K E S A T U A N K A J I B U M I M A L A Y S I A

GEOLOGICAL SOCIETY OF MALAYSIA

N E W S L E T T E R

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GEOLOGICAL SOCIETY OF MALAYSIA

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(Editor's note: Starting with this issue, the Newsletter will include always a list of the current officers of the Society. We wish to thank Dr F.H. Fitch for suggesting this addition, which we trust will be helpful to overseas members.)

GEOLOGIC NOTE

Triassic fossil find in Negri Sembilan[1]

T. Suntharalingam
Geological Survey of West Malaysia

A new fossil locality along a road cutting on the way to Fort Iskandar discovered by Inche Shuib bin Ahmad has yielded well preserved moulds of Daonella sp. The rock is white to light brown shale and the outcrop is weathered and iron-stained. The exact location of this new locality is found in the New Series Map Sheet Np. 97 at map reference (Co-ordinated) 609 610

The presence of Daonella sp. indicates the age of the rocks to be Anisic to Noric (M. Triassic to Middle Upper Triassic). To the author's knowledge this is the first discovery of Triassic pelecypods in the state of Negri Sembilan.

More detailed investigations of the fossils from this area and from Fort Iskandar are being conducted in conjunction with Dr M. Tamura (Kumamoto University, Japan).

GEOLOGICAL SOCIETY FOUNDED IN PAKISTAN

The Pakistan Geological Society was founded in 1967 and has begun to publish a Newsletter (editor: Fuzail A. Siddiqui). A complimentary copy of Vol. 1 No. 1 (June 1968) was sent to the GSM. This is similar in format to our own Newsletter, and the first issue has 13 pages packed with such useful items as a list of research projects in progress in Pakistani Universities, a summary of mineral exploration in Pakistan, personal news, announcements of coming events, and details concerning the Society. Elections in April 1967 produced the First Council, with Dr N.M. Khan (Ministry of Industries, Natural Resources Division, Islamabad) as President, Mr F.A. Shams (University of the Panjab, Lahore) as General Secretary, and Mr Baqir Hasan (WAPDA, Lahore) as Treasurer.

The GSM, which is a full three months older, extends best wishes to the new Pakistan Geological Society and hopes for fruitful exchange of information. The address of the PGS is

The Pakistan Geological Society
c/o The Department of Geology
University of the Panjab
Lahore
West Pakistan

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[1] Reported with the kind permission of the Director, Geological Survey, West Malaysia

NEWS FROM THE UNIVERSITY OF MALAYA GEOLOGY DEPARTMENT

External Examiner

Dr K.C. Dunham FRS has accepted an invitation to serve as External Examiner in Geology for three years, commencing in the present session. He succeeds Professor J. Sutton FRS. Dr Dunham is Director of the Institute of Geological Sciences in Britain, which was recently formed by amalgamating the former "Home" and Overseas Geological Surveys. Dr Dunham formerly held the Chair of Geology at the University of Dunham, and is one of the foremost geologists of the United Kingdom. He is expected to visit the University of Malaya in January 1969.

- NSH

New Lecturer in paleontology

Dr K.J. Pocock arrived recently to take up appointment as lecturer in the Department of Geology. Dr Pocock obtained his B.Sc. (First Class Honours) degree from the University of Adelaide in 1962, and took his Ph.D. under Professor M.F. Glaessner at the same university, investigating Lower Cambrian trilobites. During the research for the Ph.D. he was a Demonstrator in the Department of Geology, University of Adelaide, for 4 years. His interests include Lower Paleozoic paleontology and stratigraphy.

Openings on the staff of the Department

The University of Malaya has advertised openings for Lecturer/ Assistant Lecturers in the Geology Department. Because of recent expansion as well as normal turnover, there are currently three vacant positions. The advertisement states:

> Candidates should have a research degree in geology or applied geology. Post-graduate teaching and/or practical experience is desirable. Experience in one or more of the following fields would be required: igneous and metamorphic petrology; applied geology (especially engineering geology, hydrology, economic geology, or geochemical and geophysical prospecting); structural geology with photogeology; Quaternary geology and/or clay mineralogy.

