Geological Society of Malaysia

PERSATUAN GEOLOGI MALAYSIA

NEWSLETTER

Number 41 March 1973

CONTENTS

Issued bimonthly by the Geological Society of Malaysia,
c/o Department of Geology, University of Malaya, Kuala Lumpur,
Price to non—members: M$1/copy. Back issues M$0·50 to members.

GEOLOGICAL SOCIETY OF MALAYSIA

Officers - 1973/74

President

R.W. Murphy
Esso Exploration Inc.
P.O. Box 57, Tanglin Post Office
Singapore 10

Vice-President

S.H. Chan
Dept. of Geology
University of Malaya
Kuala Lumpur

Honorary Secretary

C.H. Leigh
Dept. of Geography
University of Malaya
Kuala lumpur

Assistant Secretary

C.H. Yeap
Dept. of Geology
University of Malaya
Kuala Lumpur

Treasurer

E.V. Gangadharam
Dept. of Geology
University of Malaya
Kuala Lumpur

Editor

B.K. Tan
Dept. of Geology
University of Malaya
Kuala Lumpur

Immediate Past President

P.H. Stauffer
Dept. of Geology
University of Malaya
Kuala Lumpur

Councillors 1973/74

K.Y. Foo
Geological Survey
Jalan Gurney
Kuala Lumpur

K.W. Choy
Conzinc Riotinto
P.O. Box 291
Kuala Lumpur

K.M. Leong
Geological Survey
Kota Kinabalu
Sabah

T.H. Tan
Geology Department
University Kebangsaan
Kuala Lumpur

Councillors 1973/75

M.K. Choo
Associated Mines
P.O. Box 2125
Kuala Lumpur

F.S. Chong
Geological Survey
P.O. Box 1015
Ipoh, Perak

S.C. Toh
Conzinc Riotinto
P.O. Box 291
Kuala Lumpur

E.H. Yin
Geological Survey
P.O. Box 1015
Kuala Lumpur

Address of the Society: Geological Society of Malaysia
c/o Dept. of Geology
University of Malaya
Kuala Lumpur

A Note on the Determination of Phosphorous and Sulphur by X-ray Fluorescence.

R.F. Allbrook, Faculty of Agriculture, University of Malaya

In the course of other work (Allbrook, 1972) determinations to estimate the phosphorous and sulphur content of clays were made. The samples, separated clays, were prepared for analysis in one of two ways, either, as a borax disc by the method of Norrish and Hutton (1969) or, as a pressed powder pellet.

Results for the estimation of the phosphorous content gave a value of about 5 per cent which was considerably higher than expected. A check was, therefore, made on the method, using standard rock samples, similarly prepared. Five rocks were used, granite G2, granodiorite GSP (Flanigan, 1967), dolerite W1 (Fleischer and Sterers, 1962), granite GA and basalt BR (Roubault, et.al., 1966).

The results for phosphorous are given in table 1 and for sulphur in table 2. In both tables the final column is calculated from the mean c/s/1% P_2O_5 or c/s/0.1%SO_3. The mean value for the c/s/1% phosphorous by the disc method is 62 and 385 by the pellet method, the mean for the sulphur is 98.

Comparison of the two methods for phosphorous estimation shows that whereas there is a 33 percent variation from the published values for the disc method there is only an 18 percent variation for the pellet. The pellet method is, therefore, more precise and also it has the advantage that since there is no dilution smaller concentrations may be estimated.

In the case of the sulphur estimation, only the pressed powder pellet may be used because of the interference by the lanthanum in the borax disc with the sulphur Kα line, also, the low concentrations of sulphur bring a diluted specimen close to the detection limit.

Only four standard rocks containing sulphur were available, GSP and BCR-1 (Flanigan, 1967), W1 and a bauxite from Tanzania. In addition a made up standard, using Analar chemicals plus a standard biotite, was used.

The error was found to be 10 percent except for W 1 which had a very low sulphur content.

