

NEWSLETTER

CONTENTS

Vol. 3 No. 3 May 1985

A ring and radial structure in rhyolite forming Victoria Peak	1
Late Pleistocene sea level changes in Hong Kong and the Pearl River Valley	7
Excursion to Guangzhou and Hainan, 5-13 April	9
Case history of the use of geotextiles in reclamation of marine silts	12
Teacher's group	13
GCO Publications	13
Recent library acquisitions	14
The Asian Information Centre for geotechnical engineering (AGE)	15
Future international meetings	15
Membership news	15
Announcement of proceedings of conference held in December 1984	16
Forthcoming programme	17



GEOLOGICAL SOCIETY OF HONG KONG

General Committee (1985-86)	:	Dr. A.D. Burnett (Chairman) Mr. K.W. Lee (Vice Chairman) Dr. D.R. Workman (Secretary) Mr. E.P.Y. Chau (Editor) Mr. M. Atherton (Treasurer) Mr. C. Dutton Mr. C.M. Lee	Mr. K.W. Lai Mr. W.W.S. Yim
Programme Committee	:	Dr. I. Gray Mrs. W.C. Li	Mr. K.W. Lee Mr. P.S. Nau
Editorial Committee	:	Mr. E.P.Y. Chau Mr. C.H. Tan Dr. D.R. Workman	Mr. C.M. Lee Mr. K.M. Wong
Planning Committee	:	Dr. A.D. Burnett Mr. W.W.S. Yim	Dr. I. McFeat Smith
Marine Studies Group	:	Dr. A.W. Malone (Chairman) Mr. P.G. D. Whiteside (Secretary)	
Teacher's Group	:	Mr. H.M. Keung (Secretary)	

NOTES FOR THE GUIDANCE OF CONTRIBUTORS TO THE NEWSLETTER

General : Typescripts, enquiries and all correspondence should be addressed to the Secretary, Geological Society of Hong Kong, c/o Dept. of Geography and Geology, University of Hong Kong. The Society does not assume copyright of material published in the Newsletter. Any other previous, current or expected future use of such material by the author must be stated at the time of submission.

Articles of a technical nature, as well as reports of interesting events, reviews and other topical items are welcome. Contributions must be short. 1,200 words is regarded as the normal acceptable length, although exceptions may be made at the discretion of the Society. Figures, tables and half-tone plates must be kept to a minimum and must all be on separate sheets.

Typescripts must be accurate and in their final form. Two complete copies should be sent to the Secretary. Typescripts should be double-spaced, including references, on one side of the paper only with a 2.5 cm margin on each side. A4 paper is preferred. All pages should bear the author's name and be numbered serially.

Send only photocopies of illustrations, retaining the originals until the Society asks for them. Originals should bear the author's name. Diagrams should be in black on tracing material or smooth white paper or board with a line weight and lettering suitable for reduction. A metric scale should be included, and north point (or where relevant, coordinates of latitude and longitude) on all maps.

References : The author is responsible for ensuring that the references are correct and that Journal abbreviations comply with those in the List of Serial Publications held in the Library of the Geological Society of London (Geological Society, 1978).

Offprints : The society does not provide authors with free offprints of items published in the Newsletter, but will obtain quotations on behalf of authors of technical articles who may wish to purchase offprints from the printer.

Cover Photograph : Dipping strata (mudstones and siltstones) on the south coast of Ping Chau, Mirs Bay.

A RING AND RADIAL STRUCTURE IN RHYOLITE FORMING VICTORIA PEAK

Bryan P. Ruxton

Canberra College of Advanced Education
Canberra, Australia

SUMMARY

A ring, 350 metres across, of six hills enclosing a depression forms the summit of Victoria Peak, Hong Kong Island. Several of these hills lead down to prominent ridges with pronounced intervening furrows. There are about six radially arranged ridges.

A granite-rhyolite contact occurs near the base of the mountain in the northeast and upslope three contact metamorphic zones in the volcanic rocks occur: andalusite-quartz-muscovite, quartz-sericite, and rhyolite with recrystallized groundmass (this forms the Peak).

The topography shows a radial and concentric pattern with nodes at the intersections. This is attributed to stress on the rhyolite metamorphic rocks by a thumb of magma beneath. The thumb of magma may be a later small intrusive body because the granite dips steeply to the south beneath the mountain.

Differential jointing, recrystallisation or microveining associated with the pattern of fractures may account for the pattern of positive and negative relief features which have been etched out by differential weathering and erosion.

INTRODUCTION

It is extremely unusual for a 550 m mountain to be capped by a ring of small hills and a central depression. It is demonstrably not a volcano and its structure proves it is not a volcanic plug. Lack of breccias and pressure minerals show that it is not a meteorite impact crater. Air photographs and topographic contour maps indicate that the pattern has probably been formed by differential weathering and erosion.

Six hills form a circle 350 m across. The northern and southern hills are the largest and the northern, Victoria Peak, is the highest at 553 m. Two smaller hills in the west clearly form part of the ring. The central depression is sufficiently marked to have accumulated colluvium (Geotechnical Control Office, 1982) and it is drained by a small stream which plunges off the Peak at the waterfall (Fig. 1). Erosion is greatest in the southeastern portion of the Peak and here two low rises may represent asymmetric remnants of two hills in the circle.

Victoria Peak is also surrounded by about six ridges, some of which lead up to the small hills on the Peak. All the ridges are fairly clear on the 1:1000 contour maps. The position of the northeast ridge is uncertain but it has been marked in the middle of the rocky brow. Victoria Peak drops away sharply to the south but even here there is a weak but pronounced small ridge on the very steep hillslopes.

GEOLOGY

General

A cupola of Hong Kong granite (Allen & Stephens, 1971) with very steep margins (Gamon & Finn, 1984) intrudes the Repulse Bay Formation of largely pyroclastic rocks. Victoria Peak is on the southern edge of the cupola and the granite/volcanic contact is on the lower northern slopes and dips steeply to the south. A

