

K E S A T U A N K A J I B U M I M A L A Y S I A
G E O L O G I C A L S O C I E T Y O F M A L A Y S I A

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Contents

Geologic Note:	Page
Unusual replacement textures in Sphalerite-rich material from Yam Chan Tin Mine, Temoh, Perak, West Malaysia	1
Planned schedule of meetings	3
Visit of Dr T.P. Thayer to Malaysia	4
News from the University of Malaya	4
CSM Library holdings	5
Viewpoints on geology - I: Belousov	9
New members	11

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c/o Department of Geology
University of Malaya
Kuala Lumpur, MALAYSIA

GEOLOGIC NOTE

Unusual Replacement Textures in Sphalerite-rich material from Yam Chan Tin Mine, Temoh, Perak, West Malaysia.

K.F.G. Hosking and J.H. Leow
University of Malaya

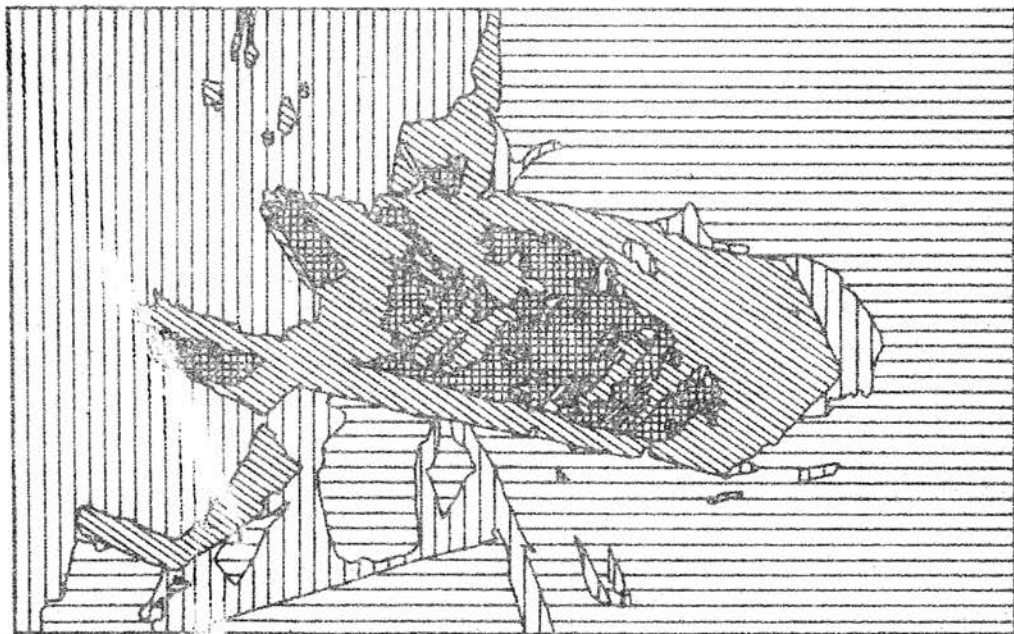
Recently a specimen of what appeared to be simply massive dark sphalerite, which had been collected from the Yam Chan Tin Mine at Temoh (Perak), was given to one of us (KFGH) by the Chief Inspector of Mines of Malaysia. Further examination, however, demonstrated that this specimen possessed a number of most interesting features and these are described below.

Examination of thin and polished sections revealed that the specimen is polymineralic, although by far the major component is sphalerite.