The conclusion from this study is, that although these two elements can be analysed by x-ray fluorescence a high degree of accuracy must not be expected and that samples should not be diluted.

TABLE 1

Rock	Code	P_2O_5%	Method	Counts/s	counts/s/1% P_2O_5	Estimated P_2O_5%
Granite	G2	0.13	disc	8	62	0.13
			pellet	45	346	0.12
Granite	GA	0.12	disc	5	42	0.08
			pellet	39	325	0.10
Grano-diorite	GSP	0.28	disc	19	68	0.31
			pellet	95	340	0.25
Dolerite	W1	0.14	disc	9	64	0.14
			pellet	66	475	0.17
Basalt	BR	1.02	disc	70	69	1.12
			pellet	488	480	1.24

TABLE 2

Rock	Code	SO_3%	counts/s	counts/s/0.1% SO_3	Estimated SO_3%
Dolerite	W1	0.015	12	80	0.01
Grano-diorite	GSP	0.03	20	67	0.02
Bauxite	-	0.04	50	125	0.045
Basalt	BCR	0.04	53	132	0.05
Standard	-	0.29	242	84	0.235

References

Allbrook, R.F., 1972. An investigation into the characteristics and genesis of soils derived from recent marine sediments in the North west of West Malaysia. Unpublished report. (Univ. Malaya)

Flanigan, F.J., 1967. U.S. Geological Survey silicate rock standards. Geochem. et Cosmochim. Acta vol. 31, 289-308.

Fleischer, M. and Sterers, R.E., 1962. Summpary of new data on rock samples G1 and W1. Geochem. et Cosmochim. Acta vol. 26.

Norrish, K. and Hutton, J.T., 1969. An accurate X-ray spectrographic method for the analysis of a wide range of geological samples. Geochem. et Cosmochim. Acta vol. 33, 431-454.

Roubault, M., de la Roche, H. and Govindaraja, K., 1966. Rapport sur quatre roches etalons geochemique granites, GR, GH, GA, et Basalte BR. Sciences de la terre vol. Xl, 105-121.

Abstracts of Papers: GSM Discussion Meeting, February 16th and 17th 1973

The value of studying the metal content of the heavy fractions of soil during geochemical follow-up work

P.C. Aw, Geological Survey of Malaysia, Kota Bharu

In conjunction with the detailed soil sampling, the heavy fractions were collected by panning the soils obtained by hand augering. The heavy fractions, mainly composed of limonite, when analysed for their Cu, Pb and Zn contents, showed values of Pb of up to 32%. Some metals may be fixed in the soil by co-precipitation with sesquioxides, but the high metal content in the heavy fractions cannot be accounted for by co-precipitation alone. The heavy metal content, especially for the relatively immobile metal such as Pb, may be due to the insoluble secondary minerals.

Preliminary investigations showed that the heavy fractions of soil, though of little use as a geochemical sampling medium, is a useful aid in geochemical follow-up work. The heavy fractions when sampled in conjunction with detailed soil survey, can provide an additional criterion for distinguishing between residual soil anomaly and hydromorphic soil anomaly. Recognition of the type of anomaly is important in determining the next phase of the exploration.

Structural Features in the Western Kuala Lumpur area

Choy Kam Wai, Conzinc Rintinto, Kuala Lumpur, Malaysia

During the course of field work in 1969, a few wrench faults have been recognised and mapped in the Western Kuala Lumpur area. Normal faults and antithetic faults have also been noted. With the measuring of joint directions and with the field evidence- shear, tension and extension directions have been recognised. Faulting has not been localised but is found to be spread over multiple parallel planes. A structural history of the area is postulated.

Grain size and mineral content of grab samples from West Malaysian waters

David R. Muerdter, U.S. Peace Corps, serving at the Geological Survey of Malaysia

374 grab samples of marine sediment have been collected from West Malaysian waters. They range up to 50 miles offshore and cover most of the east coast and from Pulau Langkawi to Pulau Pangkor. These samples have undergone geochemical analysis for heavy minerals, grain size analysis and mineralogical examination.