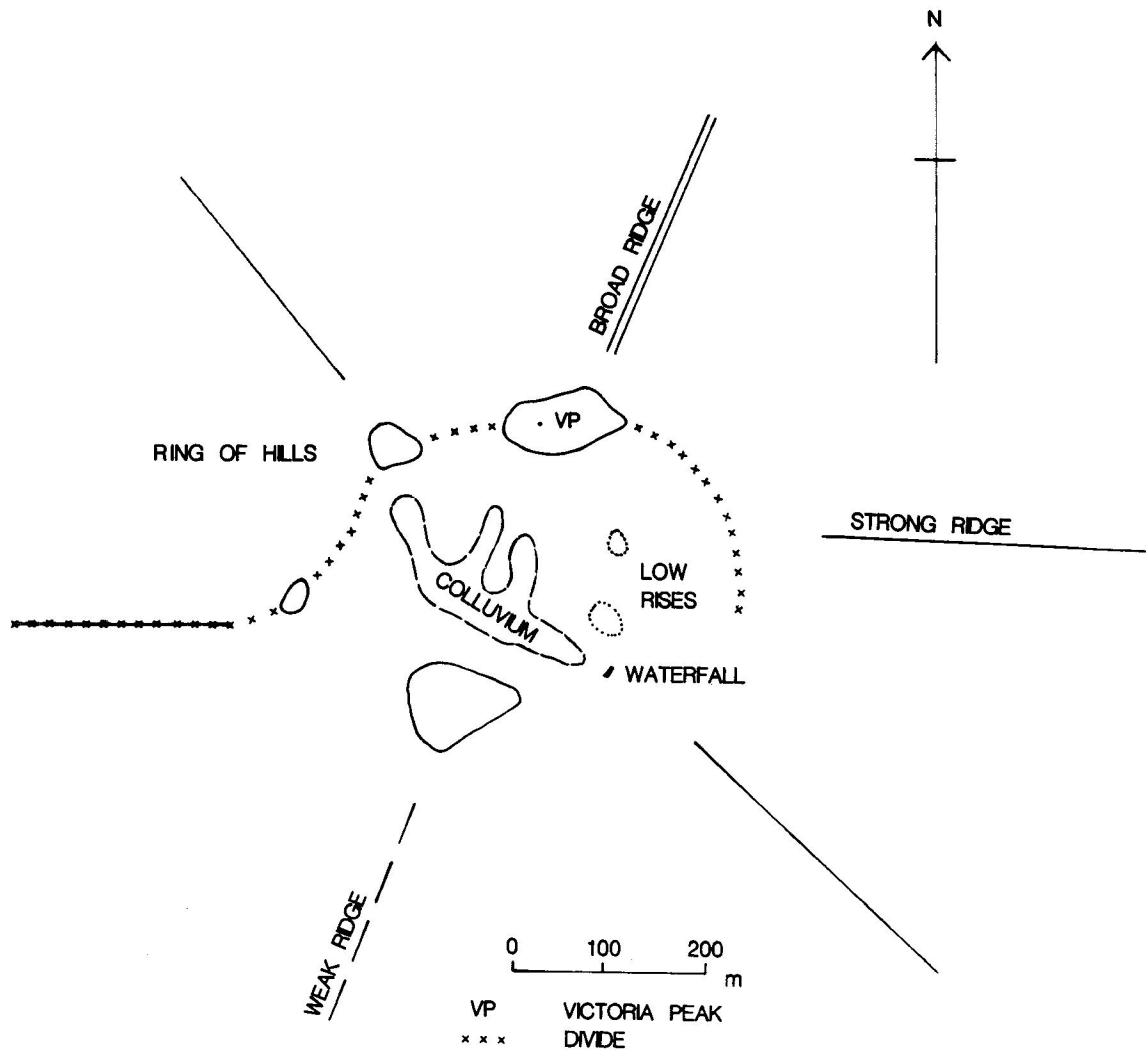


Fig. 1 Ring and radial pattern, Victoria Peak

north-northwesterly fault in the centre of the area displaces the contact from about 150 m altitude in the west to about 250 m altitude in the east. This fault cannot be discerned on the eastern margin of the Peak. Recent work (Geotechnical Control Office, 1982) has shown that the granite/rhyolite contact in the north may be a fault (Fig. 2).

Allen and Stephens (1971) showed mainly northwest-southeast striking acid pyroclastic rocks and lava flows on Victoria Peak but dips were deep and strikes variable. Recent work confirms this but also reveals the presence of several small patches of sedimentary rock. One patch forms the eastern low rise on the Peak and in thin section it is highly quartzose and indistinguishable from the older sedimentary rocks. The simple bedding structures of the sediments appear disharmonic with the surrounding rhyolites.

The ring and radial structure is developed wholly within the acid volcanic rocks and yet it bears no relationship to the structure of these rocks.

Metamorphism

The author examined over 80 thin sections in detail of volcanic rocks on Victoria Peak and recognized four groups of increasing metamorphism.

1. Low Grade A

Acid volcanics with recrystallized groundmass. Fine and coarse polygonal groundmass with some brown biotite, sericite, and in places garnet.

2. Low Grade B

Albite-epidote hornfels. Sericite-quartz rock with or without felspar phenocrysts and cordierite.

3. Hornblende-hornfels

Andalusite-muscovite-quartz rock with or without clinozoisite and anthophyllite.

4. Contact zone

Mica-quartz rock with needles of (?) sillimanite in quartz. It is not clear whether this represents pyroxene-hornfels or not.

Suggestions (Geotechnical Control Office, 1982) that this sequence is metasomatic or hydrothermal are now discounted because normal metamorphic aureoles are also found east of Taitam Bay and near Taipo and cordierite and antho-phyllite are normal metamorphic minerals. Weathering or alteration of biotite to chlorite and then metamorphism to anthophyllite could have occurred.

In a few places all three major (1, 2, 3) metamorphic zones occur from the granite/volcanic contact to the Peak but in other places one zone is missing or there are complications. The divide is formed of acid volcanic rocks with recrystallized groundmasses and to the north and south these overlie sericite-quartz rocks. Both zones together total about 150 m in thickness. Sericite has first replaced the groundmass felspar and then the phenocryst felspar forming a quartz-sericite rock. Knots and networks of coarse polygonal quartz are developed and are not necessarily of any stratigraphic value.

In the northeast the acid volcanic rocks appear to lie on a thick slab (100 m) of andalusite-muscovite-quartz rock which extends down adjacent to the contact. Much of it is depleted in muscovite and a different lithological band of volcanics is suspected.

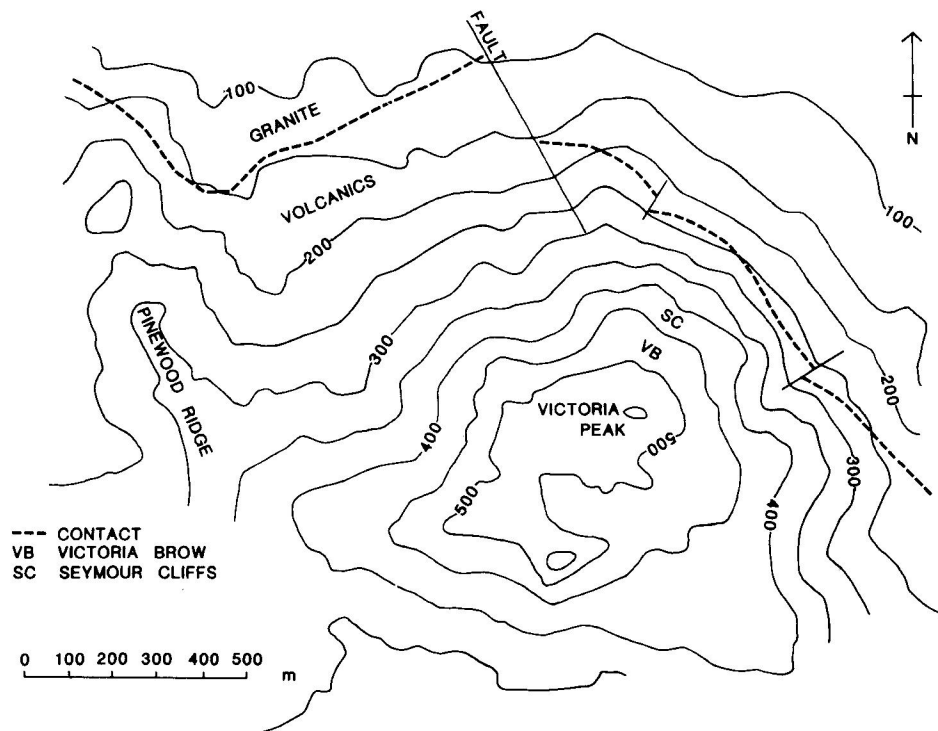


Fig. 2 Granite/volcanic contact, Victoria Peak

The dearth of sampling in the northwest allows only speculative reconstructions. First, the rocks are almost all low grade. Secondly, predominantly sericite-quartz rocks pass downslope into acid volcanics with recrystallised groundmass (with microcline in the groundmass). This pattern may be metamorphic inversion due to an intrusion high up beneath the peak (Schofield, 1924; Allen & Stephens, 1971). It could also be due to differential metamorphism of different lithology or structure.

There does appear to be a significant difference on either side of the north-northwesterly fault. In the east the sequence is:-

Acid volcanics finely crystallized.
Acid volcanics coarsely crystallized.
Andalusite-muscovite-quartz rock

and muscovite is severely depleted in many samples suggesting a relatively anhydrous zone.

In the west the sequence is:-

Acid volcanics finely recrystallized
Sericite-quartz rock

and the rocks are relatively rich in sericite indicating a hydrated zone. They are also finer grained. Four sericite rich samples occur close together on Lugard road near the pipeline and they could represent a metamorphosed lithological layer.

Sampling has been insufficient to test whether the rock types on the ridges are different from the rock types in the hollows. This is partly due to lack of outcrop in the furrows. The furrows though radial, show pronounced asymmetry in arrangement compared to the ridges.

The andalusite-muscovite-quartz rock is very resistant to weathering and it forms the prominent rocky cliffs and slopes of Victoria Brow and Seymour Cliffs.

THE CAUSE OF THE RING AND RADIAL STRUCTURE

The difference between the ridges and furrows and nodes and internodes may be due to differential hardness and softness of the rock due to recrystallization, microveining, or joint spacing. The evidence to date is that the nodes are coarsely jointed and the internodes are closely jointed. Macro-veining and microveining also occur but there is not enough evidence to make an assessment.

The sub-horizontal metamorphic zoning is independent of bedding in the rhyolites and is not parallel to the steeply dipping margin of the cupola. A vertical borehole above the contact failed to reach the granite and proved a dip of contact of at least 25° (Geotechnical Control Office, 1982).

