysia.

J.K. Raj, Dept. of Geology, University of Malaya, Kuala Lumpur.

Approximately 13 km northwest of Karak, along the Kuala Lumpur - Karak Highway, is located the road cut of a terrace consisting of unconsolidated deposits overlying a schist bedrock. The most interesting feature is the presence of a normal fault which cuts across the unconsolidated deposits and bedrock suggesting a Quaternary age for the fault. This outcrop thus provides good evidence of tectonic movements during the Quaternary of Peninsular Malaysia.

The unconsolidated deposits overlying the schist bedrock comprises three distinct units:-

- i) a lower unit, varying in thickness from 1 to 1.5 m, consists largely of sandy material with irregularly distributed pebble to cobble sized clasts. Some of the clasts are aligned subhorizontally and impart a bedding to this unit which overlies the schist bedrock along a distinct irregular erosional surface dipping westwards at an angle of about 15° .
- ii) a middle unit, also varying in thickness from 1 to 1.5 m, consists largely of pebble to cobble sized clasts that are generally linearly distributed within a sandy matrix. The alignment of the clasts imparts a distinct bedding dipping westwards at an angle of about 5° to 10° .

The clasts of this unit are similar to those of the underlying unit and are generally angular to subrounded in shape. The clasts are of a varied composition; easily identifiable ones being chert, vein quartz, schist, sandstone, and weathered granitic clasts. Both the middle and lower units appear to be composed of colluvial material, as indicated by the shape of the clasts and the overall heterogenous character of the deposits with the subhorizontal bedding probably being a primary feature.
- iii) an upper unit of sandy material that contain no large clasts and that varies in thickness from about 1.5 to 3 m. This unit consists largely of slope wash deposits upon which a shallow residual soil has developed.

The schist bedrock is weathered but its foliation is distinctly seen having a northeast-southwest strike and a dip of about 35° towards the northwest. The schist appears to be a quartz mica schist and is cut by some quartz veins.

The fault plane is stained with secondary iron oxides and strikes north-south with a dip of 55° towards the east. Distinct offsetting of the unconsolidated deposits and bedrock is seen with a dip slip of about 1.5 m. The fault plane although linear in its lower section becomes curved in its upper section (within the unconsolidated deposits) indicating that the deposits have likely been subjected to creep. Drag phenomena are also seen with the apparent bending of the alignments of clasts close to

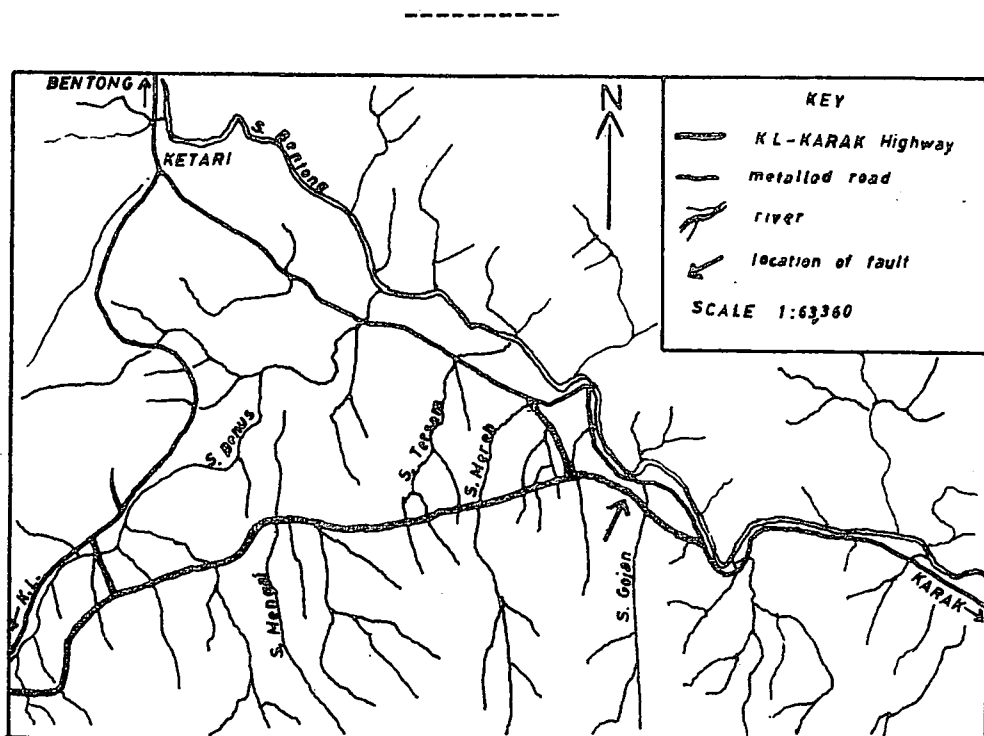
the fault. The fault appears to have been responsible for the tilting of the alignments of the clasts of the unconsolidated deposits, though this (the subhorizontal bedding) may also be a primary depositional feature.