Size analysis of the sediments showed a large expanse of sand from Kuala Dungun south to Mersing and averaging 50 miles wide. The bathometry of this area indicates that strong tidal currents flow in a N-S direction in this area. From Kota Baru to Kuala Dungun and within 20 miles of the coast the sediments are sand or sand and mud mixed. Further out to sea the sediments are mostly mud with some shells.

The geochemical results disclose high tin anomalies in several locations on the east coast: in the Singapore Straits east of Tanjong Datok and in three separate areas in a line trending NNE from Pulau Tioman. Anomalous values of Cu, Pb, and Zn were few and scattered. Very high Cu and Zn values were found near Pulau Bidan west of Gunong Jerai, Kedah on the west coast.

Some of the samples with high tin anomalies contained trace amounts of cassiterite. The heavy mineral suite usually include illmanite, tourmaline, topaz, hematite or limonite o and zircon.

Redbeds and Radiolarian Chert: Uneasy Bedfellows of the "Bentong Group"

N.S. Haile and P.H. Stauffer, University of Malaya, Kuala Lumpur

The "Bentong Group" of the Foothills Range in the Bentong-Raub area is an east-dipping sequence composed of two contrasting formations 1) chert/argillite, overlain, probably unconformably, by 2) conglomeratic redbeds. The chert in some places contains Radiolaria, and with the interbedded black and grey argillite, is commonly pyritic; the environment of deposition must have been marine, reducing, and low-energy. The redbeds comprise red, sandy, muddy, granule to boulder conglomerate, cross-bedded red sandstone, red siltstone and red shale; grey varieties are subordinate. The environment of deposition must have been oxidizing, high energy, and almost certainly continental and the rocks were probably deposited as piedmont fans. The chert/argillite overlies dark carbonaceous quartz-mica schist, which has been regarded as an "earlier extension of the Bentong Group". We suggest that three formations, easily mappable, and contrasting in lithology and genesis, form the Foothills Range - the schist, chert/argillite, and redbeds - and that there is no justification to group these into a lithostratigraphic unit of any rank. We suggest that the term "Bentong Group" should be abandoned.

The Foothills Range includes serpentinites and radiolarian chert, which has led to the suggestion that it marks a palaeosubduction zone, but it lacks many other of the "earmarks" of subduction and this suggestion remains unproved.

Tethyan connections of Malaya and adjoining countries based on faunal correlations

S.S. Sarkar, University of Malaya, Kuala Lumpur, Malaysia

The Tethyan connection in the Upper Cretaceous started from the south of the Paris Basin, proceeded through North Africa and Malagasy and extended only up to South India.

In the Lutetian a direct connection is suggested through Africa, Libya, Egypt, Somalia, Malagasy up to Indonesia. There had been another connection from the west through Asia Minor, Turkey, Syria, Jordan, Lebanon, Iraq, Iran, Afghanistan, which joined with the Himalayan arcs covering Sind, Baluchistan, Salt Range etc.

It has been suggested that, as the folding of the Arakan Yoma had been on the way, it formed a barrier to the Nummulitic sea advancing further east but provided a minor channel of communication.

Superimposed folding in West Malayasia

B.K. Tan, University of Malaya, Kuala Lumpur

A number of geologists working in different areas of West Malaysia have postulated that the rocks have undergone two or more deformation episodes but to date, no examples of superimposed folds have been recorded. Examples of such folds where the earlier folds have been refolded by a later folding episode have now been found in Mersing, East Johore, Tanjong Geliga, Pahang, Ulu Yam, Selangor and Bidor, Perak. In the first three areas, the refolding was such that the axes of the refolded folds and the earlier folds are parallel or subparallel while in the Bidor area, the axes are at right angles producing dome and basin structures. Support for proposing two folding episodes for these rocks are provided by the presence of two sets of cleavages in Mersing and Ulu Yam and in Tanjong Geliga by the folding of earlier schistosity. If the entire sequence, in which these superimposed folds were found is refolded, the present thickness would bear very little relationship to the original thickness.