A section across Victoria Peak, even allowing for faulting, would suggest a later small intrusive body beneath the Peak (Fig. 3). A thumb of magma pushing up against a uniform horizontal layer can form ring and radial structures and these have been described from geological examples on a much larger scale (Billings, 1945, Johnson, 1970) and from laboratory experiments on a much smaller scale (Robson & Barr, 1964; Durrance, 1967). The structures may be cone sheets and radial dykes (Anderson, 1935) or just fractures (Koide & Bhattacharji, 1975). Pulses of pressure are said to form nodes at the inter-section of radials and concentrics (Vann, 1978)

On this theory the radial ridges may correspond with either the maximum or the minimum stress directions and may in fact, along with the nodes, correspond to the principal or least fractured directions.

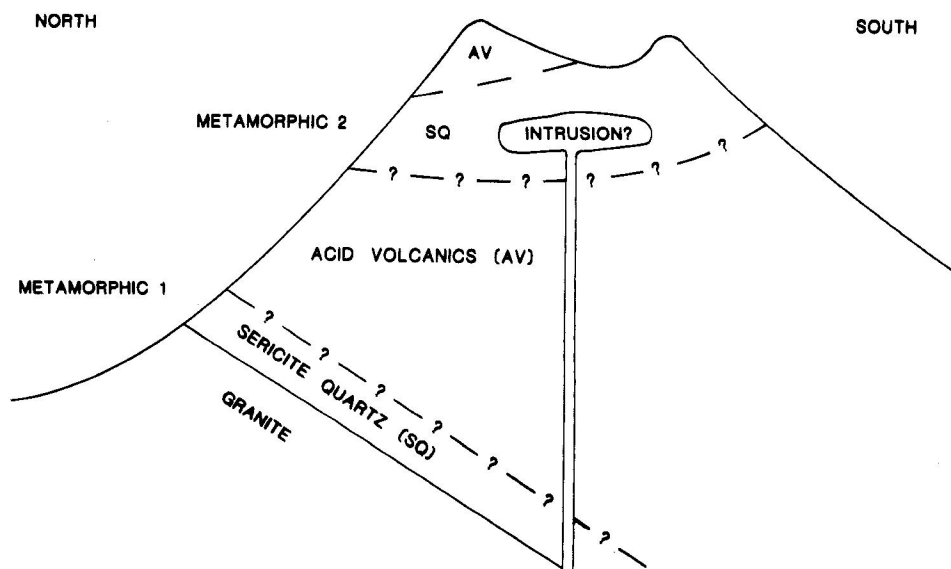


Fig. 3 Section north to south across Victoria Peak

Sir Harold Jeffries (in discussion of Anderson, 1936) claimed that if the magma struck the horizontal layer sharply (magmatic pulses due to gas activity) spiral structures could develop, and Hills (1972) refers to "cored spirals". The Peak is asymmetric with an eastern "flat" extension suggesting either a second ring or a cored spiral structure.

Allen and Stephens (1971) recognized two zoned granitic structures, one east of Castle Peak and one on central Hong Kong Island which on more detailed examination may turn out to be ring structures. The classical explanation of these is that they are of bell jar shape flattening upwards (Roberts, 1970), and are due to reduced pressure below causing ring fracture and subsidence. If validated these rings may represent horizontal slices at a much lower level than Victoria Peak.

DISCUSSION

Succession

This reconstruction would give the geological history of Victoria Peak as:-

1. Formation and folding of acid volcanics and sediments
2. Emplacement of Hong Kong granite
3. NNW fault or stoping
4. Slab fine-grained low grade metamorphic volcanic rock
5. Small high level intrusion
6. Ring and radial structure
7. Dolerite dykes and faults

The large mass of anhydrous andalusite-quartz rock in the northeast may be due to double metamorphism. Some of the asymmetry of pattern may be influenced by the pre-existing structural grain (Ode, 1967) or may be due to later faulting (Geotechnical Control Office, 1982). Later faulting cannot be extensive or there would not be a ring and radial structure left to describe.

Origin of the Andalusite

Apart from andalusite occurrences directly related to nearby visible granite contacts in metamorphic aureoles andalusite, sometimes with cordierite, is common in parts of northwestern Hong Kong Island over one kilometre away from the nearest granite exposed (Schofield, 1924). Either granite may be concealed beneath the surface or metamorphism is caused by granite-porphphyry dykes. There is a third possibility; did the regional isotherms follow the steep granite contacts or were they much flatter?

On Victoria Peak, andalusite-quartz rocks show a marked deficiency in alkalis and high alumina. Was there a hiatus in the deposition of the acid volcanic rocks allowing deep weathering to take place (Schofield, 1924).

Scattered occurrences of andalusite in volcanics and sediments on and around the Peak have yet to be investigated in detail (Allen & Stephens, 1971).

Further Work

More detailed mapping is required and it is suggested that many more rocks be thin sectioned. Counts of phenocrysts and quartz, sericite, feldspar, andalusite and biotite should be made. It is strange that in the accessory mineral assemblage there is an absence of topaz and beryl and a paucity of fluorite, all common in other localities around the Hong Kong granite. This paper is frankly speculative and is submitted in order to trigger off further work to clarify the geology of Victoria Peak.

REFERENCES

- ALLEN, P.M. and STEPHENS, E.A. (1971), "Report on the Geological Survey of Hong Kong 1967-1969", Hong Kong Government.
- ANDERSON, E.M. (1935-6), "The Dynamics of the Formation of Cone-sheets, Ring-dykes, and Cauldron-subsidences", Proc. Roy. Soc. Edinburgh, 56, 128-157, Discussion 138-163.
- BILLINGS, M.P. (1945), "Mechanics of Igneous Intrusion in New Hampshire", Amer. Jour. Sci., 243A, 40-80.
- DURRANCE, E.M. (1967), "Photoelastic Stress Studies and Their Application to a Mechanical Analysis of the Tertiary Ring-Complex of Ardnamurchan, Argyllshire", Proc. Geol. Assoc. 78, 289-318.
- GAMON, T.I. and FINN, R.P. (1984), "The Structure of the Hong Kong Granite", Geol. Soc. Hong Kong Newsletter, 2(2), 5-10.
- GEOTECHNICAL CONTROL OFFICE (1982), "Mid-Levels Study", Public Works Department, Hong Kong.
- HILLS, E.S. (1972), "Elements of Structural Geology", 2nd Edition, Chapman & Hall.
- JOHNSON, A.M. (1970), "Physical Processes in Geology", Freeman, Cooper & Co.
- KOIDE, H. and BHATTACHARJI, S. (1975), "Formation of Fractures around Magmatic Intrusions and Their Role in Ore Localization", Econ. Geol., 70, 781-799.
- ODE, H. (1967), "Mechanical Analysis of the Dike Pattern of the Spanish Peaks Area, Colorado", Bull. Geol. Soc. Amer., 68, 567-576.
- ROBERTS, J.L. (1970), "The Intrusion of Magma into Brittle Rocks in 'Mechanism of Igneous Intrusion'", G. Newall and N. Rast (eds.), Special Issue Geol. Jour., 2, 287-338.
- ROBSON, G.R. and BARR, K.G. (1964), "The Effect of Stress on Faulting and Minor Intrusions in the Vicinity of a Magma Body", Bull. Vulcanol., 27, 315-330.
- SCHOFIELD, W. (1924), "A Note on Some Andalusite-Bearing Rocks in Hong Kong", Proc. Liverpool Geol. Soc., 14, 78-81.
- VANN, I.R. (1978), "The Siting of Tertiary Volcanicity in 'Crustal Evolution in North-western Britain and Adjacent Regions'", D.R. Bowes and B.E. Leake (eds.), Special Issue Geol. Jour., Steel House Press, pp. 393-414.

LATE PLEISTOCENE SEA LEVELS IN HONG KONG AND THE PEARL RIVER ESTUARY

M.D. Howat
 Hong Kong Mass Transit Railway Corporation

Yim (1984) found a lower marine deposit off Chek Lap Kok with terrestrial deposits above and below. The terrestrial deposits were radio-carbon dated as shown on Fig. 1. The data are consistent with the sea level changes deduced by Curray (1965) offshore Texas.

Yim & Nau (1984) report data from the Pearl River estuary, reproduced in Fig. 2, which argue a sea level maximum some five thousand years later than that shown in Fig. 1.