Although the age of the faulting is uncertain, it almost definitely occurred sometime in the Quaternary. This is deduced from the fact that the unconsolidated deposits (which overlie the bedrock and are cut by the fault) form a depositional terrace that is located some 20 m above the present-day Sungei Bentong. Two lower depositional terraces are also seen further towards Karak and are found about 6 to 8 m and about 15 m above the present-day Sungei Bentong. These terraces are undoubtedly 'recent' geological features and have most likely developed during the Quaternary thus indicating a Quaternary age for the fault. Evidence for the young age of the fault is also shown by the fact that although the fault plane is weathered and has probably been subjected to creep, it is still clearly preserved in the unconsolidated deposits.

The origin of the fault can perhaps be best explained by considering that its development was in response to an isostatic uplift (probably due to erosional unloading) of the Main Range during the Quaternary. The Main Range, which lies to the west, trends in approximately the same direction as the fault strike. The fault itself could have been a pre-existing one that was reactivated during the isostatic rise of the Main Range.

Acknowledgement

The author would like to thank Dr. P.H. Stauffer for his comments on the draft of this note.



Map Showing Location of Quaternary Fault

Early mining and marketing of the Balas Ruby, together with some curious and other views concerning the properties, etc., of the mineral.

K.F.G. Hosking, Calle Isla de Cuba, 23, 1^o, 3, Sitges, (Barcelona), Spain.

Recently, when reading Latham's (1967) translation of the 13th century work 'Travels of Marco Polo', I came upon an account of the mining, marketing, etc., in Badakhshan, or Balashan, of what Latham terms balass rubies, and it is this account that is the basis of this note.

Spencer (1937, p. 161) provides the information that the name 'balas ruby' is often applied to pale red spinel of inferior quality. He also notes that red spinel has long been known to occur with ruby in white marble near Jagdalek in Badakhshan, the ancient kingdom of Balascia, now in Afghanistan. He records that Marco Polo visited the mines in the 13th century and brought back gemstones (no doubt, both ruby and red spinel) under the name balascus. In my translation of the Travels I can find nothing that proves that Marco Polo did, in fact, acquire rubies and spinels from Badakhshan, but apparently he did return with gems to Europe, and as he visited Badakhshan it is probable that he obtained at least some of them from there.

The account of the mining, etc., of the balass rubies in Badakhshan which appears on page 76 of Latham's translation, and which is reproduced below is, in my view, particularly interesting because it provides yet another example of the fact that ancient mining groups were not only capable of operating sizeable underground mines efficiently, but that, in addition, they often know how to make the best use, economically speaking, of the products of their mines. The King of Badakhshan had the balass ruby trade 'buttoned up' just about as effectively as is, say, the present South African diamond industry.

This is its account that 'sparked off' the note:-

"In this country (i.e. Badakhshan) originate the precious stones called balass rubies, of great beauty and value. They are dug out of rocks among the mountains by tunnelling to great depths, as is done by miners working a vein of silver. They are found in one particular mountain called Sighinan. And I would have you know that they are mined only for the king and for his orders; no one else could go to the mountain and dig for these gems without incurring instant death, and it is forbidden under pain of death and forfeiture to export them out of the kingdom. The King sends them by his own men to other kings and princes and great lords, to some as tribute, to others as a token of amity; and some he barter for gold and silver. This he does so that the balass rubies may retain their present rarity and value. If he let other men mine them and export them throughout the world, there would be so many of them on the market that the price would fall and they would cease to be so precious. That is why he has imposed such a heavy penalty on anyone exporting them without authority".