The official closing date for receipt of applications is 14 October 1968, but persons interested are encouraged to write the Department even if later.

MEETINGS OF THE SOCIETY

Meeting of 23 August : K.F.G. Hosking

A joint meeting of the GSM and the Malaysian Association of Mining and Metallurgy was held at 6.00 p.m. on 23 August in the lecture hall of the Geology Department, University of Malaya. Professor K.F.G. Hosking of that Department gave a talk on "The search for tin."

A synopsis of Professor Hosking's talk follows:

In searching for economic deposits, the most important thing is that exploration must be based on fact, not mere generalizations and theories. One finds it hard to evaluate much of the literature, because the two get mixed up and "fiction" often masquerades as fact.

Geochemistry of tin: We still know little of the details of the origin of tin in the primary rock - where does it come from? in what form does it move? We do know that tin proxies for Fe and Mg in silicates; the ions are similar in size. In sediments, tin is richer in bauxites and other aluminous deposits. Because of this, it is critical to know where the tin is in, say, a stream sediment - that is, is it there as cassiterite or hidden in other species.

Primary tin deposits are associated with granitic rocks and the tin may occur as cassiterite disseminations or as cassiterite and/or sulphides in veins and replacement deposits in either the granitic rock or in the rocks invaded by the latter. Very important concentrations of cassiterite also occur in placers of various kinds.

Tin is certainly spatially related to granites, but there is as yet no certain proof of a genetic relationship. Tin deposits range in age from Pre-Cambrian to Tertiary. The younger ones seem to be richer on average - the Pre-Cambrian has 90% of the world's acid granites, but is poor in tin. The relative depth of erosion is sometimes an important factor, of course.

In Thailand, tin is associated mainly with younger granites, as it is also in Australia. Older granites in both countries are poor in tin. Hence in any stanniferous area not all granites may have tin. Is there a difference between the barren and the stanniferous granites? Evidence and views seem varied and conflicting on this. One essential for primary economic deposits to develop is said to be a rough topography on the top of the granite (cupulae, etc.). Only in certain areas is it possible to differentiate between stanniferous and barren granites by chemical means, and so it follows that during the exploration of new areas for tin deposits, the chemical composition of granitic rocks may serve only to mislead.

Spatial aspects of tin: The world's tin belts are very long. Any gaps in them should be looked at - just recently a tin find was made in such a gap in the Sudan. Cusps and cupulae on top of granite bodies are centers of mineralization. Such cusps may form where anti-forms of different trend, or faults, intersect. Various forms of lode deposits form around the cusps. In Cornwall, the tin deposits tend to line up on E-W and NE-SW lines, reflecting the structure of the area. This is one of the best examples of structural control.

Dispersal of tin: Tin oxide is insoluble, so dispersal takes place mainly mechanically. The tin from sulphide minerals may more easily disperse chemically, but this has not been demonstrated. In geochemical prospecting, therefore, one may locate suboutcropping tin deposits by soil or stream sediment analysis, but the determination of tin in water is unlikely to be rewarding. One must be careful that soil samples are taken from the optimum horizon which should be established during the orientation survey. It is often better to use more than one metal - e.g., arsenic may give an indication of a suboutcropping tin lode even when no distinctly anomalous concentrations of tin occur in the soil horizon which was sampled.

Placer deposits: Deposits of economic importance are normally found in river channel sediments within 8 km of the primary source of the tin, less often in beach deposits.

Geophysics and air photos: Airphotos let you pick up the presence of igneous masses, even in difficult country; in better areas, much more can be seen. Airborne geophysics has been disappointing: one really needs to be able to map in some detail the topography of granites buried beneath both consolidated and unconsolidated sediments. In off-shore areas, sparker and seismic profiling are already proving very useful. Resistivity has been used in exploration on land to trace buried channels in which cassiterite tends to concentrate.

Geomorphology perhaps offers unsuspected dividends, as a mineralized hill with a granitic core is likely, from the point of view of shape, to be significantly different from its barren neighbors. Every hill with an unusual shape should be the locus of an exploration area.

