ISSN 1010-335X

geological society of hong kong

NEWSLETTER

Vol. 5, No. 3 (1987)

Contents

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 titles are given in full.

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 which to purchase offprints from the printer.

11.5.1988

Cover photo: Control of granite landform by sheeting joints, Po Toi Island (J.M. Nash)

Geological Society of Hong Kong Newsletter, Vol. 5(3), pp 1 - 7 (1987)

Report on the geological field trip to Northern Guangdong

C.M. Lee & K.H. Liu

Introduction

A total of seventeen members of the Geological Society of Hong Kong took part in the geological field trip to Northern Guangdong Province, PRC, jointly organised by the Institute of Geological Science of Guangdong Province and GSHK, from 16 April 1987 to 25 April 1987.

The climax of the trip was the visit to two large mining pits and the Devonian and Cretaceous stratigraphic sections. Everyone was very happy with the samples of minerals and fossils collected during the trip. Below are some of the places which were visited (Figure 1).

Figure 1 Map of the route through Northern Guangdong, and areas visited

Golden Cock Range (Jingjiling)

The Golden Cock Range is located to the east of Eastern Pingshe Station, by the side of the Wu River. It was named after the cock-shaped tors at the summit of the Range. It is one of the eight famous scenic spots in Guangdong Province. The Golden Cock Range is 338 m high and is surrounded by vertical cliffs up to 130 m in height. There are four small paths leading to the tors, one from each direction (Plate 1).

The Golden Cock Tor is about 20.8 m in length, 8.4 m high and 3.8 m wide. It has the 'head' pointing north and the 'tail' pointing south. These were originally considered to be products of weathering in the Eocene Red-beds of the Tertiary about 57-66 million years ago, but it is now considered to be Late Cretaceous in origin.

Plate 1 Group Photo at the summit of the Golden Cock Range

In the Middle Jurassic, some 130 million years ago, the area within 100 km^2 of the Golden Cock Range - Pingshe area was controlled by a northeast-trending fault, forming an elongated basin. But in the Cretaceous Period, the dry climate brought piedmont sedimentation to the basin. There were a lot of iron-bearing gravels forming a series of red sandstones and conglomerates up to 700 m thick which is called the Nanxiong Group in the local stratigraphy. The red clastic deposits with a thick layer of medium-grained calcareous sandstone with lenticular gravels continued to form in Tertiary. The rock strata is about 400 m in thickness and is called the Danxia Group.

In the Quaternary (about 3 million years ago), the basin was being denuded as it was elevating. Vertical joints developed in the rock strata. As the calcium content contained was easily dissolved, the red-bed 'karst' landscape was formed after long-term denudation. The area is similar to the landforms of Danxiashan Mountain, these are therefore also called the Danxia landforms.

Xigangchai

Xigangchai is located in Lechang County. We studied the Upper Devonian Section of limestone, especially the Shitianqiao Group with dark grey and grey algal limestone, and bioclastic limestone. We found a lot of fossils such as Disphyllum frechi, Hexagonaria thomasi and Phillipsastraea monticula (Plate 2, Figure 2).

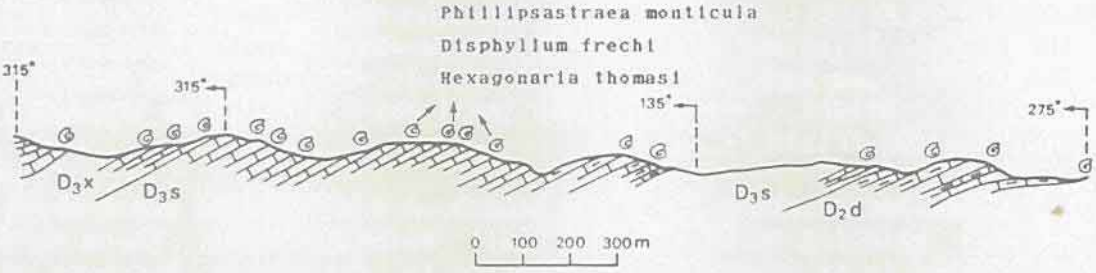


Figure 2 Stratigraphic section of the Middle to Upper Devonian, Xigangchai, Lechang County

Plate 2 Searching for fossils in Xigangchai

Gufuyan Cave

Gufuyan Cave is 5 km^2 to the southwest of the Lechang County Town. Gufuyan Cave developed in the limestone of the Upper Devonian. Carbonation appeared along the cracks and joints. The crustal movement in the past one million years led to the 3-level structure of the cave. It has a total area of more than 10,000 m^2 and is up to 30 m high and over 40 m wide.