That the Badakhshan spinel plus ruby, collectively termed balascus or balasius, was held in considerable esteem by the ancients, is vividly

indicated by the remarks of Camillus Leonardus who, according to Spencer (1937, p. 161) wrote, in 1502, as follows:- '*Balasius is of a purple or rosy Colour, flames and glitters Some think it is the Carbuncle (i.e. ruby) diminish'd in its Colour and Virtue; just as the Virtue of the Female differs from that of the Male. It is often found that the external part of one and the same stone appears a Balasius, and the internal a Carbuncle, from whence comes the saying, that the Balasius is the Carbuncle's House It gives help to Disorders of the Liver; and, what is still more surprising, if you touch the four Corners of a House, Garden, or Vineyard, with the Balasius, it will preserve them from Lightning, Tempest and Worms.*' (Would gemmologists, or others, like to comment on the close spacial association of spinel and corundum that is mentioned in this extract?).

In conclusion, it is relevant to point out that, as Anderson (1947, p. 213) states, the term 'balas ruby' is misleading and should be avoided. It is also interesting to record that 20th century gemmologists of note have held distinctly different views about the balas ruby. As mentioned earlier, Spencer holds that the balas ruby is a pale red spinel of inferior quality. He also mentions that clear spinel, of gem quality, may show a wide range of colours - crimson, pink, yellow, brown, green, blue, purple, violet, etc., of various shades. Herbert Smith (1913, p. 203) on the other hand, states that '*the only variety (of spinel) which is valued as a gem is the rose-tinted stone called balas ruby which is very similar to the true ruby in appearance*'. Well, if this were true in 1913 it is true no longer as the variously coloured cut spinels to be seen in the gem collection in the museum of the Institute of Geological Sciences, London, will amply demonstrate!

References

- Anderson, B.W., 1947. Gem testing. Haywood and Co. Ltd., London. 252 p.
- Herbert Smith, G.F., 1913. Gem-stones and their distinctive characters. Methuen and Co. Ltd., London. 312 p.
- Latham, R., 1967. The travels of Marco Polo. Pengiun Books, Harmondsworth, Middlesex, England. 380 p.
- Spencer, L.J., 1937. A key to precious stones. Blackie and Sons, Ltd., London. 237 p.

MEETINGS OF THE SOCIETY

Mr. T.N. Crook, the President of the Society of Exploration Geophysics spoke on "Modern Geophysical Technology" at a meeting of the Society in Kuala Lumpur on 23 January 1979. The main emphasis of this presentation was on the advances made in the field of exploration geophysics with respect to the petroleum industry.

Mr. Crook began his talk by outlining the problems faced by petroleum geologists and geophysicists in their search for oil. Improvement in the geophysical techniques employed in the oil industry has greatly reduced the number of wells drilled which turned out to be nonproductive. The speaker also discussed the respective roles of the geologists and the geophysicists in the industry.

Mr. Crook is based in Houston, Texas and his visit here was arranged by Esso Production Malaysia.

NEWS OF THE SOCIETY

Annual General Meeting and Discussion Meeting

The Society's Annual General Meeting will be held on Friday, 20th 1979 at 5.00 p.m. in the Geology Lecture Hall, University of Malaya, Kuala Lumpur. Tea will be served at 4.30 p.m. The agenda for this meeting have been posted to all GSM members.

The discussion meeting planned for this Annual General Meeting may be postponed to a later date due to poor response from the call for papers. Members will be informed of the final decision of the Organizing Committee regarding this discussion meeting in early April.

More on Young Geoscientist Publications Award

To let young geoscientists know more about how they may qualify for the Geological Society of Malaysia Young Geoscientist Publications Award, extracts from the Rules and Regulations of this Award, a copy of which may be requested from the Secretary, are given below:

1. Award: The Young Geoscientist Publications Award shall be given annually to the author(s) of the best paper(s) in geology about Malaysia or the region and/or should be of general interest to the local community of geoscientists. Papers with joint authorship may also be considered provided the relative responsibility of the authors is made known. The award will

consist of a certificate and a sum of money derived from interest of an award fund (to date contains \$2000) or a medal of equivalent value.

2. Board: The Board, consisting of a Chairman and four members, shall call for nominations each year not later than 1st October, through the Society's publications or circulars and submit to Council by 31st December each year, its recommendation(s) of suitable candidate(s) for the award.
3. Eligibility: No person shall be considered for the award unless he satisfies the Board:
 - (a) that he is not more than thirty years of age at the time of publication of the paper or the time the paper was accepted for publication;
 - (b) that he is normally resident in Malaysia;
 - (c) that he belongs to any one of the membership classes of the Society;
 - (d) that the paper was published or had been accepted for publication in the previous calendar year, in which case written proof from the publisher must be shown;
 - (e) that the paper has been published or accepted for publication in any one of the Society's series of publications or in international journals.
4. Nominations:
 - (a) Nominations for an award must be made by a member who is not a Student or Associate Member.
 - (b) An author cannot nominate himself for the award.
 - (c) The written consent of the author is required.
5. Presentation: The presentation to the winner of the award shall normally be during the Society's Annual General Meeting. During the presentation ceremony, a citation shall be given.

