

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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UNIVERSITY NEWS

The course in Applied Geology, introduced at Year III level from the beginning of this academic year, is proving popular. Of 17 students reading Year III geology, 15 are also reading Applied Geology. The course is under the direction of Professor K.F.G. Hosking, formerly of Camborne School of Mines, Cornwall, England. Originally it had been planned to introduce the course in 1969, but due to the enthusiastic response of the students, the date of introduction was advanced. The work of planning and giving the course, and assembling the large range of chemicals and equipment needed for specialised laboratory and field work, is considerable, and the Department is grateful for assistance received from the Geological Survey and the mining industry, in particular Associated Mines (M) Ltd.

Dr F.P. Glasser, Visiting Lecturer in Chemistry under the Aberdeen exchange scheme, is giving courses of lectures and tutorials in geo-chemistry, and is assisting in calibrating the Techtron Atomic Absorption Spectrophotometer which was given to the Department by the Australian Government.

Graduate studies continue to increase. At the convocation in June, the first two M.Sc. degrees awarded by the University were conferred. Enche Mohammad bin Ayob's thesis was on "Stratigraphy and Sedimentology of the Tembeling Formation in the Gunong Berantai area, Pahang", whereas Enche Dharam Singh Dhillon's thesis was on "Recent Brackish-water Foraminifera of Three Estuaries in Malaysia". The external examiners were Dr R.L. Folk, of the University of Texas, and Professor M.F. Glaessner of the University of Adelaide, respectively. There are currently three students registered or applying for registration for the Ph.D. degree, and three in the M.Sc. degree. The present enrolment for other courses is: Year I 210 students; Year II 24 students; Year III 17 students; Honours course 5 students.

Whereas the new geology building is adequate for present undergraduate enrolment, there is already insufficient space for graduate students and for applied geology laboratories. It is hoped that an extension may be provided to accommodate these.

NSH

United States Army Research Grant to the University of Malaya

The United States Army Research and Development Group (Far East) announced last week from its headquarters in San Francisco, the approval of a research grant under contract FE-400 to Dr Charles S. Hutchison, Senior Lecturer in the Department of Geology of the University of Malaya, to undertake a 2-year research project into

"The Weathering of Rocks under Humid Tropical Conditions"

The total value of the grant is of the order of US\$20,000.00 more than half of which will be given to the University of Malaya in the form of non-expendable equipment. The major item of equipment supplied will be a complete Differential Thermal Analysis (D.T.A.) apparatus to enable the measurement of samples to very high temperature and under vacuum and the pressure of selected gases.

The grant also includes provision for the appointment of technicians and for travel. There is provision for bringing an expert to Kuala Lumpur to set up the apparatus.

The research will be concerned with the chemical and mineralogical changes during weathering. It is foreseen that the project will be a group endeavour with Dr Hutchison being assisted by one or more graduate students.

The results of such a study should offer useful information to civil engineers in the construction of roads, damsites, and building foundations. It is intended to study the distribution of trace elements during weathering, so that the results should be of interest to the economic geologist.

CSH

MR P. COLLENETTE AND DR G.E. WILFORD

This month Mr P. Colletette left Malaysia on retirement as Director of Geological Survey, East Malaysia, after 19 years in East Malaysia. His departure may be taken to mark the end of the foundation period of the Geological Survey of East Malaysia, which was set up as the Geological Survey Department, British Territories", in Borneo, under the Directorship of the late Dr F.W. Roe. The policy of obtaining basic geological information and publishing it without delay so that it is immediately available to geologists and other scientists in research organizations, established by Dr F.W. Roe and Dr F. H. Fitch, was continued to good effect during Mr Colletette's directorship, which saw the extension of more detailed investigations and mapping, and the first potentially major discovery of an ore deposit by geochemical prospecting in the territory, namely the Mamut porphyry copper.

Mr Colletette was and is a keen supporter of the Society. The research recorded in several of the papers in the Society's first bulletin was made possible by his keen efforts to sponsor co-operative research projects with the University of Malaya. Mr Colletette will also be remembered by the Council for his unremitting campaign to ensure that notices sent to East Malaysia are posted by air mail, thus

giving Society members there a sporting chance of receiving the notice before the meeting or other event which it announces. The departure of Dr G.E. Wilford (Deputy Director, Geological Survey of East Malaysia, also after 19 years in East Malaysia and Brunei) has already been noted in a previous issue. It is a pleasure to record that since then he has been awarded the O.B.E., the second member to be so honoured, since the foundation of the Society, the first being Mr W.D. Proctor O.B.E., in 1967.