Lastly, a word about drilling: The sampling in drilling programs is often unsatisfactory. One must remember that in some major lodes the tin is distributed very unevenly. One should use statistics and computer techniques to interpret drilling data.

After some discussion on the usefulness of panning as an exploration tool, and a vote of thanks to the speaker proposed by Mr D. Santokh Singh, the meeting adjourned. About 80 persons attended.

Meeting of 9 September : J.S. Tooms

A meeting of the Society was held at 5.15 p.m. on 9 September in the lecture hall of the Geology Department, University of Malaya. Dr J.S. Tooms of Imperial College, London, addressed the meeting on the topic "Present status and new developments in applied geochemistry."

A synopsis of Dr Tooms' talk follows:

Applied geochemistry is not just prospecting, but also includes regional geochemistry, biogeochemistry, and marine geochemistry.

Regional ("provincial") geochemistry: This deals with a fairly large area, and takes a whole suite of elements; it has both fundamental and applied aspects. The chemistry of an area is a function of the rocks; within the rocks there are differences (e.g. in sediments, distance from the source; in igneous rocks, the distribution of minerals). Topography, drainage, and vegetation are also reflected.

How can one study the geochemistry of a region? Outcrops are generally a typical, and usually leached besides. We can study soils, or better, stream sediments - everything must go down the stream. Interpretation is difficult, but the usefulness has been proven by the discovery of anomalies which have been interpreted and which have led, on many occasions, to the discovery of minable deposits. Computers are coming into increasing use, especially to evaluate data on a number of elements simultaneously which have been collected during regional reconnaissance studies.

Even in England, so thoroughly examined, new mines are being found at the present time. Not all deposits have been found by traditional prospecting means. The Sabah copper prospect is a good example: Based on small "showings", the Survey took the initiative to arrange geochemical reconnaissance studies, leading apparently now toward actual mining.

Prospecting: There is a great shortage of trained staff in geochemical prospecting. One result is that costs may be much higher when someone less experienced (e.g. a geologist) plans a project.

Problems in prospecting: Surface dispersion in soil may be dilute and irregular, so one sometimes has to go deep. Fines are too easily spread, so it is better to take coarser material (sand). For example, at the Kinabalu copper prospect, the surface values are higher in valleys - this is because the hills are deeply leached; values at depth are more uniform. The significance of an anomaly is not necessarily a function of its height. This is where some sophistication

of interpretation is needed and "rule-of-thumb" is not then so good.

Present work in prospecting is concentrated on: (1) interpreting the grade and size of sources from geochemical dispersion pattern (mainly work in the U.S.S.R.); (2) finding blind deposits under a cap of barren rock, by drilling and using element ratios (mostly Soviet work; expensive); (3) finding deposits beneath transported overburden, again using element ratios (much work in the West).

Biogeochemistry: Chemistry can be related to the occurrence of disease. Suppression of nickel dust in some factories has reduced local cancer rates. Here we use the data of regional geochemistry and apply it mainly to improve human health and agriculture, especially in rural areas where most food is locally derived and sub-clinical disease may be economically important.

Marine geochemistry: This is a new area involving collaboration between workers in the fields of geochemistry, geophysics, and geology. Work on tin is already in progress off the Malaysian coast. There is a need for fundamental data on how tin moves. We may be dealing with various sorts of sediments and deposits: residual; alluvial; beach and dune; marine.

Geochemistry is also being used in connection with work on the hot brines of the Red Sea, and in looking for presently forming phosphate deposits in the sea.

After some discussion, which covered the difficulties of finding tin under barren alluvium, the problems of sampling the Sunda Shelf, the use of plants as geochemical indicators, and the status of olfactory geochemistry, Professor K.F.G. Hosking proposed a vote of thanks to the speaker and the meeting was adjourned. About 30 persons attended.

(Note: The society regrets the very short notice given for Dr Tooms' talk. Because of the speaker's tight schedule, there was not time to issue a printed notice; an attempt was made to notify members in Kuala Lumpur and in Ipoh by telephone. Members who were not notified but wish to be in similar circumstances in the future should inform the Secretary, giving the number through which they can be reached.)