Tin Symposium Bulletin

Bulletin 11, a collection of papers presented at the Tin Symposium held in March 1978 is at the galley proof stage and can be expected to be published in the very near future. Most of the papers that will appear in the Bulletin are titled below:

GENERAL

1. K.F.G. Hosking: Tin Distribution Patterns.
2. C.S. Hutchison & K.R. Chakraborty: Tin: a mantle or crustal source?
3. A.H.G. Mitchell: Rift, subduction and collision-related tin mineralisation.
4. W.W.S. Yim: Rapid methods of tin determination for geochemical prospecting.

SOUTHEAST ASIA

5. S. Puwakool: Review of the potential and exploration of tin in Thailand.
6. P. Nutalaya & P. Aranyakanon: Review of the geology of Thai Tin Field.
7. S. Pitragool & S. Panupaisal: Tin and tungsten mineralisation of the Mae Lama Mine and the surroundings, Northwest Thailand.
8. Ishihara, S., et al.: The magnetite-series and ilmente-series granitoids and their bearing on tin mineralisation, particularly of the Malay Peninsula region.
9. S.S. Rajah: A review of the geology of the Kinta Tin Field, Malaysia.
10. G.H. Teh: Geochemical studies around the Tekka area, Perak, Malaysia.
11. B.C. Batchelor: Geological characteristics of certain coastal and offshore placer deposits as essential guides for tin mineralisation in the Sundaland, Southeast Asia.

OTHER AREAS

12. R.G. Taylor: Some observations upon the tin deposits of Australia.
13. Solomon Rivas: Geology of the principal tin deposits of Bolivia.
14. Borges, M.R., et al.: Aspects of exploration of a tin mineralisation in Amazon region, Brazil.
15. M.B. Katz & K. Tuckwell: Structural and tectonic controls of tin bearing pegmatites and granites in the Precambrian of Broken Hill, Australia.
16. J.G. Wilson: The major controls of the mineralisation in the Bushveld igneous complex, South Africa.
17. G. Matheis: Geochemical exploration around the pegmatitic Sn-Nb-Ta-mineralisation of southwest Nigeria.
18. N.J. Jackson: Geology of the Cornubian Tin Field

Editor's Note

Its come now to the time when the old must make way for the new - yes, its AGM time, come Friday 20th, April and the new GSM Council will soon be at the helms of the Society. This new Council has a few reassuring old faces, led by our incobnent President, Dr. Tan Bock Kang, and also a few refreshing new ones, i.e. a balanced group drawn from the Universities, Geological Survey and industries. We wish the new Council every success in the running of the Society and hope that they will also have as enjoyable a time as the old one had.

The Society can now look forward to several evenings of informative geological talks for affirmative replies to our letters have been received from potential speakers. One such talk was given recently by Mr. Crook on geophysical techniques.

A letter was received from Mr. Y.L. Low of Universitat Graz, Austria to ask that GSM members be informed of the Second European Conodont Symposium to be held in Austria and Czechoslovakia. Those interested, please see the relevant section in this Newsletter.

New Library Additions

The following works have been added to the Society's Library and are available to members at the Klompe Reading Room at the Department of Geology, University of Malaya, Kuala Lumpur.

1. Commonwealth Geological Liaison Office, NL 11 & 12, 1978 and NL 1, 1979.
2. Journal of Petroleum Geology, vol. 1, no. 2, 1978.
3. Geophysical Research Bulletin, vol. 16, no. 3, 1978.
4. Suara Remaja, 1978.
5. IMM Bulletin no. 865, 1978; 866 & 867, 1979.
6. National Library, Singapore, Adult reference collections accession list, Dec, 1978; Jan & Feb, 1979.
7. Geological literature of USSR: Bibliographical yearbook for 1965 year, vols. 1 & II, 1978.
8. IMM Trans/Sect. A, vol. 87, Oct., 1978.
9. Molybdenum in New South Wales by C.R. Webber, et al., 1978.
10. IMM Trans/Sect. B, vol. 87, Nov., 1978.
11. IMM Trans/Sect. C, vol. 87, Dec., 1978.
12. Bulletin du Bureau de Recherches Geologiques et Minieres, Sect. IV, no. 3, 1978.