Carbonate precipitation from groundwater caused stalactites to develop under the ceiling and for stalagmites and limestone pillars to grow on the floor of the cave. The pebbles on the floor of the cave are evidence that an underground stream had previously flowed through the cave.

Kuitou

The market town of Kuitou is about 10 km southwest of the urban area of Lechang County. Along a river valley in the fringe area of the town, is a standard section of an unconformity between the Devonian and the Sinian, the Middle to Lower Devonian and Middle Devonian (Figure 3).

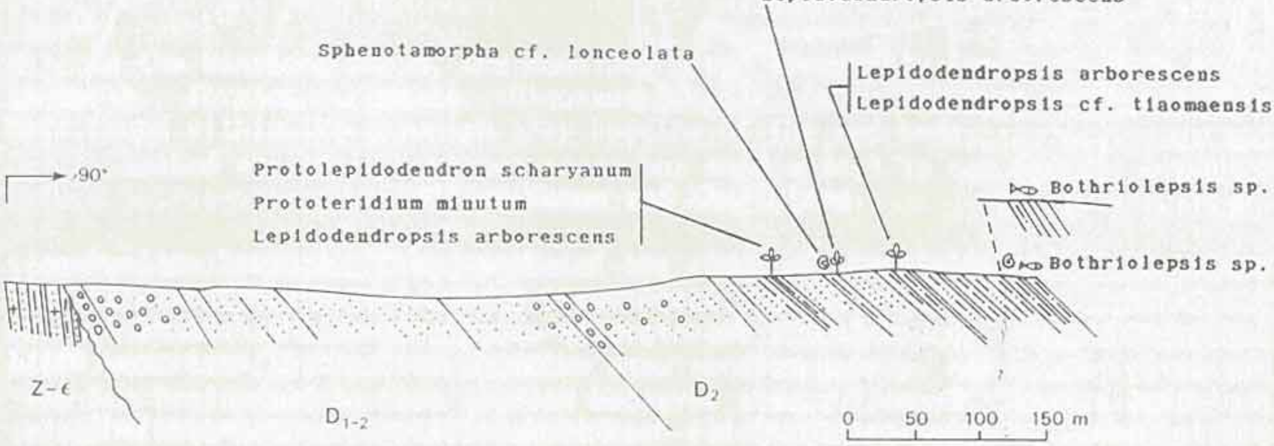


Figure 3 Sketch Map of the Lower to Middle Devonian section at Kuitou, Ruyuan, Guangdong Province

The Lower to Middle Devonian can be divided into two parts, the upper and the lower. The lower part is called the Yangxi Group. The basal conglomerate has a complicated composition and is superimposed on the Sinian interbedded epidote-bearing purplish sandstone and slate. A 300 m thick layer of purple, brownish yellow polymineralised medium- to fine-grained sandstone is on top of it.

The upper part is the Luhutou Formation of Middle Devonian age, with grey or greyish white siliceous conglomerate at the base. Layers of sandstone, pelitic sandstone and sandy mudstone are interbedded in a sequence that is more than 300 m thick. There are three fossil-beds in the middle to upper parts. Fossils of Protolepidodendron sp., Protopteridium sp., Lepidodendropsis sp. etc, were found in the lower fossil-bed. Fossils of bivalves were found in the middle, while the precious Bothriolepsis sp. were found in the upper fossil-bed by some of our members. These fossils are of the Late Eifelian stage to Middle to Late Givetian stage of the Middle Devonian.

Fankou Mines

About 20 km to the east of the urban area of Lechang County is Renhua County, where there is a lead and zinc mine called the Fankou Mine. Mr Lam Siu-biu, the Chief Geologist, was on hand to welcome us personally.

Fankou Mine is one of the largest state-owned mines in Guangdong Province. The mine was prospected in 1956 and constructed in 1965. The ore deposit is in limestone of Late Devonian age and is of the sedimento-metamorphic strata-bound type. The ore body is massive and irregular in shape (Figure 4). The high grade ore reserve is very large and includes mineral resources of lead, zinc, sulphur and silver, together with mercury, cadmium, germanium and gallium.