The geology of a number of areas in West Malaysia have close similarity to the areas in which the examples of superimposed folds were found and it is likely that more examples of such folds would be found on closer examination. Such folds have yet to be described in the Indonesian Island Arcs and any postulation of fossil subduction zones in these West Malaysian areas should be regarded as speculative until more evidences are available.

Stratigraphy of Panching Area, Pahang, West Malaysia

J.T. Tan, University of Malaya, Kuala Lumpur

The sedimentary rocks of Panching area, are lithologically grouped into four stratigraphical units, informally named as (youngest mentioned first):

(i) Taweh beds
(ii) Sagor beds
(iii) Panching limestone
(iv) Charu beds

The Charu beds lying on the western part of the area, comprises essentially of steeply dipping, interbedded sandstones, siltstones and shales. The brachiopod-bryozoan bivalve assemblages indicate this unit to be of Lower Carboniferous (Visean) age. The overlying Panching Limestone is a richly fossiliferous partly recrystallised, calcitic limestone. Brachiopods and conodonts give the age of this limestone as of Lower-middle carboniferous (Visean-Namurian?$\frac{1}{8}$. The Sagor beds, of possibly Upper Carboniferous age, occupy the central part of map area. It conformably overlies the Panching Limestone and is composed of sandstones laminated shales, mudstones, with a lens of conglomerate and an occurrence of radiolarian mudstone. These three conformable units of Upper Paleozoic age were deposited in shallow marine with near shore conditions to moderately deep marine environment.

A younger unit of predominantly arenaceous sediments of Taweh beds probably overlies unconformably over these older strata. The environment of deposition of the conglomerates, sandstones and shales of this unit range from fluviatile to very shallow water marine. The age of Taweh beds is Post-Carboniferous - Pre-Cretaceous, possibly of Triassic age, basing on its lithology. Lack of paleontological evidence hinders age determination for this unit.

Preliminary results of granite trace-element analysis of West Malaysia

C.H. Yeap, University of Malaya, Kuala Lumpur

X-ray fluorescence scans of powdered granite samples indicated that there were significant qualitative differences in the contents of the trace-elements Rb, Sr, Ba, Zr, Sn and W in the granites from different parts of West Malaysia. Subsequently about 400 samples of granite were analyzed for Rb, Sr, Ba and Zr by means of the X-ray Fluorescence Spectrometer, and for Sn, W and Wb by rapid semi-quantitative colorimetric methods. In addition, some samples were analyzed for Cu, Pb and Zn by means of the Atomic Absorption Spectrometer.

Analysis to date show that there are major trace element differences between the granite of the west coast and that of the east coast. Of the two the west-coast granite tends to be richer in Rb, W and and Nb and to a less marked extent in Sn and to be poorer in Sr, Ba and Zr. In central Malaya, the Rb and Sr contents of Gunong Benom granite are of the same order as the west-coast granite, but contain appreciably higher concentrations of Ba and Zr.

The trace element content and its relationship to the age of the granites is clear when it is appreciated that most of the granites of the west-coast are between 200 to 230 million years while those of the east coast are between 260 to 300 million years.

It is highly significant that the content of Rb and W both increase toward mineralised areas while the content of Sr, Ba and Zr bear an antipathetic relationship towards those area. More detailed sampling in the Kuala Lumpur area demonstrate these phenomena very well.

Samples, collected from Mt. Ophir, Gunong Pulai and Singapore, said to be examples of high-level epizonal granites, contain signifcantly lower Rb and higher Sr, Ba and Zr than the mesozonal granite, which is the dominant component, of the Main Range.

Results obtained so far for the Cu, Pb and Zn content of the granites do not indicate any positive relationships.