The writer has recently received a report (Grisack, 1985) on a sample of timber from 20 m below mean sea level at the base of terrestrial deposit, between two marine units in the Western district of Hong Kong Island. The cellulose or carbon appears to have been completely displaced by some organic material and examination with a scanning electron microscope revealed that treatment with 50% hydrochloric acid had not removed the debris. The replacement carbon has been dated at about 8,000 years before present, which corresponds with the Holocene transgression sea level (Fairbridge, 1961). A mere 6% replacement of a 30,000 year old carbon by an 8,000 year old carbon is sufficient to give an apparent age of 25,000 years before present.

In view of these potential problems it is gratifying to note that the apparent age of the Mid-Wuerm interstadial sea-level high, interpreted from the Pearl River estuary data is within the limits of uncertainty found by Milliman and Emery (1968) for the Atlantic continental shelf of the United States (Fig. 2).

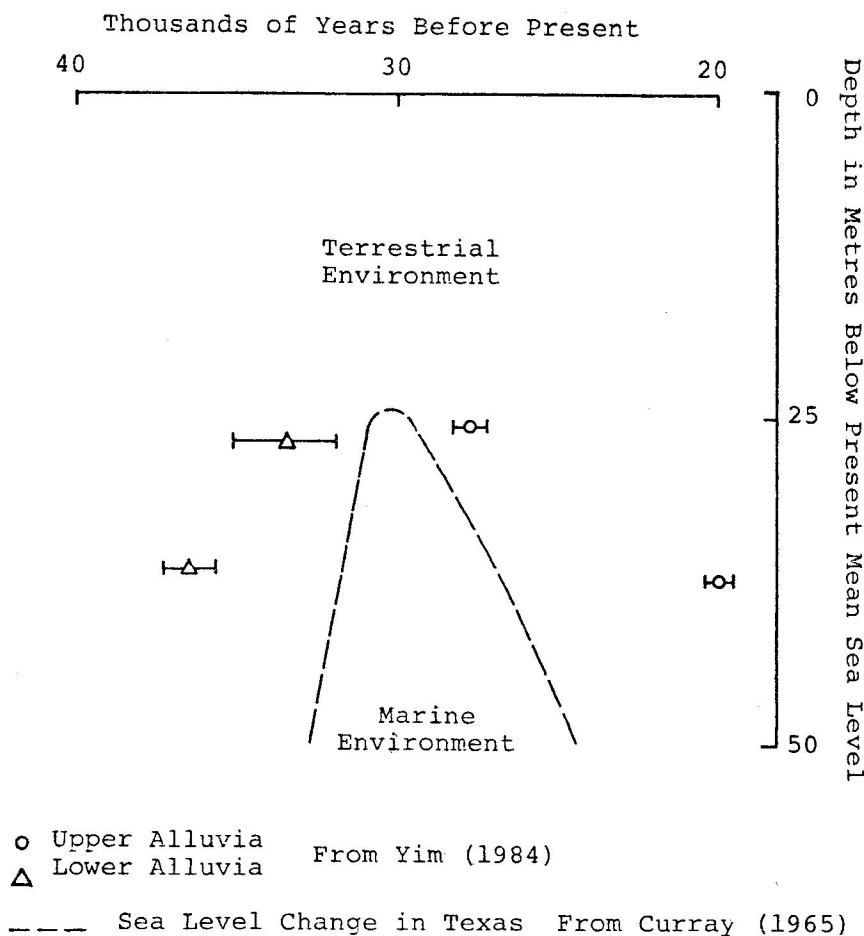


Figure 1 - Radio-carbon dates of "alluvial deposits" at Chek Lap Kok compared with mid-Wuerm interstadial sea level change in Texas, U.S.A.

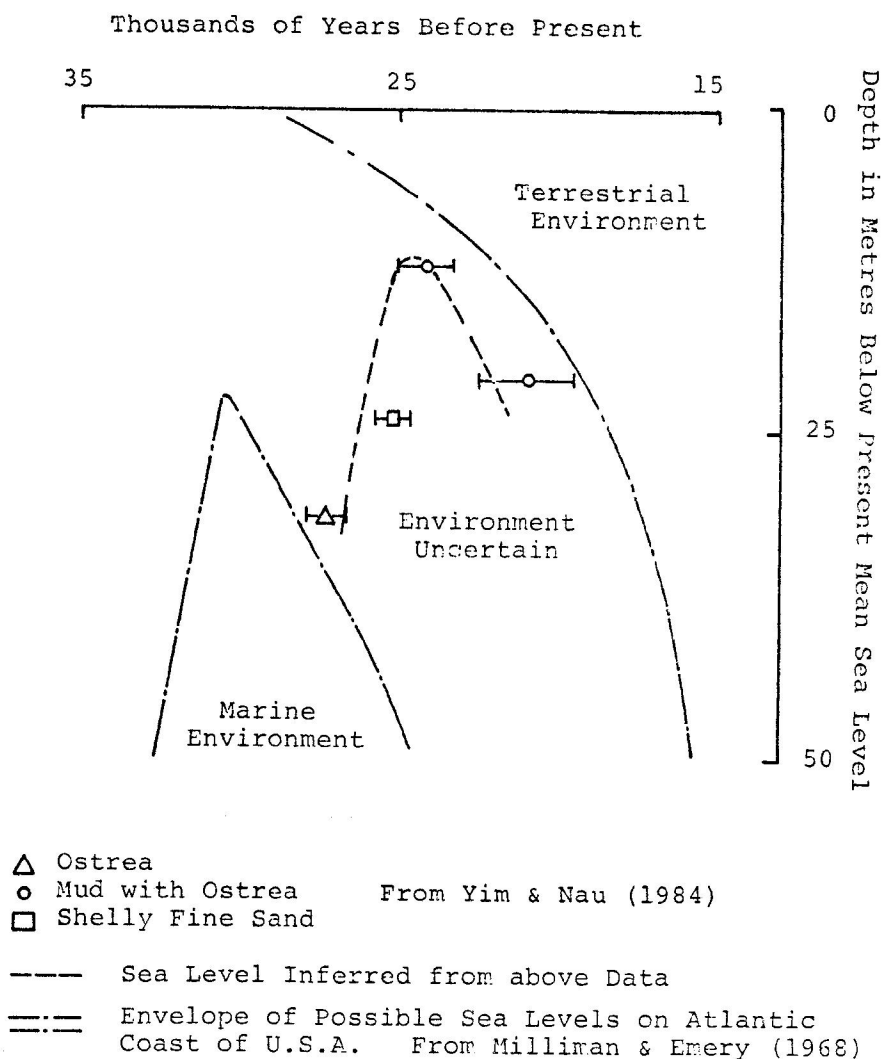


Figure 2 - Radio-carbon dates of shallow water marine deposits in the Pearl River estuary compared with sea level changes deduced for the east coast of the U.S.A.

References

- Curry, L.R. (1965). The Quaternary of the United States, Wright and Frey, Eds., University Press, Princetown, New Jersey, P.723.
- Fairbridge, R.W. (1961). Eustatic changes in sea-level, Physics and Chemistry of the Earth 4, pp. 99-185.
- Grisack, E.B. (1985). Microscopical examination of 8,000 year old wood for charring by fire. Project P-4191. Technical Service Report to the Hong Kong Archaeological Society, MacMillan Bloedel Research, 6pp., 1 Table and 13 Figures.
- Milliman, J.D. and Emery, K.O. (1968). Sea levels during the past 35,000 years. Science, Vol. 162, pp. 1121-1123.
- Yim, W.-W.S. (1984). Evidence for Quaternary Environmental changes from sea-floor sediments in Hong Kong. The Evolution of the East Asia Environment 1. Centre of Asian Studies, University of Hong Kong, pp. 137-155.
- Yim, W.-W.S. and Nau, P.S. (1984). Radiocarbon dates of the Zhujiang Delta and their implications for Hong Kong. Newsletter of the Geological Society of Hong Kong 2, No. 5, pp. 10-14.

EXCURSION TO GUANGZHOU AND HAINAN, 5-13 APRIL

R.L. Langford
Geotechnical Control Office

FRIDAY, 5 APRIL

The ten guests of the Seismological Bureau of Guangdong were Lai K.W., Lee C.M., Dr. R.L. Langford, Dr. R. Shaw, M. Atherton, Chan Y.C., Lai M.G., Chang C.H., Tse K.C. and Tse O.N. We left Hunghom early in the morning. On arrival in Guangzhou we were taken to the Bureau where Chan En-Min and Pan Jia-Xiang gave talks on recent seismological aspects of the province.