Membership

The following applicants were admitted to the Society:

Full Members

- Nordin Ramli, Petronas, P.O. Box 2444, Kuala Lumpur.
- Lee Kim Yee, Petronas, P.O. Box 2444, Kuala Lumpur.
- Khalit bin Hj. Othman, Jurutera Konsultant (SEA) Sdn. Bhd., 468-6D, Jln. Ipoh, K.L.
- Claude Carrel, Aquitaine Indonesia, Jln. Hayam Wuruk 8, Jakarta Pusta, Indonesia.
- Ahmad Tajuddin Hj. Ibrahim, Jabatan Geologi, Universiti Malaya, K.L. (from student member).
- Wan Hasan b. H. Wan Zakaria, Petronas, P.O. Box 2444, K.L.
- Camillo Premoli, 106 Elizabeth Bay Rd., Sydney, N.S.W. 2011, Australia.
- Mohd. Ali Hassan, Jabatan Geologi, Universiti Malaya, K.L.
- Tuan Kob b. Tuan Dir, Petronas, P.O. Box 2444, Kuala Lumpur.
- Samsuddin Taib, Jabatan Geologi, Universiti Malaya, K.L. (from student member).
- Mohd. Danish Hanif, PBC Management Services, GPO Box 2401, K.L.
- Lim Soo Chong, Tony, 36, Jln. Sungei Dua, Taman Seputeh, K.L.
- Low Teck Khoon, 31-A Lorong Chan Ah Tong, Brickfields, K.L.

Hamzah Yunus, Petronas Carigali, 2nd Floor, Oriental Plaza, K.L.

Wong Pak Kheong, Robertson Research, Ayer Rajah Industrial Estate, 55
Jalan Ayer Rajah, Singapore 5.

V. Nadarajah, MINCO, P.O. Box 2263, K.L.

Associate Members

Sheah Ping Kok, Jurutera Konsultant (SEA) Sdn. Bhd., 468-6D, Jln. Ipoh, K.L.

K. Gurasekaran, 176-4, Jln. Tuanku Abd. Rahman, K.L.

Student Member

Vijayan, s/o V.V. Rajan, 126 Sri Taman Cicely, Teluk Anson, Perak.

Change of Address

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

Brian W. Hester, 5926, McIntyre Street, Golden, Co. 80401, USA.

Wan Ismail bin Wan Yusoff, Petronas, Wisma Maju, Jalan Paya Bunga, Kuala
Trengganu, Trengganu.

Wan Fuad Wan Hassan, c/o Dr. O. Von Knorring, Dept. of Earth Sciences,
The University, Leeds, LS2 9JT, England.

J. Stocklin, Huebstrasse 9a, CH-9011 St. Gallen, Switzerland.

F.E.H. Haser, 14 Lorong Dungun, Damansara Heights, Kuala Lumpur.

Hubert Van Wees, Beemdstraat 24, 5662 RP Geldrop, Netherlands.

Ming Liang Lee, 10871 Springwood Court, Richmond, BC V7E 1Y2, Canada.

Cho Wing Nam, P.O. Box 242, Kuala Lumpur.

Addresses wanted

We would like the current address of the following members:

Dr. Harry Doust, c/o SSB, Lutong, Sarawak.

Mr. Fritz Lucas, Liaison Unit SIPM/SIPC, P.O.B. 2634, Jln. Thamrin 8,
Jakarta, Indonesia.

O T H E R N E W S

COSPAR - 22nd Plenary Meeting

The Committee on Space Research (of the International Council of Scientific Unions) will hold its 22nd Plenary Meeting in Bangalore, India between May 29 and June 9, 1979. A special 2-day workshop on "Remote Sensing and Mineral Exploration" will be organised as part of IGCP Project 143.

Members wishing to attend and meet leading space scientists at the meeting should write to:

COSPAR Secretariat
 c/o Organising Committee
 XXII nd COSPAR - 79
 ISRD Headquarters
 Cauvery Bhavan, District Office Road,
 Bangalore 560009, India.