The granitic rocks of Gunong Pulai and its adjacent area, Johore

C.C. Voon, University of Malaya, Kuala Lumpur, Malaysia

The granitic rocks of the area around Gunong Pulai, S.W. Johore comprise mainly pink adamellite (Upper Cretaceous), hornblende granodiorite (Lower Triassic), pink aplite and hornblende adamellite. The last two varieties have not been dated. Detailed petrographic, mineralogic, and geochemical studies of the granitic rocks have been made in order to understand the genetic as well as temporal relations of the pink aplite and hornblende adamellate with the other two. With the help of the available data, an attempt has been made to underscore the distinguishing characters of the Triassic and Cretaceous granitic rocks.

Pink adamellites and pink aplites are mineralogically identical. In Harker's variation diagram, the plots of these rocks define a smooth curve suggesting that there are comagmatic and hence of similar age (Upper Cretaceous). The plots of aplites towards the SiO_2 - end further suggest that these are late differentiates. The fractionation trend of the Cretaceous magma, as inferred from the variation curves, is as follows: enrichment of alkalis and depletion of CaO, MgO, and FeO in later fractions.

The mineralogical difference between the Cretaceous and the Triassic rocks is that the former lack hornblende. Moreover, the Triassic rocks have more mafic contents (by volume). Chemically, however, these groups of rocks can be easily distinguished. The Cretaceous rocks contain significantly higher amount of K_2O and Rb and lower amount of CaO, MgO and FeO.

Mineralogically, hornblende adamellites are smilar to Triassic rocks. But chemically, they are different from both the Triassic and Cretaceous rocks. However, the hornblende adamellites are compositionally intermediate between the Triassic and Cretaceous rocks. It is probable that these hornblende adamellites are the products of interaction between the Triassic rocks and the Cretaceous magma.

The hornblend adamellites, the Cretaceous and Triassic rocks cannot be distinguished on the basis of triclinicity and structural state of their K-feldspar. However, the orthoclase in the hornblende adamellites has lower optic axial angle.

Sungei Siput Unconformity, Pahang

Wee Heng Tian & Dennis Taylor, Conzinc Riotinto, Kuala Lumpur

A distinct unconformity was located in Sungei Siput in the Pekan district of Pahang. The underlying rocks are cordierite-andalusite hornfels overlain unconformably by a younger sequence of unmetamorphosed conglomerates grading upwards into conglomeratic sandstone, orthoquartzite and arkosic sandstone interbedded with purplish to blue shale. Due to the absence of fossils, the age of the sediments is not known but lithologically they can be correlated with the Tembeling or the Gagau Formations.

It is interesting to note the presence of gossanous hematite-magnetite pebbles in the conglomerates suggesting that the mineralisation was placed prior to the deposition of the clastic sediments and was undergoing oxidation and erosion at the old land surface now represented by the plane of the unconformity.

REPORT OF MEETINGS

Meeting of 1st February 1973: K.J. Hsü

Prof. Ken. J. Hsü, the External Examiner in Geology to the University of Malaya, addressed a meeting of the Society at 8.00 p.m. on the evening of 1st Feb. 1973 in the Department of Geology, University of Malaya. His talk was entitled "Plate Tectonics of the Mediterranean and Alpine Region".

The origin of the Mediterranean has for a long time been a subject of controversy. One school has postulated that the Mediterranean is an old basin which has existed for some time in a form similar to what we see today. Another school believed that the Mediterranean is a relatively young phenomena created by the splitting apart of Africa from Europe. Looking at the physiographic map of the sea bottom, the Mediterranean seems to be made up of a number of different basins.

The eastern part of the Mediterranean is characterised by a prominent ridge which appears similar to the mid-oceanic ridges of the Atlantic Ocean. If this ridge is a mid-oceanic ridge, then the sea floor spreading hypothesis is applicable in this region. This hypothesis seem attractive at the moment and explain many of the features found in these regions.