With the departure of Mr Collenette and Dr Wilford, the "Borneo Survey" (as it is colloquially known) is left somewhat depleted in numbers but with a nucleus of well-trained and experienced Malaysian geologists and a full complement of others who are still studying overseas and in the University of Malaya. According to press reports, the Geological Survey of Malaysia is being reorganized, and the East and West Malaysian branches of the Survey will be amalgamated under the overall administration of Mr S.K. Chung of the Ipoh Headquarters. Under this arrangement the Borneo Survey stands to benefit from the wealth of experience and full backing from the modern analytical laboratories of the (former) West Malaysian Survey. The effectiveness of the Malaysianization program of the East Malaysian Survey, and the propitious circumstances of the amalgamation, are in large measure due to the hardwork and tact of Mr Collenette and Dr Wilford.

It is somewhat difficult to write a departure note for two members who have, between them, 38 years of service in Borneo, without it sounding rather like an obituary. Nevertheless, it is hardly necessary to remind readers that Peter Collenette and "Wilf" are very much alive and at present on a world tour via Australia, the Pacific, and Canada, back to England. Their many friends in the Society will wish them au revoir and all success in whatever new fields of service they choose.

NSH

FOSSIL FLORAS: A REQUEST FOR INFORMATION

Professor C.J. Smiley is planning to make fossil plant collections from rocks of as many ages as possible during his stay in Malaysia. This study should ultimately serve as a basic standard of reference, for assisting in the correlation of sedimentary rocks, and in the interpretation of paleoecology.

Broader aspects of the study include later collecting in India and perhaps West Pakistan, to collect floras of different ages, and spanning the same interval of time as in Malaysia (Carboniferous to Tertiary). Comparison of these sequential floral records may shed considerable light on such problems as Southeast Asian correlations of non-marine deposits, past climates and climatic changes, and tectonic development especially as related to continental drift.

Professor Smiley is in need of information on fossil plant localities of any age, and requests the members of the Geological Society of Malaysia to contact him, either in person or by letter, if they have any information that may be of value in this research project. As his time in Malaysia is limited, he would appreciate such contacts as early as is convenient.

Write to: Charles J. Smiley
Fulbright Visiting Professor
Department of Geology
University of Malaya
Kuala Lumpur, Malaysia.

CJS

SMITHSONIAN INSTITUTION

Smithsonian Institution Centre for Short-lived Phenomena

A centre for Short-Lived Phenomena has been established by the Smithsonian Institution. The purpose of the Centre is to assist Smithsonian scientists in their investigation of short-lived phenomena and to provide a reporting and information service for use by the scientific community. The Centre is serving as a clearing house for the receipt and dissemination of information concerning rare natural events which might otherwise go unobserved or uninvestigated, such as remote volcanic eruptions and earthquakes, the birth of new islands, the fall of meteorites and sudden changes in biological and ecological systems. The Smithsonian Institution aims to improve opportunities for research by providing an organization whose function it is to collect reports on short-lived events and to disseminate this information immediately to individual scientists and scientific organizations interested in their investigation.

The aim of the centre is to encourage and help set up teams that can be mobilised and dispatched quickly to make the most of the opportunity afforded by short-lived phenomena.

Any members interested in becoming correspondents of the centre should write to the centre at:

60 Garden Street
Cambridge
Massachusetts 02138

giving the following information:-

types of events interested in, including any specific aspects of these events.

What events you would like reported to you

Exact address, including telephone number and cable address, if any

The Society have received copies of the reports on:

"Mount Mayon Volcanic Eruption, Philippine Islands".

"Submarine Volcanic Eruption and Formation of a Temporary Island at Metis Shoal, Tonga Islands".

and these will be available to members in the library.

JDB

GEOLOGICAL SURVEY PUBLICATIONS

During the past two months the following volumes have been published:

East Malaysia

Annual Report 1967

Papers on Borneo Geology 1966 Bulletin 8

Igneous Rocks of Sabah and Sarawak (Bulletin 5) H.J.C. Kirk

West Malaysia

Geology of Bentong Area, Pahang J.B. Alexander

Diamond Jubilee Review

It is hoped to include reviews of some of these publications in the next issue of the Newsletter.