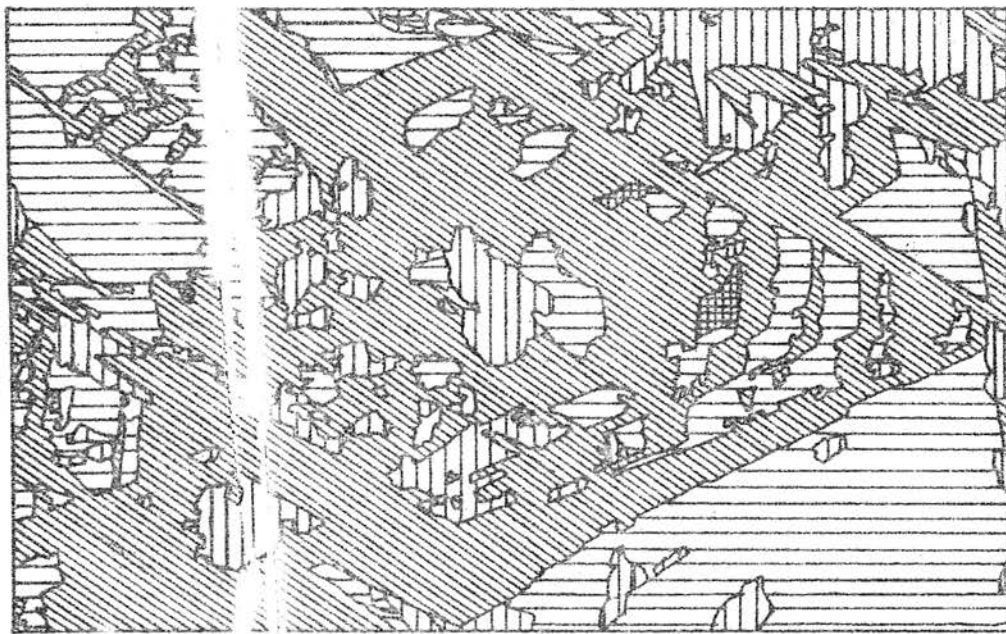
The earliest species present is apatite which occurs as single colourless crystals and as aggregates, which fluoresce orange in short-wave ultraviolet light, and which are generally sparsely and randomly scattered in the sphalerite, but which, in a few instances, are part-invested by loellingite.

The next species to be deposited after the apatite was loellingite which occurs as isolated euhedral crystals and as crystal aggregates. These crystals have been subject to remarkable core replacement by tetrahedrite and sphalerite, as figure 1 demonstrates. Briefly, whilst some crystals show, in polished section, complete replacement of the core by one, or usually both, of the species noted above, others have been so replaced that in section a number of isolated areas, composed of the replacing minerals, are to be seen which are bounded by straight sides parallel to the edges of the host. It seems very likely that the (010) and (101) cleavages of the loellingite played a major role in determining the shapes of the 'bodies' developed by replacement. However, although reflectivity and microhardness measurements indicate that what remains of the original crystals is loellingite, it is tempting to consider the possibility that compositional differences may have existed within each of the crystals (perhaps, for example, they were in part arsenopyrite) and that it was those portions that were not loellingite which had a particular penchant for reacting with the invading mineralising agents and so were preferentially replaced. One thing is certain, and that is that it is impossible to give a wholly satisfactory reason as to why some parts of the host crystals were replaced whilst other parts were not.

The tetrahedrite present is invariably found in contact with loellingite and so it might have formed slightly before the bulk of the sphalerite. Possibly some of the arsenic liberated during the replacement of the loellingite crystals may have been included in the lattice of the tetrahedrite, although there must have been an excess of arsenic as the quantity of tetrahedrite present is very modest by comparison with that of the loellingite that was replaced. What happened to the excess As cannot, of course, be ascertained.



304 μ



290 μ





- | | | | |
|---|--------------|---|-------------|
|  | Sphalerite |  | Loellingite |
|  | Tetrahedrite |  | Void |

FIGURE I (TRACED FROM PHOTOMICROGRAPHS)

Although the sphalerite is quite dark it is not markedly ferriferous as it contains only 4.8% FeO. It is also likely that some of the iron present in it was derived from the loellingite when the latter was being replaced by the sphalerite.

The sphalerite is also interesting on account of the paucity of exsolution bodies in it. Those that do occur consist solely of stannite, and are generally discoidal but, on occasion they possess forms reminiscent of the antlers of a deer.

Finally it is of further interest to note that the specimen has been shown, by means of the X-ray fluorescent spectrometer, to be quite strongly cadmiferous. Doubtless the cadmium is incorporated in the lattice of the sphalerite.