In the Western Mediterranean however, no trench or ridge exists and it is in this region that Prof. Hsü has, in the past few years, been associated closely with deep sea drilling projects to ascertain the nature and origin of this basin. Drilling results support the theory that the Mediterranean is a relatively young basin and that Sardinia was at one time connected to Southern France.

The splitting of Europe from Africa, thus creating a new oceanic basin in between can only be explained when one looks at the broader picture and include the Atlantic Ocean. Geophysical data available shows that the trends of anomalies are different in the southern part of the Atlantic from that in the northern part. This means that Europe and Africa had different rates of movements during the creation of the Atlantic Ocean. At certain times, Africa moves faster while Europe remain fairly inactive while at other times, Europe moves faster than Africa. This fact is supported by the Mesozoic geological history of Western Europe, e.g. the opening of the Alpine geosyncline occurred at the same time as the opening of the Atlantic Ocean.

The deep sea drilling project has also yielded several interesting new information regarding the sediments in the Mediterranean. The sediments found in the drill cores all indicate that they are shallow water deposits. Large amount of evaporites, mainly gypsum and anhydrites were encountered. This together with the occurrence of submarine canyon in the Nile and other major rivers support the idea of a drying up of the Mediterranean in the past. For this to occur, the link between the Mediterranean and the Atlantic must at some time in ghe geological past be temporary closed. Members who are interested in this project can read more on it in Prof. Hsu's article entitled "When the Mediterranean dried up" published in Scientific America, December 1972, volume 227, no. 6.

The meeting ended at approximately 10.00 p.m. and was attended by approximately 40 members.

BKT

Meeting of 6th February 1973: G.C. Amstutz

A meeting of the Society was held at 8.00 p.m. on the evening of 6th February 1973 in the Department of Geology, University of Malaya. The speaker for the evening was Professor G.C. Amstutz, External Examiner in Applied Geology of the University of Malaya. Professor Amstutz spoke on "The controversy concerning syngenetic or epigenic formation of mineral deposits".

For a long time, it was generally believed that for ore bodies in sedimentary rocks, the ore mineralizing solutions were introduced from outside the sphere of the rocks in which they are found. Hence, no interest was shown in the sediments or wall rocks. During the last 10 to 15 years, geological thinking has changed drastically and today most such deposits are believed to be formed within the rocks in which they are found. The nature and origin of the sedimentary rocks associated with ore deposits are therefore of great interest to the economic geologists.

An important reason for the radical change in thinking is that economic geologists in the past had a tendency to regard ore deposits as something unique and mystical, very different from other geological phenomena. In recent alluvium, it is easy to see that the ores where present are formed at the same time and by the same processes which produces the alluvium. However in fossil conglomerate, many geologists in the past have often postulated an epigenetic source for, as an example, the uranium found in these consolidated rocks.

Prof. Amstutz showed several slides illustrating the features of ore deposits which may be taken as indicative of their syngenetic or epigenetic origin. Examples of ore deposits whose origins are still controversial e.g. the Akansas Barite belt were briefly mentioned. He concluded by saying that most of the sulphides deposits show strong evidence of a syngenetic origin although some mobilization during diagenesis have taken place. Other types of deposits may however have epigenetic origins.

The meeting was attended by 13 members and ended at approximately 10.00 p.m.

BKT

NEWS OF THE SOCIETY

AGM : 17th February 1973

The Society's Annual General Meeting was held in the Geology Lecture Hall, Department of Geology, University of Malaya on Saturday 17th February at 11.30 a.m. About 30 members were present.

The Meeting received the reports of the Officers of the Society (1972/73). All Members should receive copies of these reports together with this Newsletter.