JDB

SOCIETY NEWS

Society Meetings

Ordinary Meeting on 2 July 1968

The meeting was held in the Lecture Hall of the Department of Geology at 5.30 p.m. when Professor C.J. Smiley gave a talk on "Fossil Floras and Climatic Zones". A synopsis of the talk follows:

In the geologic past, oscillating shelf conditions have commonly occurred along continental margins in many parts of the world. In such areas detailed studies on physical stratigraphy,

sedimentation, paleontology, and paleoecology show an intertonguing or interfingering relationship between the resulting marine and non-marine deposits. During marine transgressive phases the shelf received sediments and fossils of marine environments; oil, gas, invertebrate megafossils, and forams are found commonly in such marine intertongues and interbeds. During regressive phases the shelf was exposed above sea level as a forested, often swampy, coastal plain; coal, bentonite, and beds containing plant megafossils are typical of these non-marine deposits.

Professor Smiley outlined several seasons' work in northern Alaska where he studied the paleontology and paleoecology of one such oscillating shelf that existed during Cretaceous time. His field projects were supported by the U.S. Office of Naval Research and the Arctic Institute of North America. Field studies resulted in 260 fossil collections and more than 10,000 well-preserved and identifiable plant specimens, from seven study areas extending across more than 350 miles. Fossil beds were referred to precise positions in sections that had been measured and described in detail by geologists of the U.S. Geological Survey. Local sections were of thicknesses ranging from about 800 feet to more than 15,000 feet, with beds exposed continuously in homoclines. Floras from different levels were referred to European Cretaceous stages by molluscan index fossils from marine interbeds, showing ages ranging from early Albian for the oldest beds to Maestrichtian for the youngest.

A gradual but striking floral change was noted as one progressed from the bottom to the top of local sections. The Cretaceous vegetation changed from a warmer type with numerous cycads in older deposits (Albian), to a cooler type with deciduous angiosperms and no cycads in younger deposits (Maestrichtian). Comparisons made with similar coastal plain floras in the Soviet Arctic and Greenland indicate a generally uniform Holarctic vegetation, but one that was changing in the same manner in all Arctic regions during the Cretaceous.

Comparisons with Mesozoic coastal plain floras at Lower latitudes show a latitudinal zonation of vegetation similar to that of today. Across both Eurasia and North America, from early Jurassic to Recent times, floras from areas that are now lower latitude were warmer in character than contemporaneous floras from areas that are now in higher latitudes. Such latitudinal zonation of past vegetation generally parallels that of the present, as do the past climatic belts that have been inferred from these floral studies.

Times of significant broadening or constricting of the world tropical belt have occurred on several occasions since the Triassic, and have generally paralleled the present equator. A broadening of this belt indicates a warming of world climates, as occurred in the middle of the Cretaceous, near the end of the Eocene, and to a lesser degree in the Miocene. A constriction of the tropical belt indicates a cooling of world climates, as occurred near the end of the

Cretaceous and to a much greater degree in the Quaternary.

The plotting of Mesozoic climatic belts from rich floral records across Northern Hemisphere continents, and the recognition that these past belts closely parallel those of the present, have significant bearing on geologic concepts of much broader scope: (1) The northward deflection of climatic belts on the west side of the Eurasian continent (as occurs at present) strongly suggests the presence of the Atlantic Ocean since Triassic time. This would seem to preclude east-west drifting of the continents, at least of the magnitude postulated by drift proponents. (2) The evidence suggests also that past climatic changes were world-wide in scope, rather than more regional as would result from latitudinal drifting of one continent or another. (3) The fact that Mesozoic climatic belts generally parallel those of today seems to dictate against any appreciable shift in position of the earth's geographic poles or of its equator. (4) As the concept of wandering poles is based in large part on evidence of paleomagnetism, the plotting of paleoclimatic belts will also have considerable bearing on concepts of planetary magnetism.

It is proposed that this body of evidence seems to dictate against any form of appreciable continental drifting of Northern Hemisphere continents from the Triassic to the present day; but it does not necessarily dictate against an earlier drift of continents in the Southern Hemisphere (the Gondwana continents). Professor Smiley hopes that his projected plans for Malaysian research in paleobotany, and subsequent work in the India-Pakistan region, may throw some additional light on the latter problem.