NEWS FROM SABAH

Professor Hosking's Visit

The Geological Survey was fortunate to have Professor K.F.G. Hosking, University of Malaya, visiting the two offices (Kuching and Kota Kinabalu) and advising on geochemical exploration in East Malaysia. A proposal to produce a geochemical map of Sabah and possible research projects for students of the University of Malaya were discussed.

Japanese Research Team

Two teams of Japanese geologists led by Associate Professor T. Kasama of Osaka City University and Professor W. Hashimoto of Kyushu University spent more than a month in Sabah recently.

Professor Kasama and two others (Messrs. H. Akimoto and S. Hada) worked in the southern part of the Kinabalu area. This team was part of a group of scientists undertaking basic research on geology, plant ecology, animal ecology, entomology, anthropology and human geography in countries including Malaysia, Thailand, Cambodia, Laos, Brunei and Indonesia under the Fifth Project of Southeast Asian Studies organized by the Committee for Southeast Asian Studies, Osaka City University, Japan. Professor Kasama and his associates were particularly interested in the neotectonic movements of the Kinabalu pluton. Results of their study indicated that there are around the Kinabalu area considerable amounts of faulting and tectonically disturbed beds which were formerly thought to be of sedimentary origin. Very recent faulting was detected in the Quaternary Pinosuk Plateau debris. Metamorphic rocks indicating intrusive contacts were also found in the Sungai Mesilau area near Kundasang.

Professor W. Hashimoto, T. Shuto and M. Tamura and Dr H. Ujiie spent about a month in Sabah after studying the Melinau Limestone and Mesozoic rocks in Sarawak. While in Sabah the team visited the Silimpopon, Umas Umas, Madai Limestone and Semporna areas. The team also spent some time in the Sandakan and Gomantong areas. A short trip to the Kudat Peninsula was also made. The team was interested in the Paleontology of the Tertiary rocks of Sabah.

An excursion was organized by the Geological Survey for the teams to see the Crocker Formation along the Sinsuron and Papar Roads.

Mamut Copper Prospect

Drilling in the Mamut Prospect by Overseas Mineral Resources Sendirian Berhad is going ahead well. The Company is drilling initially

to depths between 200 and 300 meters. Prefabricated houses for geologists and engineers and a laboratory were established on the site.

Oceanography

Mr Leong Khee Meng, a mamber of the Department, is currently taking part in oceanographic work carried out by a petroleum company on the east coast of Sabah.

-- N. Wong (Geological Survey, K.K.)

INDONESIAN GEOLOGIST VISITS MALAYSIA

Dr John Katili, Director of the National Institute of Geology and Mining, and Dean of the Faculty of Mineral Sciences, Bandung Institute of Technology, is currently visiting Malaysia for ten days to give a course of lectures in the Department of Geology, University of Malaya. During his stay, Dr Katili will also be meeting Malaysian scientists and officials to discuss possible future scientific co-operation between Indonesia and Malaysia, and to exchange views on the organization and co-ordination of scientific research and education.

Dr Katili is a senior official of LIPI (Lembaga Ilmu Pengetahuan Indonesia), the Indonesian Institute for Sciences, which is a cabinet-level body responsible for co-ordinating, stimulating, and funding scientific research.

Dr Katili gave assistance in organizing a very successful field trip to Java by geology students from the University of Malaya earlier this year, when several seminars on geology were held at the Institute of Technology, Bandung. His lectures at the University this week will be on the structure, stratigraphy, and economic geology of Indonesia, and their relationships to the geology of Malaysia.

Dr Katili will also address a meeting of the Society on Monday September 30th at 5.15 p.m. in the lecture hall of the Geology Department, University of Malaya. His topic at this meeting, as already announced in a circular to members, will be 'geotectonic problems, with special reference to Southeast Asia'.

- N.S.H.

NEWS OF THE SOCIETY

The Editor visits Philippines, India

During my recently completed six months' 'long leave' from the University of Malaya, I visited, among other places, two Asian neighbors of Malaysia: the Philippine Republic and India.