SATURDAY, 6 APRIL

CAAC were unable to fly us to Hainan, so we looked at Palaeogene sediments east of Guangzhou in the morning, Buxin Fm oil shales, Xibu Fm sandstone and conglomerate, and Huayong Fm alluvial conglomerate. These are all part of the San Shui sedimentary basin. In the afternoon we saw a porphyritic trachyte lava flow at Zoumayang. About 50 m thick, the flow is worked for roadstone. By early evening we were at the 6000 BP sea cliffs and seismological station at Shi Liu Gang; the station is set on (?) Kat O Fm (U. Cretaceous) red sandstone.

SUNDAY, 7 APRIL

After a 6 hour flight delay we departed for Hainan. Although little of the day was left we saw Quaternary sediments at Fulianshui; Beihai Fm (Q2) unconformably above Zhanjiang Fm (N₂ - Q₁). Clays of the lower formation are used in brickmaking, and the unconformity locally yields meteorites.

We were entertained in the evening by Meng Qing-Ping, a Director of the People's Government of Hainan Administrative Region, and Liu Wu Zhong, the Director of the Seismological Bureau of Hainan. Our guides for the tour, also present, were Ren Zhen-Huan, He Qi-Yi and Luo Su-Xiong.

MONDAY, 8 APRIL

We rose at 3 am to catch the low tide in the estuary at Xipaicun, east of Haikou. The mudflats revealed the remains of villages drowned by extensive subsidence following the 1605 earthquake. Evidence of dextral slip on minor faults was seen. By mid-morning the estuary was inundated by a strongly flowing tide.

The afternoon visit was to the Ma An Shan volcanic cone, a Holocene (10,000 BP) basalt lava vent. The cone stands well above the basalt plains which dominate northern Hainan. A remarkable lava tube was seen near Shishan; 12 m across by 8 m high, the tube extends several kilometres. A few of us explored part of the tube, with the aid of paraffin torches.

TUESDAY, 9 APRIL

The 330 km journey to the south coast of Hainan was along the eastern side of the island. Lunch was at Dongshanling, a striking hill of Yenshanian biotite granite set among paddy fields. The granite is quarried, but all the work of aggregate production is by hand. We had a brief afternoon stop at Xinglong Farm, where a brand new spa hotel has been built around the hot springs.



Plate 1 Eocene oil shale of Xibu Formation in San Shui Sedimentary Basin, west of Guangzhou.

WEDNESDAY, 10 APRIL

From our base at Sanya (Yulin) we went a short distance to Yelinzhuang to see an extensive development of raised coral beach. About 2 m of coarse stagshorn coral storm deposit rests on coral reef about 1.5 - 2 m above sea-level. The reef is 5,180 BP, and the sands as young as 3,630 BP. These widely developed beaches probably relate to a global sea-level high.

Tian Ya Hai Jiao (Southern Heavenly Columns), west of Yulin, is Yenshanian coarse-grained granite, and was the last site visited on the southern end of the island. After lunch we started north again, straight through the mountains.

At Daimaoshan we saw a disused phosphorite mine, and the day ended with a cultural visit to one of the minority groups in Hainan, the Miao people, south of Wu Zhi Shan.

THURSADY, 11 APRIL

We made a brief cultural visit to the Li people outside Wu Zhi Shan before resuming the journey north. At Maoyang we saw Ordovician marble in granite, and north again we were given a tour, of the Qiong Zhong Seismic Monitoring Station. The station, established in 1974, has close links with the USA. Measurements of magnetic field and ground stress are made, and the station is seismically very sensitive, with very little background noise.

FRIDAY, 12 APRIL

We travelled about 60 km west of Haikou to look at the east-west trending graben which stretches across the north of the island. The graben is 30 m deep and over 200 km long, with an extensive Tertiary to Quaternary history.

In the afternoon we flew back to Guangzhou.

海南島地質參觀示意圖

東寨港 (1605年地震遺址)
Dongzhai gang (1605 Earthquake Site)

Handwritten notes:
N. Point
Columbus
1492
1498

海口市
Haikou

馬鞍山 (Ma An Shan)
(Basalt volcano)
澄邁
Chengmai

海南島
Hainan Island

中
Qiongzong

毛陽 (沐理岩)
Maoyang
(Marble)

五指山 (花崗岩)
Wuzhishan (Granite)

1,867 m
通什 (黎族)
Tongshen (Li)

毛岸 (苗寨)
Maoan
(Miao)

天涯海角
Tianya Haijiao

三亞
Sanya
椰林莊 (珊瑚礁)
Yelinzhuang
(Coral reef)

大東海 (沙灘)
Daidong Hai (Swimming Beach)

鋪前
Puqian

文昌
Wenchang

瓊海
Qionghai

萬寧
Wanning

東山嶺
Dongshanling

▲ Mountain

● Location visited

◎ City or county town visited

---- Route

Fig 1 Sketch map showing locations visited in Hainan Island

SATURDAY, 13 APRIL

Five members of the party presented talks to the Seismological Bureau before lunch; Dr. Shaw (granite weathering), Dr. Langford (strike-slip faulting), Atherton (HK rocks), Lai (HK faults) and Lee (HK stratigraphy).

Before returning to Hong Kong the party was given a farewell banquet by the Bureau Director, Prof. Ding Yuan-Zhang, and other members of the Bureau.



Plate 2 The visiting party at Tianya Haijiao (The end of the world), the southern end of Hainan Island.

CASE HISTORY OF THE USE OF GEOTEXTILES IN RECLAMATION OF MARINE SILTS

Lecture by Professor Kazuya YASUHARA of the Nishinippon Institute of Technology to the Marine Studies Group, 15 May 1985.

Prof. Yasuhara started with a brief review of the conventional applications of geotextiles for improving trafficability and bearing capacity, subgrade settlement control and embankment reinforcement. He then showed the results of dynamic tests on model and full scale embankments resting on plastic mats, polymer grids, permeable unwoven geotextiles and cement or quicklime stabilised layers of subgrade. He concluded that plastic mats were not effective in controlling embankment settlements on soft clays under cyclic load. Prof. Yasuhara then described a case history of an embankment and reclamation for a timber yard in Kanda port on the west end of Kyushu Island in Japan. Plastic mats were used to control the sinking of an embankment into a low plasticity, well graded (poorly sorted) marine silt with an extremely variable liquidity index of up to 6. After the embankment reached isostatic equilibrium at a variable depth, the structure was found to be stable with no significant long term settlement effects.

The lecture stimulated discussion on isostasy, displacement of soft clays with and without geotextiles, clay stability factors and design for seismic activity. Dr. Malone thanked Prof. Yasuhara for putting together an interesting talk at extremely short notice. Prof. Yasuhara was invited to address the Marine Studies Group again on his next visit to Hong Kong in December 1985 on the subject of dynamic loading and the quick clays of Ariake.

M.D. Howat

TEACHER'S GROUP

SLIDES

The society has been given 200 35 mm colour slides of Hong Kong geology in 5 sets of 40. The sets cover the following topics or themes:

- Igneous rocks
- Sedimentary rocks
- Weathering
- Geology and scenery
- Geology and development

Initially the sets are available for inspection only (not borrowing). Copies may be ordered of whole sets or individual slides at cost (\$2.20 per slide), plus postage if required. Captions/descriptions on separate sheets will be supplied free of charge. Later after an initial period of priority for orders for copies, the sets will be available on short-period loan. The sets are kept by Mr P.S. Nau at the Dept. of Geography and Geology, H.K.U. (859-2832).

The society hopes to add further sets of slides of teaching interest to its collection. Any slides (originals or copies) which members may like to contribute for this purpose will be gratefully received.

It goes without saying that although the slide collection is primarily aimed at providing a service to school teachers, any member of the society is free to make use of it.

MEETINGS

The Teacher's Group holds a field meeting about every 3 months and sometimes in between. There have been four meetings so far: Lantau (November), Kat O/Ap Chau (March), Ma On Shan (May) and Rocky Harbour (June). Indoor meetings are also arranged from time to time and members are welcome to visit H.K.U. with groups of students to see the geology collections, by arrangement. Anyone involved in teaching in any capacity who would like to join the group or who is not sure of being on the current list of group members should contact the group secretary, Mr Keung Hon Ming, 6D Babington Path, 5/F., Hong Kong (Tel. 401684).

G.C.O. PUBLICATIONS

The Geotechnical Control Office announces the recent publication of:

BIBLIOGRAPHY ON THE GEOLOGY AND GEOTECHNICAL ENGINEERING HK\$35
OF HONG KONG TO DECEMBER 1984, E.W. Brand (1985), 76 p.