CCOP/SOPAC Symposium

The Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC) will hold a symposium on the Petroleum Potential in Island Arcs, Small Ocean Basins, Submerged Margins, and Related Areas from (provisional dates) 18 - 21 September 1979 in Suva, Fiji. The Symposium will include both invited and other papers on the following main topics:

Geology and Tectonics
 Hydrocarbon Generation
 Reservoir Types
 Geophysical Techniques in Exploration
 State of the Art in Deep Water Offshore Technology
 Case Histories.

The Symposium will commence with a special invited paper on National Development Policies and Legal Framework for Petroleum Exploration in the Southwest Pacific.

For further details please write to:

CCOP/SOPAC Technical Secretariat
 c/o Mineral Resources Department
 Private Mail Bag
 GPO Suva, Fiji.

ECOS II

The Second European Conodont Symposium, co-sponsored by the Geological Survey of Austria and the Geological Survey of Czechoslovakia, will be held at Vienna on August 4, 1980 and in Prague from August 8-9, 1980. Pre- and post-symposium field trips to conodont-bearing rocks in Austria and Czechoslovakia are being planned between July 30th and August 7th. Those wishing to avail themselves of this opportunity to present and discuss any matters related to modern research on conodonts are requested to write to:

ECOS II
c/o Geological Survey of Austria
P.O. Box 154, Rasumotskygasse 23
A-1031 Vienna, Austria.

Third Postgraduate Training Course: Geochemical Prospecting Methods

The Unesco office in Jakarta has given the following information on the Course:

1. Sponsors: Gechim Geological Office, Praha; Unesco; IAGC.
2. Places : various laboratories in Czechoslovakia.
3. Time : 15 August - October 1979.
4. Requirements: Participants possess a university degree or equivalent and 2-3 years practical experience in geological work.
5. Funds : A limited amount of scholarships are available for participants from developing countries. Unesco supports travel up to US\$400 to \$500.
6. Number of participants in 1979: max. 12.
7. A certificate will be issued at completion.
8. Closing date: (Air?) Mail before 30 March 1979.

Applications should be sent directly to

Geochim CSSR Unesco 1979
Postgraduate Training Center for
Geochemical Prospecting
Ústřední Ústav geologický
118 21 Malostranské nám 19
Praha 1, Czechoslovakia.

and a copy to Prof. H.D. Tjia as the National Contact Point (Malaysia) of the Regional Network in Geosciences.

Erratum

The scale in Fig. 2 of Hosking's paper "The curious tin-ore of Wheal Primrose, St. Agnes, Cornwall" in Newsletter vol. 4, No. 5, should read as 20 μ m, not 200 μ m.

Calendar

Under this column the Society will note coming events on meetings, courses and symposia of interest to members. Date in parentheses gives the issue of Newsletter containing more information pertaining to the event.

Geological Society of Malaysia1979

20 April : Discussion Meeting on Malaysian Geology. Secretary, Geological Society of Malaysia, c/o Dept. of Geology, University of Malaya, Kuala Lumpur (Nov-Dec 1978).

Other Events1979

- 1979 : 14th Congress of the Pacific Science Association USSR. B.G. Gafurov, Chairman of the Soviet National Pacific Committee, Academy of Sciences of the USSR, Moscow. (Jul-Aug 1977).
- Apr 30-May 3 : 1979 Offshore Technology, Astrohall, Houston, Texas. OTC Headquarters, 6200 North Central Expressway, Dallas, Texas 75206, USA. (Jul-Aug 1978).
- May 10 - 26 : Ninth International Congress of Carboniferous Stratigraphy and Geology, Washington, USA. President or Secretary-General IX-ICC, 1979, Museum of Natural History, Washington, D.C. 20560, USA. (Sep-Oct 1977).
- May 29 - : 22nd Plenary Meeting of the Committee on Space Resources,
Jun 9 : Bangalore, India. COSPAR Secretariat, c/o Organising Committee, XXIInd COSPAR - 79, ISRO Headquarters, Cauvery Bhavan, District Office Road, Bangalore 560009, India. (Jan-Feb 1979).
- Jun 5 - 6 : Eighth Annual Convention of the Indonesian Petroleum Association. I.P.A. Lecture Committee, Jalan Menteng Raya 3, Jakarta, Indonesia. (Nov-Dec 1978).
- Jul 24 - 27 : Sixth Asian Regional Conference on Soil Mechanics and Foundation Engineering, Singapore. Dr. Tan Swan Beng, c/o Institution of Engineers, Singapore, Suite 1306, 13th Floor, International Plaza, Anson Road, Singapore 2. (Sep-Oct 1978).
- Sept 18 - 21 : CCOP/SOPAC Symposium on "Petroleum Potential in Island Arcs, Small Ocean Basins, Submerged Margins, and Related Areas, Suva, Fiji." CCOP/SOPAC Technical Secretariat, c/o Mineral Resources Dept., Private Mail Bag, GPO, Suva, Fiji. (Jan-Feb 1979).
- Oct 8 - 12 : Tenth World Mining Congress, Istanbul, Turkey, Dünya Madencilik Kongresi Turk Milli Komitesi, Ziya Gokalp Cad No. 17, Kat 8, Ankara, Turkey. (Jan-Feb 1978).