PLANNED SCHEDULE OF MEETINGS

The Council of the Society hopes to have more meetings, and these on a more regular schedule, than was possible last year. The planned framework involves regular meetings on the last Friday of every other month. Some of these regular meetings will be replaced by special Discussion Meetings whose time and venue may differ from the regular schedule. In addition, extraordinary meetings may be called from time to time as opportunity or need arises.

The schedule of meetings as planned for this year is as follows:

- April 3rd: Ordinary meeting, University of Malaya
 Speaker: Al Rashid b. Mohd. Ibrahim and W.M. Law
 Topic: "Archeology of Bujang Valley" and
 "Geology and Soils" respectively.
- May 29th: Ordinary meeting, University of Malaya
 Probable speaker: T.P. Thayer (USGS) - see below
- Last weekend in July: Discussion meeting in Kuching, Sarawak. It is hoped that a two-day Discussion Meeting can be organized with perhaps two days of field trips in Borneo. The Discussion topic will be some aspect(s) of the study of sedimentary basins in the Sunda region and the South China Sea, with special reference to petroleum possibilities.

The Society hopes to get support for transport, to make it possible for members from West Malaysia to attend.

September 25th: Ordinary meeting, University of Malaya

November-December: Discussion Meeting in Ipoh, Perak. This meeting will be timed to take place at the end of the Geological Survey's annual conference, and the exact date cannot be fixed yet. It is planned to have two Discussion topics, one in general geology and one in applied geology.

This is a repeat of last year's highly successful Ipoh meeting, and the Society hopes it can become a regular feature of the year's activities in the future.

January (1971): The Annual General Meeting, with probably a short Discussion Meeting. The topic is open and may possibly be 'Miscellaneous'.

- PHS

VISIT OF DR. T.P. THAYER TO MALAYSIA

Dr T.P. Thayer of the United States Geological Survey, Washington, D.C., will be visiting West Malaysia in mid- to late May 1970.

Dr Thayer is the leading authority on alpine type ultramafic complexes and one of the contributors to the book by Wyllie on ultramafic rocks. He has dealt with many aspects of such rock complexes, including the chromite bodies which occur in them. Dr Thayer's purpose in coming to Malaysia is to examine the collection of ultramafic rocks from the Darvel Bay area of Sabah in the Department of Geology, University of Malaya, with a view to comparing these rocks with those in the Lizard area of England.

During his stay in Kuala Lumpur, Dr Thayer will be giving a talk to the Society on the subject of peridotite-gabbro petrology.

- BKT

NEWS FROM THE UNIVERSITY OF MALAYA

New posts in the Geology Department

The University of Malaya has announced the creation of four new posts of Lecturer/Assistant Lecturer in the Department of Geology. This will bring the total teaching staff of the Department to 15. The new posts were already advertised and the first batch of applications are being considered.

Largest Honours Class graduates

Fourteen students have been awarded the degree of B.Sc. (Hons) in Geology or Applied Geology for work in the 1969/70 session. This is by far the largest Honours class ever turned out by the Department of Geology - more than twice the previous high. Four of the students were in Geology (2 First class; 2 upper seconds) and ten in Applied Geology (1 first; 4 upper seconds; 4 lower seconds; and 1 third). Most of the graduates will either go to work for mining companies or pursue further studies.

- PHS

GSM LIBRARY HOLDINGS

The following list comprises the contents of the Geological Society of Malaysia Library, as of February 1970. The items listed are all housed in the Klompé Reading Room of the Department of Geology, University of Malaya, where they may be referred to by members.

Books and periodicals are shelved accordingly to the Universal Decimal Classification (UDC), pamphlets are filed by number.

Books

UDC Class No.