Society members may also be interested in the following GCO publications:

MID-LEVELS STUDY: REPORT ON GEOLOGY, HYDROLOGY AND SOIL PROPERTIES (1982), 265 p. plus 54 large drawings HK\$200

GEOTECHNICAL MANUAL FOR SLOPES (1984), 295 p. HK\$50

These documents may be obtained from:

Government Publications Centre,
General Post Office Building, G/F.,
Connaught Place, Hong Kong.

RECENT LIBRARY ACQUISITIONS

We are grateful to the Geotechnical Control Office for presenting the society with reprints of the following papers:-

from the Proceedings of the ASCE Conference on Engineering and Construction in Tropical and Residual Soils, Honolulu, 1982:

E.W. Brand - Analysis and design in residual soils
W.T. Flintoff and J.W. Cowland - Excavation design in residual soil slopes
A.W. Malone and J.C. Shelton - Landslides in Hong Kong 1978-1980
H.B. Phillipson and P.N. Chipp - Air foam sampling of residual soils in Hong Kong

from the Proceedings of the 7th Southeast Asian Geotechnical Conference, Hong Kong, 1982:

E.W. Brand and R.R. Hudson - CHASE - an empirical approach to the design of cut slopes in Hong Kong soils
E.W. Brand, A.D. Burnett and K.A. Styles - The geotechnical area studies programme in Hong Kong
S.R. Hencher and R.P. Martin - The description and classification of weathered rocks in Hong Kong for engineering purposes
R.W. Lumsdaine K.Y. Tang - A comparison of slope stability calculations

from the Proceedings of the 4th International Congress of the International Association of Engineering Geologists (IAEG), New Delhi, 1982

E.W. Brand, A.D. Burnett and K.A. Styles - Geotechnical land use maps for planning in Hong Kong
A.D. Burnett and K.A. Styles - An approach to urban engineering geological mapping as used in Hong Kong

from the International Society for Rock Mechanics International Congress on Rock Mechanics, Melbourne, 1983

E.W. Brand, S.R. Hencher and D.G. Youdan - Rock slope engineering in Hong Kong

from the IAEG International Symposium on In Situ Testing, Paris, 1983

E.W. Brand, H.B. Phillipson, G.W. Borrie and A.W. Clover - In situ shear tests on Hong Kong residual soils

from Bulletin 29 of the IAEG (Proceedings of the International Symposium on Aggregates, Nice, 1984)

E.W. Brand, C.A. Maunder and J.B. Massey - Aggregates in Hong Kong

from the Proceedings of the 4th International Symposium on Landslides, Toronto, 1984

E.W. Brand - Landslides in Southeast Asia : A state-of-the-art report (and addendum)
E.W. Brand, J. Premchitt and H.B. Phillipson - Relationship between rainfall and landslides in Hong Kong
S.R. Hencher, J.B. Massey and E.W. Brand - Application of back analysis to Hong Kong landslides

from Geotechnical Engineering, v. 15, 1984

E.W. Brand and H.B. Phillipson - Site investigation and geotechnical engineering practice in Hong Kong

from the 8th Southeast Asian Geotechnical Conference, Kuala Lumpur, 1985

E.W. Brand - Text of special lecture : Landslides in Hong Kong.

THE ASIAN INFORMATION CENTER FOR GEOTECHNICAL ENGINEERING (AGE)

Established in 1973 at the Asian Institute of Technology in Bangkok, AGE has developed a worldwide information system covering soil and rock mechanics, engineering geology, foundation engineering, earthquake engineering and related topics. The services provided include a Newsletter (4 times a year), current Awareness, Digest, Abstracts and Holdings Lists. There is also a copying service. The Digest is a printed version of AGE's computerized data base, built up since 1973 (vol. 1 to 1979, vol. 2 1980-1, vol. 3 1982-3). Subscriptions for Hong Kong are US\$40 (individual) and US\$85 (institutions). Further information from the Center at A.I.T., P.O. Box 2754, Bangkok.

FUTURE INTERNATIONAL MEETINGS

(see also Newsletter v.3, no. 2)

1985

16-19 SEPTEMBER. Groundwater in engineering geology, Sheffield, U.K. (J.W. Hooper, Dept. of Geology, Portsmouth Polytechnic, Burnaby Rd., Portsmouth, UK).

5-16 OCTOBER. International symposium on loess research; Xian (Institute of Geology, Academia Sinica, P.O. Box 634, Beijing)

1986

14-19 APRIL. Engineering geology problems in seismic areas; Bari and Potenza, Italy (Prof. G. Melidoro, Istituto di Geologia Applicata e Geotecnica, Via Re David, 200, I-70125 Bari, Italy).

7-14 OCTOBER. Symposium on sea-level changes; Qingdao (Prof. Zhao Songling, Inst. of Oceanology, Academia Sinica, 7 Nanhai Rd, Qingdao)

MEMBERSHIP NEWS

The membership at 31 May 1985 totalled 269, made up as follows (figures at 31.12.84 in brackets).

Honorary	Resident	Overseas	Student
9	234	10	16
(9)	(235)	(17)	(18)

A total of 77 members and student members have not paid their subscriptions for 1985. In accordance with the bye-laws, these members have now had their membership suspended. They are not included in the above totals. Sixty seven new members and student members have joined the society so far in 1985.

Members may like to inform any friends thinking of joining that the subscription for the remainder of 1985 is \$40 - only half the annual dues. Anyone joining after 30 September pays the full subscription of \$80, which is credited to the following year thus making the remainder of the current year free.

The society welcomes the following new members who have joined since the issue of the last Newsletter: Bai Yi Liang, Kong Yu Ling (s), Lam Lai Fong (Miss), Li Kwai Fong (Miss), Li Po Shan (Miss), Ng Shun Pui, Ng Ying Pang, Shi Ching Hon Che, Siu Oi Ling (Miss), Wong Yuet Wah (Mrs), Zhao Ji.

GEOTECHNICAL ASPECTS OF SITE INVESTIGATION
Proceedings of Conference held in December 1984

CONTENTS

FOREWORD

OPENING STATEMENT BY DR. E.W. BRAND

PAPERS:

Site Investigation Techniques

The Determination of the Uniaxial Compressive Strength of Rock Material - A Review of Current Practice in Hong Kong
T.I. Gamon & P.L. Szeto

A Theoretical Background for the Application of Air-Powered Percussion Drilling Machines in Site Investigation
R.J. Purser

The Drilling of Long Horizontal Boreholes for Site Investigation Purposes
D.I. McFeat-Smith

A Review of Current Nearshore and Offshore Site Investigation Practice in Waters Around Hong Kong
P. Blacker & J.W. Seaman

Seismological Measurements in Hong Kong
H.T. Poon

Contributions & Discussion

Geological

Concealed Marble at Yuen Long
K.I. Sit & K.M. Wong

Joint System of Hong Kong Granite
P.S. Nair

Towards a Simpler Classification of the Hong Kong Granites
P.J. Strange

The Structure of Some Debris Flows in Hong Kong
B.P. Ruxton

A Review of Photogeological Lineaments in Hong Kong
A.D. Burnett & K.W. Lai

Contributions & Discussion

Engineering Geological Evaluation

A Brief Review of Soil Erosion Causes, Effects and Remedial Measures
A. Hansen & J.M. Nash

Marine or Terrestrial? The Soil of Tai Tam Bay
M.D. Howat

Site Investigation for the Junk Bay Road Tunnels
C.R. Matson

Geological Characteristics of Some Hong Kong Rocks and their Importance in Underground Excavation Works
P.G.D. Whiteside & D.R. Bracegridle

Geological Investigations for New Town Planning
C. Dutton

Staged Engineering Geological Evaluation for the Residential Development at Tai Wo Tsuen, N.T. Hong Kong
J. Costello & K.M. Wong

A Geologically Complex Site near Tsuen Wan
B.I. Dubin

Contributions & Discussion

PRESENTATIONS TO CONFERENCE

SITE VISITS, FILM AND EXHIBITION

SUMMARY BY DR. A.D. BURNETT

LIST OF PARTICIPANTS

The proceedings will be published later this year.

FORTHCOMING PROGRAMME

Tuesday 25 June 6 pm

**Room A702 (Geology Lab)
Hong Kong Polytechnic**

SOME GEOLOGICAL FEATURES OF HAINAN

Members of the group which visited Hainan in April will give an illustrated talk on what they saw

Saturday 13 July

**dep. Ma Liu Shui (Chinese U.) ferry pier at
9:30 a.m. Arrive back about 5:30**

FIELD TRIP : PING CHAU

The Society's second excursion to this remote island in Mirs Bay. Sign up for a look at something totally different, geologically and scenically, from the rest of Hong Kong (see cover photo).