CJS

Ordinary meeting on 16 July 1968 Mr T.R. Sweatman

The meeting was held at 5.15 p.m. in the lecture room of the Department of Geology, University of Malaya.

The acting editor introduced Rex Sweatman who gave a talk on Electron Microprobe Analysis. A synopsis of the talk follows:

The electron microprobe is a device for chemically determining small areas on polished surfaces. Essentially the probe consists of an electron gun which supplies a beam of electrons, which after focusing impinges on a polished surface. The electrons excite X-ray fluorescence in the sample and the resulting X-ray spectrum is analysed as in conventional X-ray fluorescence techniques. The electron beam is focused such that an area of about one square micron is irradiated and as the penetration of the electrons is up to 1 micron the volume

analysed is about 1 cubic micron. An ordinary optical system is also incorporated. The basic principles have been known since the time of Moseley, 50 years ago but, it was not until 1949-51 when Castaing conducted a very thorough investigation into the instrument and techniques that the instrument was first produced.

As in X-ray fluorescence standards are required for the analysis and research is in progress to develop standards independent of chemical analysis. Very pure metals can be used for the transition elements Ti to Ni. Si can be analysed using stoichiometric quartz as a standard.

Scanning coils can be used to deflect the electron beam such that it scans over a small area, as in television, thus enabling a television picture to be built up showing the distribution of an element in a sample. Photographs of metallurgical samples were shown to illustrate this.

Microprobe analysis is non destructive and this is particularly important when analysing a sample only obtainable in very small quantities, e.g. meteorites.

The analysis depends upon the generation of a known amount of X-rays from a given electron beam.

Problems that have to be overcome include the back scattering effect, where electrons rebound from the sample thus diminishing the effective beam, and absorption effects. Electrons have deeper penetration than X-rays and hence this effect is more important than in X-ray fluorescence.

Because of absorption effects a smooth even surface is vital. While this may be obtained in metallurgical samples it is difficult to obtain in geological samples containing different minerals. In order to minimize this effect a high "take off angle", the angle between the surface and the beam analysed, is desirable. British machines now have take off angles of up to 75° but some Japanese models use a very low angle of 15° which is rather dangerous.

The reliability of the probe can be demonstrated by comparing results by the probe with those obtained by other methods e.g. SiO₂ content of an olivine 40.81% probe, 41.42% chemically 40.31% X-ray fluorescence. Probes can now give very good quality analyses.

As an example of its use, a proxene was analysed chemically for Cr to give a value of 230 ppm. The probe showed that the distribution of the Cr in the mineral was not even, various small volumes giving values ranging from 10 to 3766 ppm.

The detection limits for transition elements Ti-Ni is at present about 10 ppm while for Sn it is about 50 ppm.

Dr Hutchison proposed a vote of thanks and the meeting was closed at 6.30 p.m.

This meeting was arranged at very short notice and it was impossible to inform all members in time. Members living in the Kuala Lumpur area were contacted by telephone.

JDB

NEWS OF MEMBERS

New Members

At the Council meeting of 2 July 1968 the following were elected full members:

Professor K.F.G. Hosking
 Professor C.J. Smiley
 Mr N. McLeod
 Mr P. Thomas
 Mr J.O. Zehnder

H.C. Olander of Esso Exploration Ltd is shortly to leave Singapore to spend a few months working in North Africa. On his return he will take up residence in Kuala Lumpur.

Rex Sweatman a founder member of the Society, visited Malaya for a few days in the middle of July. This was his third visit to Malaya and on previous visits spent much time helping the Geological Survey set up their X-ray fluorescence equipment at Ipoh. During his stay he visited the Survey and the University where he gave much valuable advice on X-ray fluorescence techniques. At very short notice he gave a talk to the Society on Electron Microprobe Analysis.

Mr Sweatman was on his way from Cambridge, England, where he is conducting research on microprobe analysis, to Australia where he is to help set up a microprobe in Adelaide.

The editor would welcome news of the activities of members from themselves, especially from those now working outside of Malaysia.

Publications

Bulletin No. 1

Bulletin No. 1 has now been published and distributed free to members.

The price of the Bulletin has now been fixed by the Council as M\$2/- for extra copies for members and M\$3/- for non-members.