- 55(44) BCRP Bulletin Centre de Recherches de PAU, vol. 3, no. 1, 1969
- 55(595.1) Geological Society of Malaysia. Newsletter, no. 1-15, 1966-1968
GSM
- 55(91) GSI Geological Survey of Indonesia, 1961. Atlas - Stratigraphic Lexicon of Indonesia. Publikasi Keilmuan no: 31A-seri Geologi.
- 55(91) HAD Hadikusumo, Djajdai, 1961. Bulletin of the Volcanological Survey of Indonesia for the period 1950-1957 (Continuation of the Bulletin of the East Indian Volcanological Survey).
- 55(038) HAD Hadiwidjojo, M.M.P., 1965. English-Indonesian and Indonesia-English terms of Geology and related sciences. Publikasi Teknik - seri Geologie Khusus no. 2-A
- 55(91) IAGI Ikatan Ahli Geologie Indonesia, vol. 2, no. 1, 1965. Geologi dalam Teknik Sipil.
- 55(91) JOH Johnson, R.F. and Harjono, 1963. Geology and bauxite deposits of the central Riau Islands, Indonesia. Publikasi Teknik-seri Geologie Ekonomi No. 6
- 55(91) MAK Makagiansar, M. and Soemantri, R.M., 1965. Research di-Indonesia, 1945-1965, II. Departmen Urusan Research Nasional Republik Indonesia.

- 55(91) MAR Marks, P., 1956. Smaller foraminifera from Well no. 1 (Sumur I) at Kebajoran, Djakarta. Publikasi Keilmuan Nr. 30-seri Paleontologie.
- 55(91) MAR Marks, P., 1961. Stratigraphic Lexicon of Indonesia. Publikasi Keilmuan No. 31 - seri Geologie.
- 011 NAM National Archives of Malaysia, 1967. Bibliographic Negara Malaysia. Arkib Negara Malaysia with the assistance of UNESCO
- 55(91) NIX Nixon, Karmijuni P. et. al., 1961. Republik Indonesia Departemen Perindustrian Dasar/Pertambangan Djawatan Geologie-Bandung.
- 55(91) SIG Sigit, S., 1962. Penyelidikan geologi Terhadap Endapan Batubara Didaerah Sungup-Selaro, di-Bagian Utara Pulau Laut (Kalimantan Tenggara), with abstract in English. Publikasi Teknik-seri Geologi Ekonomi no. 3.
- 55(91) SIG Sigit, S., 1964. A brief explanatory note to the distribution map of coal deposits. Industrial minerals and rocks of Indonesia. Scale 1:5,000,000.
- 55(91) SIG Sigit, S., 1963. Penyelidikan geologie Terhadap Endapan Batubara di-Pulau Sebuku. (Kalimantan Tenggara). Publikasi Teknik-seri Geologi Ekonomi no. 5
- 55(91) SIG Sigit, S., 1962. A brief outline of the geology of the Indonesian Archipelago. 2) Geological map of Indonesia scale 1:5,000,000 compiled by Th. H.F. Klompe.
- 55(91) SUR Surjo, undated. Bulletin of the Volcanological Survey of Indonesia for the year 1959.
- 55(91) THA Thaib, J., 1960. Tanah Diatomea di-Indonesia (with abstract in English). Publikasi Teknik - seri Geologie Ekonomi no. 1
- 622 TRI Tin Research Institute, 1967. Guide to laboratories and exhibits.
- 622 TRI Tin Research Institute, 1966. Annual report of the International Tin Research Council.

PERIODICALS RECEIVED FROM SISTER SOCIETIES AND OTHER ORGANIZATIONS

- 55(44) BRGM Bureau de Recherches Geologiques et Minières, (Paris), Bulletin, section IV (Geologie Generale) 1968-
- 55(06)GSLP Geological Society of London, Proceedings, no. 1652- ., 1969-
- 55(914)GSP Geological Society of the Philippines, Journal. (formerly Journal of the Philippine Geologist), vol. 21- ., no. 2- 1967-
- 55(549)PGS Pakistan Geological Society. Newsletter vol. 1, no. 1, 1968
- 55(914)GSP The Philippine Geologist (see Geological Society of the Philippines Journal).