Besides these reports, the main items discussed at the Meeting were:

i) Student Loan Fund:- Most Members at the Meeting seemed to be in favour of the 1972/73 Council's plans to start the loan scheme as outlined in the last Newsletter.

ii) Student Membership in the GSM:- The meeting ammended the present By-Laws so as to create two types of student Membership:

a) M$8.00 p.a. and receive all Newsletter and publications issued to Full Member (as at present)

b) M$2.00 p.a. and receive Newsletter and notices only.

iii) Councillors of the Society:-

The results of the election for Council Members to the GSM for 1973/74 was announced. The new Councillors are:

1) K.Y. Foo
2) K.W. Choy
3) K.M. Leong
4) T.H. Tan
5) M.K. Choo
6) F.S. Chong
7) S.C. Toh
8) E.H. Yin

The first four of the above councillors would serve for one year only while the others would serve for 2 years. This decision was arrived at by a drawing of lots.

iv) Storage space and insurance of GSM property:- The meeting discuss this matter at some length after the Chairman read a letter from Dr. C.S. Hutchison requesting for this matter to be brought up at the AGM. The meeting agreed that it is important for the Society to try to solve the problem of a proper storage space for its publication in the near future but no solution to this problem seems in sight.

v) Treasury Arrangements:- The Meeting discussed this matter and agreed that the present arrangement whereby the Society's finance is in the hands of a firm of professional accounting firm should continue for the time being but suggest that the new Council look into this matter.

The meeting ended at 1.00 p.m. with a vote of thanks to the outgoing Council.

BKT

Membership

New Members:-

Full Members

1. Dr. B.J. Chronic
Dept. of Geological Sciences
University of Colorado
Boulder, Colorado 80302
U.S.A.

2. Mr. F.E. Dekker
144 Sukumvit Road
Bangkok, Thailand

3. Dr. M.J. Valencia
School of Physics and Maths.
Universiti Sains, Minden
Pulau Pinang
Malaysia

4. Encik Mohd. Koesmono
Geology Department
Padyadaran State University
Jalan Jr. H. Juanda 4
Bandung, Indonesia

5. Encik Mohd. Shah Abdullah
School of Pre-University Studies
Institute Tecknoloji MARA
Jalan Othman, Petaling Jaya
Selangor, Malaysia

6. Prof. G.C. Amstutz
Mineralogical Institute (Post fach 840)
University of Heidelberg
D69 Heidelberg,
West Germany

7. Mr. J.C. Pearson
c/o UNCOL Corp.
Ming Court Office Block
Tanglin Road, Singapore 10

8. Mr. J.C. Johnston
Box 211 Geological Survey Dept.
Kota Kinabalu, Sabah
East Malaysia

Student Member

9. Mr. Lim Keng Hoo
No. 27 Jalan 20/9
Petaling Jaya
Selangor, Malaysia

Resignations

1. Mr. R Campourcy
   42 Rue St. Dominique
   Paris 7, France

2. A.G. Darling
   Geological Survey Malaysia
   P.O.Box 1015
   Ipoh, Perak, Malaysia

3. P.F. Burgess
   c/o Forest Research Institute
   Kepong, Selangor,
   Malaysia

Request for new address : Mr. J. Nelson Edge & Clive Nicholas.

Present addresses unknown.

25th INTERNATIONAL GEOLOGICAL CONGRESS : AUSTRALIA : 1976

Preliminary Announcement

The 25th International Geological Congress will be held in Sydney from 16 to 25 August 1976, under the sponsorship of the Australian Academy of Science and the Geological Society of Australia.

Pre- and post-Congress excursions are being arranged throughout Australia, and the Geologists of New Zealand and of Papua New Guinea have also agreed to organize excursions in association with the Congress.

The Organizing Committee is anxious to establish a distribution list for the First Circular, which will be available in October 1973. It will be distributed automatically to those whose names and addresses appear in the List of Registrants for the 24th Congress 1972, and to major geological institutions. Others who wish to receive it are asked to write, if possible by June 30th 1973 to:

The Secretary-General
25th International Geological Congress
P.O. Box 1892
Canberra City, ACT 2601
Australia