Cost : members \$30, non-members \$40.

Return reply slip in this issue, with payment, to P.S. Nau,
Dept. of Geography & Geology, University of Hong Kong.
(tel. H-8592832)

There will be no meetings in August. Programme for September - December will be announced in the July Newsletter.

REPLY SLIP - PING CHAU EXCURSION

I/we wish to attend the Ping Chau field meeting on July 13th

NAME(S):

NAME(S) OF GUEST(S):

I/we enclose payment of \$
(Cheque payable to Geological Society of Hong Kong)

會員消息

截至本年五月卅日止，本會共有269位會員，成員為（括號內數字代表至1984年十二月卅一日底人數）：

榮譽	本地	海外	學生
9	234	10	16
(9)	(235)	(17)	(18)

共有77位普通及學生會員因還未交1985年度會費而被取消會籍。今年則有67位新會員參加。

會員們可告知親友現時在年中參加，只需繳半年會費，即40元。而新會員於九月卅日後參加的，則可豁免今年餘下三個月（即十至十二月）的會費而只需繳交\$80作為1986年度會費。

節目預告

六月廿五日（星期二）下午六時

地點：香港理工學院A702室

將由四月間訪問海南島的會員介紹一些海南的地質現象及他們在旅途中所拍的幻燈片。

七月十三日（星期六）上午九時半集合於中文大學馬料水碼頭

本會的第二次到這偏僻的小島觀察，可以看到一些無論在地質或景色都和香港其他地方都不同的景物（可見於封面照）。回程約為下午五時半回抵馬料水碼頭。

費用：會員\$30，非會員\$40，寄將回條及劃線支票寄給香港大學地理地質系鈕柏榮先生收（詢問電話：5-8592832）

三水盆地位於廣州以西約50公里，屬第三紀地層發育，主要有漸新世的華涌組，為紅棕色沖積粗砂岩夾礫岩。厚度達755—1,162米。始新世的西布組為黃褐色粉砂岩，砂岩上部為紅色鈣質砂礫岩。再上為布心組，為湖相的粉砂岩、油頁岩夾石膏薄層，含有魚類化石和有孔蟲，曾有四次海浸。在三水的走馬營看到有粗面岩岩流。

在海南島我們主要參觀了第四紀沉積、玄武岩和花崗岩。海南島以東西向的王五——文教斷裂為界，在島的北部形成地塹，新生代時大幅下降，沉積了很發育的第四系，噴發了大量玄武岩。我們參觀了其中的海口組，為更新統，主要為紅色砂礫岩，夾行星雨降下的隕石——雷公墨。湛江組，沉積於新第三紀至中更新世，為瀉湖至淺海相雜色泥岩、粉砂岩和砂岩，厚度100—120米，在第三紀和第四紀均有多次玄武岩噴發，最新的火山噴發約一萬年，風化較弱，仍保留火山口的地貌特徵，如馬鞍山、鳳凰山。在石山我們參觀了一個火山熔洞，洞內還保留火山熔岩的流動構造。

在鹿回頭的椰林莊，我們看到了上升的珊瑚礁，為含珊瑚骨骼的砂礫層，比現在海平面高2.0M，其年代為5180年。成因仍有爭論，有人認為是高海面產物，有人認為是近代地殼上升形成。

在海南島的王五——文教東西向斷裂以南主要為上升的山地，出露大片花崗岩，還有古生代的寒武、奧陶紀地層。海南島的花崗岩有兩個明顯不同的類型，但均在中生代侵入。較新的為中細粒至中粗粒黑雲母花崗岩，較老的為黑雲母混入花崗岩，含大量捕虜體。在毛陽花崗岩中見有奧陶系大理岩捕虜體，長300米，寬100米，被開採作為水泥原料。

海南寶島前途無量

海南島地處亞熱帶，但氣溫怡人，適合熱帶作物生長，公路兩旁、山邊、田野到處見到不少熱帶植物，如椰子樹、棕櫚油橄欖、可可、咖啡、胡椒、橡膠樹、茶樹和香蕉，礦產也很豐富，有石油、水晶、煤等等，不愧是一個寶島，很有發展潛力，我們之中以前有人曾訪問過海南島，感覺是面貌一新，新蓋不少現代化的高層建築，公路均由泥沙路改為柏油路，在興隆農場，建設了西班牙別墅式的酒店，附近溫泉泳池和酒吧，富有南洋風味。未參觀前大家以為海南島比較偏僻，可能仍為落後的農村地方，參觀後使我們刮目相看。海南島開放不久，已取得很好的成績，相信過幾年後，建設速度將會更快，海南島將會有更大的發展，前途會無可限量。

主人盛情接待 我們深刻難忘

這次訪問，廣東地震局自始至終把我們作為貴賓熱情接待，充分表現了中國人的好客傳統，我們剛抵廣州火車站，廣東地震局的辦公室主任何啟義，監測處處長任振寰等人已在車站等候多時，立刻送我們去東方賓館。在以後的訪問過程中，他們兩人均一直陪同我們，並經常了解我們的要求，盡量按照我們的意見安排各項活動。在參觀三水盆地時，為了使我們更清楚了解盆地的地質特徵，特別邀請了對三水盆地有研究的中山大學地質系系主任黃玉崑教授帶領我們參觀和講解。

四月七日我們乘飛機到海南時，海南地震局局長兼地震學會理事長劉武忠等人親自到海口機場迎接我們，當天晚上海南行政區人民政府負責人孟慶平親自設盛宴招待我們。在海南島每到一地，主人都安排我們住上當地最好的賓館或酒店，海南地震局專門安排了一輛轎車和一輛小巴供我們在海南整個旅途上使用。海南地震學會副理事長羅速雄先生還一直陪同並安排我們在海南的訪問。在參觀東寨港地震遺址時，由對該次地震進行多年研究、取得重大成果的陳恩民先生親自帶領和講解。

四月十三日臨別廣州前，廣東地震局局長丁原章教授設宴親自為我們送行，使我們各人留下深刻難忘的印象。我們在此謹致衷心感謝。

三水盆地位於廣州以西約50公里，屬第三紀地層發育，主要有漸新世的華涌組，為紅棕色沖積粗砂岩夾礫岩。厚度達755—1,162米。始新世的西布組為黃褐色粉砂岩，砂岩上部為紅色鈣質砂礫岩。再上為布心組，為湖相的粉砂岩、油頁岩夾石膏薄層，含有魚類化石和有孔蟲，曾有四次海浸。在三水的走馬營看到有粗面岩岩流。

在海南島我們主要參觀了第四紀沉積、玄武岩和花崗岩。海南島以東西向的王五——文教斷裂為界，在島的北部形成地塹，新生代時大幅下降，沉積了很發育的第四系，噴發了大量玄武岩。我們參觀了其中的海口組，為更新統，主要為紅色砂礫岩，夾行星雨降下的隕石——雷公墨。湛江組，沉積於新第三紀至中更新世，為瀉湖至淺海相雜色泥岩、粉砂岩和砂岩，厚度100—120米，在第三紀和第四紀均有多次玄武岩噴發，最新的火山噴發約一萬年，風化較弱，仍保留火山口的地貌特徵，如馬鞍山，鳳凰山。在石山我們參觀了一個火山熔洞，洞內還保留火山熔岩的流動構造。

在鹿回頭的椰林莊，我們看到了上升的珊瑚礁，為含珊瑚骨骼的砂礫層，比現在海平面高2.0M，其年代為5180年。成因仍有爭論，有人認為是高海面產物，有人認為是近代地殼上升形成。

在海南島的王五——文教東西向斷裂以南主要為上升的山地，出露大片花崗岩，還有古生代的寒武、奧陶紀地層。海南島的花崗岩有兩個明顯不同的類型，但均在中生代侵入。較新的為中細粒至中粗粒黑雲母花崗岩，較老的為黑雲母混入花崗岩，含大量捕虜體。在毛陽花崗岩中見有奧陶系大理岩捕虜體，長300米，寬100米，被開採作為水泥原料。