55(591) UBJ Union of Burma Journal of Science and Technology, vol. 1.
No. 1-1968-

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3. AW, P.C. 1967. Igimbrite in Central Kelantan, Malaya. Geological Magazine, 104, 13-17
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8. FICK, L.J., 1967. Offshore prospecting. The International Tin Council.
9. GARNETT, R.H.T. 1967. The underground pursuit and development of tin lodes. Part I: Text. Part II: Figures.
10. GEOLOGICAL SURVEY, WEST MALAYSIA. 1967. West Malaysia: Work and problems on tin. The International Tin Council.
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16. HILL, J.C.C. 1967. Sea bed prospecting. Prepared for the Technical Conference on Tin of the International Tin Council.
17. IKATAN ALHI GEOLOGIE INDONESIA, vol. 1, no. 1, 1962

18. INTERNATIONAL TIN COUNCIL. 1967. The work of Geomines at Manono.
19. JACKSON, A. 1961. Oil exploration - a brief review with illustrations S. Sumatra. Council for Sciences of Indonesia, Publication No. 2
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21. JOY, A.S. 1967. The recovery of fine tin by flotation. The International Tin Council.
22. KATILI, J.A. 1961. The progress of geological sciences in Indonesia, 1921-1961
23. KATILI, JOHN A. & JOHANNAS. 1961. Review of the status of the mineral industry and the perspective of mineral exploration in Indonesia.
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- PHS

VIEWPOINTS ON GEOLOGY -- I: BMLUSOV

The psychology of the geologist as a researcher developed in accordance with the nature of the objects he studied and the methods he employed. The geologist is first and foremost an observer. The objects of his scrutiny are to be found on mountain tops and slopes, in canyons and gullies, in forests and steppes. Nature stages its geological experiments on vast territories, which to the geologist is the same as the laboratory is to the chemist. But it is much harder to move about in geological space, and one of the basic features of the geologist's job is that it combines mental work with no mean physical exertion. Of course there are branches of geology that do not require field work, but the foundations of geology as a science were laid by regional field investigations. This creates additional difficulties in handing the experience of one generation of geologists down to the next.

The very nature of the objects of his investigation does not arouse the geologist's desire for an experimental representation of his observations. The volume of materials taking part in geological processes is much too great, the physical conditions prevailing in various epochs in the earth's crust are known much too vaguely, and the origins of geological forces are doubtful. In these circumstances the geologist tends to regard description as his main task. He reconstructs the history of processes by means of comparisons and analogies, relying on the methods of geochronology mentioned above. In the overwhelming number of cases all this tends to give a qualitative, dimensionless nature to the geologist's conclusions.

To a considerable degree the qualitative approach is conditioned by the fact that usually the geologist deals with complex processes that are the end result of a reciprocal overlapping of many simpler processes. It is extremely difficult, if not impossible, to define the elementary component parts and establish which are fundamental and which are to a greater or lesser degree incidental. One could even claim that, should such a breaking down prove possible, the upshot would be that geological processes would cease to be geological, and we should find ourselves in the situation of a person studying living processes by dissecting the living organism which, naturally, would cease to be living in the process.

Thus the geologist is compelled to assess the phenomena he observes in their totality and complexity. This complex totality always contains variable components that depend on local, incidental conditions and they contribute to the individuality and inimitability of phenomena, a consideration which greatly affects the development of geological concepts. Every volcanic eruption, every fold, every graben, every geosyncline has individual traits that distinguish the given, specific phenomenon from others of the same type.

Where, then, is the boundary between irrelevant deviations and new types of phenomena?

There is no definite answer to this question and, in such scope, this difficulty is hardly known to any experimental or exact science. This may be why some geologists take a dim view of any attempts to find general laws.

The qualitative approach and the desire to make the results of observations more understandable lead the geologist to a figurativeness of expression, to metaphores and comparisons that would have been superfluous were it possible to offer precise quantitative definitions. From this stems a vagueness in nomenclature. Because of the inimitability of geological phenomena, practically every author tends either to give new inflections to old terms or invent new ones.