The highlight of a week's stay on Luzon was a trip out to Taal Volcano on February 29th. This volcano, which is about fifty miles south of Manila, is situated on an island in the center of a fairly large lake occupying a probable caldera. The volcano achieved fame in 1965 when, after lying dormant since 1911, it suddenly erupted with great violence, killing hundreds of the island's residents. Minor eruptions have occurred in every year since, and fortunately for me activity had started again in late January of this year and was still proceeding at the time of my visit. I went out to the lake with Dr E.V. Tamesis of the Geology Department, University of the Philippines, and we were taken out to the island in the launch of the Volcanological Commission. Mr Roger Datuin was in charge of the group of volcanologists living on the island (otherwise uninhabited now) to observe and study the volcanic activity. Although Taal is considered a dangerous volcano, the early phases of this year's eruption were unusual in that basic and very fluid lava was being erupted with much less violence than usual, and so we were able to climb up to the rim of the collapse pit within which the active vents were situated. There appeared to be three vents erupting: (1) the main vent, which had built a pyroclastic cone several hundred feet high, was erupting large puffs of dark ash, lapilli and bombs, accompanied by impressive roaring noises (more or less a Strombolian style); (2) a second vent close by, also with a cinder cone a few hundred feet high, was quietly throwing out incandescent spray with no ash cloud at all; (3) from the base of the pyroclastic accumulation fluid dark lava flowed out into the collapse pit, where a large 'lava lake' was already, according to Datuin, over 100 feet thick. The walls of the collapse pit were composed of the thick masses of ejecta from the explosive 1965 eruption, with only a thin surface coating of new material. During the rest of my stay in the Philippines, the violence of Taal's eruptions increased daily, but Dr Tamesis writes that rather than proceeding to a paraxismal explosive phase, the eruption died out during April and the volcano has been quiet since. It is interesting that Mayon volcano, also on Luzon, has been quite active in this period.

Later I was able to accompany Dr Tamesis, Dr (Miss) P.J. Militante, also of the University of the Philippines, and their students on a stratigraphy field trip to north Luzon. Starting at Damortis on the coast at the north end of Lingayan Gulf, we worked up the canyon of the Bued River, across the strike of a thick and fascinating sedimentary and volcanic section, to the beautiful pine-covered plateau country of Baguio,

4000 feet up. The aridity of the country was striking after being accustomed to Malaya: typical vegetation was brown grass and scattered brush and trees; the lower Bued River course formed a half-mile wide braided gravel expanse, almost dry then because it was the dry season. The geology was impressive in its youth: the oldest rocks seen in the section are middle Miocene, and these are intruded by major bodies of later plutonic rocks. Seeing great masses of marine Pliocene limestones now tilted and uplifted to 4000 feet above the sea effectively brought home the young and active nature of this orogenic area. The beautiful exposures of marine 'flysch', marine limestones, continental boulder conglomerates and red beds, and pyroclastic and mixed volcanoclastic-sedimentary rocks convinced me that exchanges of visits by geologists and geology students of our two countries would be very useful. I hope such exchanges can be arranged.

In India I visited the Geological Survey of India district office in Nagpur on the edge of the Deccan Traps, and the Indian School of Mines in Dhanbad. My host in Dhanbad, Professor T. Narasimhan, arranged a very interesting trip underground into one of the large coal mines in the area. The coal is in the Gondwanas, sedimentary basins on top of the Pre-Cambrian shield rocks, whose section includes at its base the Talchir boulder beds, supposed to represent tillites from a late Paleozoic glaciation. No equivalents are recognized in Malaya, although J.B. Scrivenor long thought some of the Kinta boulder beds might be the extension of the Gondwanas.

I am very grateful for the hospitality shown me by my hosts at my various stops, and for the care and trouble they took to show me the local geology.

During my absence, the duties of editor have been ably performed by Mr J.D. Bignell, to whom I wish to express my and the Society's gratitude.

- PHS

Mineralogy questionnaire

About 20 replies have been received to the questionnaire concerning affiliation with the IMA (Newsletter 13, July). Anyone interested who has not yet replied is urged to send the questionnaire back in time for the results to be considered by the Council at its next meeting (October 9th).