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- Feb 11 - 16 : Fifth Gondwana Symposium, Wellington, New Zealand.
Secretary, Fifth Gondwana Symposium, Victoria University
of Wellington, Private Bag, Wellington, New Zealand.
(May-June 1978).
- Apr 10 - 15 : 8th International Geochemical Exploration Symposium, Hannover,
Fed. Rep. Germany. Dr. H. Gundlach, Organizing Committee,
8th Int. Geochemical Exploration Symposium, Federal Institute
for Geosciences and Natural Resources, P.O. Box 510, 153,
D-3000 Hannover 51, W. Germany. (Jul-Aug 1978).
- Jul 7 - 17 : 26th International Geological Congress in Paris, France.
Secretariat General du 26 eme Congress geologique
international. Maison de la Geologie, 77-78 rue Claude
Bernard 75005, France. (Nov-Dec 1977).
- Aug. 4 - 9 : Second European Conodont Symposium, Vienna and Prague. ECOS
II, c/o Geological Survey of Austria, P.O. Box 154,
Rasumofsteygasse 23, A-1031, Vienna. (Jan-Feb 1979).

Latest: AGM Discussion Meeting

The Discussion Meeting scheduled for 20th April 1979 has regrettably
been postponed due to poor response to the request for papers. The Annual
General Meeting planned on the same day will be held as scheduled.

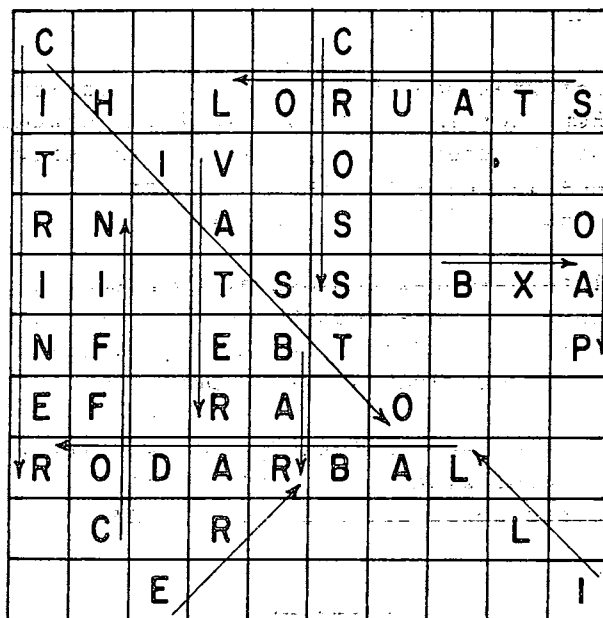
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Delay of Warta Geologi

This issue of Warta Geologi was held up owing to the difficulties
the printer had in obtaining his printing licence from the authorities
concerned. We apologise for this delay.

Editor

Solutions to Mineralogy Word Puzzle (Warta Geologi, vol. 4, no. 5)



Clue

1. The old age pensioner in every biaxial mineral (abbrev) (3). OAP
2. Figure with two clear hyperbolic curves may not react positively (abbrev.) (3). BXA
3. Fruity member of the Silica Family; distinguished for vitamin C (7). Citrine
4. Family blessed with holy twins (7 + ite). Staurolite
5. German godfather of the Carbonate Mafic Family (5 + ite). Vaterite
6. Canine member of the Plagioclase Family (8 + ite). Labradorite
7. The undertaker (6 + ite). Coffinite
8. The sick mineral (3 + ite). Illite
9. The mistaken mineral (3 + ite). Errite
10. The annoyed mineral (5 + ite). Crossite
11. The lawyer (3 + ite). Barite
12. The Spanish hero honoured with a C-cross (8 + ite). Chiestolite