In his quest for analogues the geologist introduces data from the exact sciences into his reasoning, and this frequently leads to considerable misunderstandings. The geologist's mind, accustomed as it is to deal in qualitative appraisals of phenomena, is not ready to perceive the quantitative aspect of these sciences, it skims over the surface of

numerical computations and picks up the conclusions which seem to have qualitative meaning. This is a fundamental mistake. In the exact sciences each phenomenon has a precise dimension, rate of development and relationship to surrounding conditions. Accordingly, every conclusion has meaning only within strictly defined conditions beyond which it cannot be transferred. Ignoring of this has repeatedly led geologists to erroneous conclusions. Of late this misconception has displayed itself most vividly in the so-called "astrogeological" branch, in which a dimensionless approach results in a monstrous exaggeration of the importance of factors whose influence on the life of the globe is actually negligible.

On the other hand, similar difficulties are encountered by the representatives of the exact sciences who attempt to apply their methods to the solution of geological problems. In their pursuit for phantom precision they schematise natural processes so rigidly in their constructions that the geologists flatly refuses to treat their schemes as geological phenomena. The mathematician is unable to grasp the complexity of a natural phenomenon and its internal indivisibility; he overlooks the fact that in any attempt to break down such a phenomenon something essential is lost and the very nature of the whole phenomenon is distorted.

It is this author's contention that, as follows from what has just been said, the qualitative nature of geological science is by no means an indication of its backwardness, as some are wont to claim. It is determined by the specific features of the objects of geological investigation. Rather the geologist's ability to operate so successfully with such concepts as "more" and "less", "stronger" and "weaker", "earlier", "later" and "simultaneously", and his uncanny insight in the intuitive separation of the main from the secondary deserve the greatest admiration. It is on this rather nebulous methodological basis that the geologist draws conclusions that allow him to solve the most complex problems of providing the economy with a raw material base. The objective and subjective difficulties on this road are so great that the geologists would certainly have long since resorted to quantitative methods in solving their problems, were they always and everywhere applicable.

From "Trends in geoscience" by U.V. Belousov, in The Interaction of Science in the Study of the Earth. Progress Publishers, Moscow, 1968.

NEW MEMBERS

The following were elected to membership in the Society at the meeting of Council held on 13th March, 1970. A = Associate member; S = Student member; others are Full members.

Mr M.C. Cater, Robertson Research Co. Ltd., 'Tyn-y-Coed', Llanrhos, Llandudno, Caerns., U.K.

Mr Y.S. Chiam, 16 Jalan Tangsi, Kuala Lumpur.

Mr P.D. Connard, Geophysical Service Int'l, 101 Boon Kong Road, Singapore 12.

Mr J.N. Edge, 241 River Valley Road, Singapore 9
Mr W.D. Emerson, Esso Exploration (M) Inc., P O Box 601, Kuala Lumpur
Mr K.L. Er (A) c/o Analabs, 46-A Jalan 52/4, Petaling Jaya, Selangor
Dr J.C. Hazzard, Int'l Resources Ltd., 632 Petroleum Building,
714 West Olympic Blvd., Los Angeles, Calif. (USA)
Mr G.A. Hodgson (A), c/o P.O. Box 291, Kuala Lumpur
Mr W.F. Hooper, P O Box 979, Bangkok, Thailand
Mr F.N. Jamieson, McMahon and Partners (SIA), Chase Manhattan Bank
Building, 9-11 Jalan Gereja, Kuala Lumpur
Mr K.G. Jaffries, 85/92 Anson Road, Singapore 2.
Mr P.K. Kopper, Continental Oil Co., P O Box 367, Djakarta, Indonesia
Mr L.S. Lim, P O Box 863, Kuala Lumpur
Mr D.R. Muerdter, Sekolah Tuanku Abdul Rahman, Tiger Lane, Ipoh, Perak
Mr Rabinder Singh, c/o S.R.E.M Sdn. Bhd., 805 AIA Building, Kuala Lumpur
Mr C.H. Tan (S), 90 Rembau Street, Klang, Selangor
Mr Paul Truitt, P O Box 979, Bangkok, Thailand
Drs. A.P. van Lennep, c/o P O Box 49, Singapore
Mr John White, Continental Oil Co., P O Box 367, Djakarta, Indonesia.