海南寶島前途無量

海南島地處亞熱帶，但氣溫怡人，適合熱帶作物生長，公路兩旁、山邊、田野到處見到不少熱帶作物，如椰子樹、棕櫚油橄欖、可可、咖啡、胡椒、橡膠樹、茶樹和香蕉，礦產也很豐富，有石油、鐵礦、水晶、煤等等，不愧是一個寶島，很有發展潛力，我們之中以前有人曾訪問過海南島，感覺是面貌一新，新蓋不少現代化的高層建築，公路均由泥沙路改為柏油路，在興隆農場，建設了西班牙別墅式的酒店，附近溫泉泳池和酒吧，富有南洋風味。未參觀前大家以為海南島比較偏僻，可能仍為落後的農村地方，參觀後使我們刮目相看。海南島開放不久，已取得很好的成績，相信過幾年後，建設速度將會更快，海南島將會有更大的發展，前途會無可限量。

主人盛情接待 我們深刻難忘

這次訪問，廣東地震局自始至終把我們作為貴賓熱情接待，充分表現了中國人的好客傳統，我們剛抵廣州火車站，廣東地震局的辦公室主任何啟義，監測處處長任振寰等人已在車站等候多時，立刻送我們去東方賓館。在以後的訪問過程中，他們兩人均一直陪同我們，並經常了解我們的要求，盡量按照我們的意見安排各項活動。在參觀三水盆地時，為了使我們更清楚了解盆地的地質特徵，特別邀請了對三水盆地有研究的中山大學地質系主任黃玉崑教授帶領我們參觀和講解。

四月七日我們乘飛機到海南時，海南地震局局長兼地震學會理事長劉武忠等人親自到海口機場迎接我們，當天晚上海南行政區人民政府負責人孟慶平親自設盛宴招待我們。在海南島每到一地，主人都安排我們住上當地最好的賓館或酒店，海南地震局專門安排了一輛轎車和一輛小巴供我們在海南整個旅途上使用。海南地震學會副理事長羅遠雄先生還一直陪同並安排我們在海南的訪問。在參觀東寨港地震遺址時，由對該次地震進行多年研究，取得重大成果的陳恩民先生親自帶領和講解。

四月十三日臨別廣州前，廣東地震局局長丁原章教授設宴親自為我們送行，使我們各人留下深刻難忘的印象。我們在此謹致衷心感謝。

海南行 ——一次豐富的地震地質參觀學習

黎權偉

應廣東地震局的邀請，我會一行十人抱着參觀和學習的心情於四月五日到達廣州，展開對廣州和海南島的九天訪問，行程如下：

四月五日，到達廣州，廣東地震局陳恩民先生介紹廣東歷史上十九次強震，潘家祥先生介紹廣東的地震預報。

四月六日，參觀三水第三紀沉積盆地和火山活動；訪問了廣州石榴崗地震台。

四月七日，乘飛機到達海口，在浮蓮水參觀了海南北部的第四紀地層。

四月八日，清晨三時趁低潮時參觀東寨港1605年地震遺址；下午參觀馬鞍山第四紀玄武岩火山口。

四月九日，沿海南東綫公路經文昌、瓊海參觀了東山嶺的燕山期黑雲母花崗岩；與隆農場的溫泉和熱帶作物，到達最南端的三亞鹿回頭。

四月十日，參觀了椰林莊的上升珊瑚礁，景色怡人的天涯海角，大茅山的磷礦。拜訪了毛岸的苗族村莊，到達海南黎族、苗族自治州首府——通什。

四月十一日，訪問了黎族村寨和海南的布達拉宮——富有民族色彩、堂皇華麗的首府行政大廈；參觀了毛陽的大理岩和瓊中地震台，回到海口。

四月十二日，到澄邁參觀海南島的第四紀地層、王五——文教東西向大斷裂和海南北部的地塹構造；參觀了熔岩流形成的火山熔洞。下午乘飛機回到廣州。

四月十三日，在廣東地震局進行學術交流，我會代表介紹了香港的地質概況。晚上回抵香港。參觀路綫見英文稿附圖Fig. 1。

廣東重視地震監測和預報工作

廣東地震局負責全省的地震監測和預報工作，為了保證人民生命財產的安全，在全省設立了卅四個地震台。我們參觀了其中兩個國家一級的地震台。這些地震台均建於穩固的基岩上，盡量避免城市對儀器的干擾。廣州石榴崗地震台建於白堊紀的砂岩上，海南島的瓊中地震台建於花崗岩上。兩台均裝備有中長周期和短周期的三向地震儀（拾震器），地磁觀測儀，地應力觀測儀，重力儀。地震局在全省佈置了測量綫路，用精密水准測量了解地形的水平變化。觀察路綫在全省長達三千二百公里，精度為1/100毫米，並用傾斜儀、連通管、監測活動斷裂的變化。目的是進行地震預報。

對廣東歷史上發生過的十九次強震進行了詳細研究，特別是對海南島1605年7月13日（明朝萬曆卅三年）的瓊州大地震研究得最詳細。當時震級為7.75—8級（據陳恩民）震中烈度為11°，震源深度為22公里，震源斷裂為070°，其次為340°，在東寨港、舖前港有五十多個村莊沉陷於海，沉陷幅度一般為3—4米，最大超過10米。我們在低潮時在遺址看到一些村莊的遺迹，如牆腳、石磨、水井、墳墓、陶瓷、碎片等。地震局做了多年的艱苦深入調查工作，並因此得到國家有關的科學研究獎。

廣東的地質研究深入細緻

我們參觀了三水沉積盆地和海南島的地質體會到廣東省的地質工作比較詳盡，取得重要的成果。我們參觀過的三水盆地和海南島，地層劃分很細，對化石和岩石學都做了大量工作。

香港地質學會

1985—86年度常務委員會

主席：Dr. A. D. Burnett

副主席：李坤榮先生

秘書：Dr. D. R. Workman

編輯：周邦彥先生

司庫：Mr. M. Atherton

委員：黎權偉先生，李作明先生

嚴維樞先生，Mr. C. Dutton

編譯小組：周邦彥先生，Dr. D. R. Workman

李作明先生，陳兆湖先生

黃廣美先生

節目小組：李坤榮先生，李雲祝女士

鈕柏燊先生，Dr. I. Gray

籌劃小組：Dr. A. D. Burnett，嚴維樞先生

Dr. I. McFeat Smith

海洋研究組：主席：Dr. A. W. Malone

秘書：Mr. P.G.D. Whiteside

教師小組：秘書：姜漢明先生

投稿本會通訊簡則

概則：請將所有稿件，查詢及通訊寄香港地質學會秘書收（煩香港大學地理地質系轉）。本會並不負責刊登在本通訊內文章之版權。如寄來的文章或資料有在過去曾引用過，或現時及將來可能會引用到的話，作者請於來稿時特別註明。

我們歡迎一些專門性的稿件，有趣事項的報導，書評或專題討論等。來稿以簡為主。雖然有些時候本會可作出例外，但普通稿件請以一千二百字為限。請盡量減少插圖及附表等，而所有圖表請另外分頁。

所有來稿必須清晰——英文稿用打字機打出，中文則以正楷謄寫。來稿需寄兩份。英文稿（包括援引）必須隔行，不可一紙兩面用；請用A4號紙張。中文稿則請用原稿紙。中英文稿每頁均必須有頁編號及作者姓名。

所有插圖請只寄影印本，待本會通知時始可將原版寄來，而必須註有來稿者姓名。圖表必須用黑色繪在描圖紙或滑面白紙或紙板上；所有綫條或字體之粗幼必須能縮影後仍可保持清晰，所有地圖必須附有公制比例，正北指向及如適用的話附有經緯綫座標。

援引：來稿者須負責確定所有援引的準確性，而公報之簡寫須以現藏於倫敦地質學會圖書館內倫敦地質學會1978年出版之定期出版物目錄為準。

單行本：經本通訊刊出之稿件，本會不負責供免費單行本給作者，但可代向承印商洽商，使作者可向承印商購買單行本。

封面圖片：蒙Dr. D.R. Workman借出
香港大鵬灣平洲南岸之傾斜泥岩及粉砂岩

香港地質學會

通訊

目錄

第三卷 第三號 一九八五年五月

海南行——一次豐富的地震地質參觀學習

會員消息

節目預告

July 10, 6:30, Guangdong Science and Technology Museum

1. Investigation of Hainan Earthquake in 1965
2. Seismic Structure of Hainan Earthquake
3. Seismic Structure of Hainan Earthquake
4. The Grand Liquefaction of All Clay Strata of the Hainan Earthquake
5. Relationship between the Hainan Earthquake and Seismic Activity