The rates for overseas are somewhat higher than a straightforward conversion to allow for bank and postal charges

	Members	Non-members
U.S.	\$1.00	\$1.50
Australia	0.80	1.20
Sterling	8/-	12/- or equivalent

These prices include sea mail postage. If copies are required to be sent by air the following surcharge to cover the extra postage should be added:

Australia, India	M\$2.50 or direct equivalent
Europe	4.00
N. and S. America, Africa	4.50

Library

The following volume has been presented to the Society by the Chief Inspector of Mines, Malaysia and is available for members to consult in the Society library.

Technical Bull. Vol. 1 Economic Commission for Asia and the Far East, Committee for co-ordination of Joint Prospecting for Mineral Resources in Asian offshore Areas.
June 1968

INTERNATIONAL MINERALOGICAL ASSOCIATION

It has been proposed that the Society, in accordance with its objects, should affiliate itself to the International Mineralogical Association. The advantages of affiliation to this international body are:

1. international contacts and communication on mineral science
2. up-to-date information on the progress on the various aspects of mineral science as soon as it becomes available.
3. representation of Malaysian delegates to this international body and its commissions
4. active participation in the organisation of research in mineral science internationally
5. the chance of making Malaysian mineralogists and their work known internationally.

However, there is an annual subscription based on the size of the Society (on a membership basis) to be paid on affiliation. The Council feels that it is unfair to commit the whole Society for the benefit of a portion of its membership who are interested in mineral science. The Council, however, recommends that it is best to affiliate to the International Mineralogical Association only those members (as a group) who are interested in mineralogy; this will reduce the annual subscription to the International Mineralogical Association considerably. The subscription rates for 1968 are as follows:

Membership	1-25	26-100	101-250	250-500
subscription	US\$15/-	30/-	60/-	90/-

For your information the office bearers of the International Mineralogical Association for 1967/68 are

President	C.E. Tilley (U.K.)
1st Vice President	H. Strunz (Germany)
2nd Vice President	D.S. Korshinsky (USSR)
Secretary	A. Preisinger (Austria)
Treasurer	L.G. Berry (Canada)
Councillors:	T.F.W. Barth (Norway)
	J. Kutina (Czechoslovakia)
	T. Watanabe (Japan)
	F. den Tex (Netherlands)

Membership of the International Mineralogical Association represents 27 member societies: Austria, Belgium, Brazil, Bulgaria, Canada, Czechoslovakia, Denmark, Egypt, Finland, France, Germany, India, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, U.S.A. and U.S.S.R.

Various commissions are established by the International Mineralogical Association for the promotion of the various aspects of mineral science. They include:

1. Commission on Abstracts (Mineralogical Abstracts which they publish is well known)
2. Commission on Cosmic Mineralogy
3. Commission on Mineral Data
4. Commission on Museums
5. Commission on New Minerals and New Mineral Names
6. Commission on Ore Microscopy
7. Commission on Teaching

Among the many aims of the various commissions, just to name a few, are the standardisation on the use of mineralogical terminologies; the recommendation of scientific symbols; the collection of mineral data; the provision, accumulation and publication of standard data. Affiliation to the International Mineralogical Association entitles the nomination of Malaysian representatives to any of the above-mentioned commissions.

There is now a general awakening in international collaboration and co-ordination in scientific research. Affiliation to international organisations such as the I.M.A. by our Society not only ensures the provision of international contacts but will also help to project the image of Malaysian scientists and their research to other parts of the world. Other countries will also learn about, and may co-operate with the aims of our Society.

The Council will therefore appreciate it if members will fill in the following questionnaire as guidance for its action.

JHL

Name:..... Tel No.:.....

Address:.....

.....

Mineralogical interest:.....

(in its broadest sense, e.g., petrological, ore, sedimentary,
clay, industrial, etc.)

1. Do you favour the affiliation of the Society as a whole to the I.M.A.? Yes/No

2. Do you wish that at least a small membership connected with mineralogical work be affiliated to the I.M.A.? Yes/No

3. Would you join such a sub-group of the G.S.M.? Yes/No

(It is not expected that any additional fees to members joining will be involved. Members of such a sub-group will get information passed on from the I.M.A. which would normally not be conveyed to ordinary G.S.M. members).

Please return this completed questionnaire as soon as possible to:

The Hon. Secretary
Geological Society of Malaysia
c/o Department of Geology
University of Malaya
Kuala Lumpur
MALAYSIA