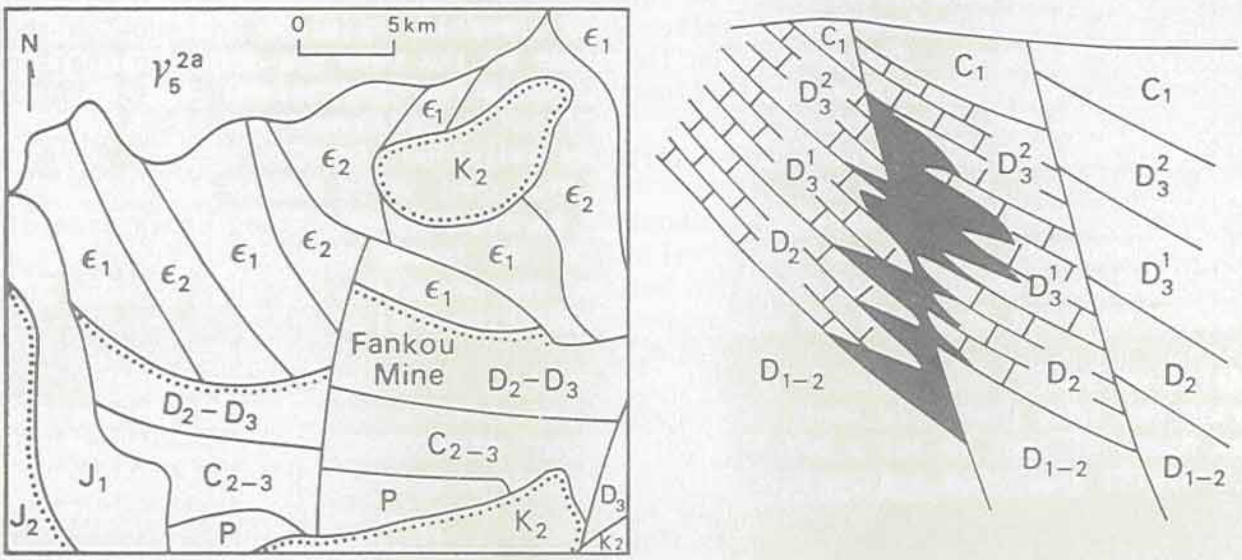


Figure 4 Sketch map of Fankou Mine and cross section of the ore bodies

Mr Lam arranged for us to visit the mining pit some 240 m underground. We could see that the ores are distributed in the form of laminations along bedding planes, indicating that the ore body originated due to faulting. In the early days, the mining methods were overhead cut-and-fill and short hole shrinkage stopes. Recently, more advanced methods such as mechanised cut-and-fill and large diameter hole blast techniques (VCR) have been used. Again, our members collected many excellent mineral samples.

Danxia landforms

Danxiashan Mountain is 9 km to the south of Renhua County. It is one of the four famous mountains in Guangdong. The landforms and scenery of Danxia and Jinjiang River seem to be very similar to those of Kweilin, but they are quite different geologically.

The main rock types in Danxia are red clastic rocks formed by the interbedding of pink, brick-red or purplish brown massive conglomerate and sandstone with fine sandstone or siltstone, deposited in the Late Cretaceous to Early Tertiary. The upper part is called the Danxia Group and the lower, the Nanxiong Group.

About 60 to 100 million years ago, this region was a very large lake with an area of more than 500 km^2, under a hot dry climate. Later, due to crustal movement, this land rose to form a highland. Vertical internal cracks or step faults controlled the mechanical weathering of the rock and the lime contained in the rock was denuded under the hydraulic erosion of surface- and groundwater. Eventually, an attractive landscape of vertical isolated hills and flat valleys was formed.

Nanxiong - dinosaur eggs

Nanxiong, a town more than 1,200 years old, is located to the south of Dayaling Mountains, at the confluence of the Jinjiang and Lingjiang Rivers. In the southern bank of the Jinjiang River is the famous location where dinosaur eggs were found. The red-beds belong to the Nanxiong Group of the Upper Cretaceous and consist of brownish red, purplish red sandy conglomerate, sandstone with pelitic siltstone, pelitic sandstone and siltstone, occasionally with greenish grey sandstone, pelitic sandstone and mudstone (Figure 5).

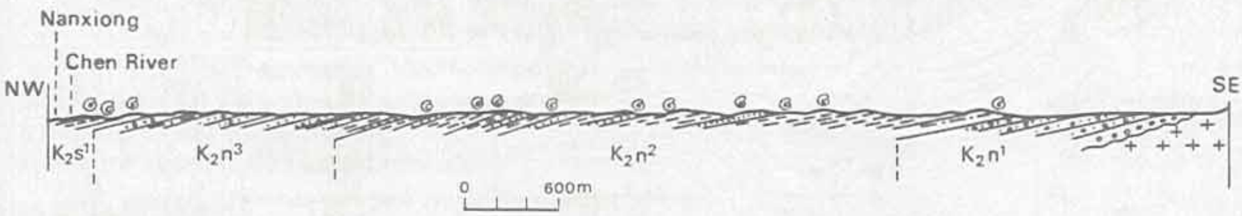


Figure 5 Stratigraphic section of the Upper Cretaceous, Dafeng-Henanjia, Nanxiong County

In the Nanxiong Basin, the Nanxiong Group is gently inclined from south to north, forming a cuesta. Dinosaur fossils, including eggs, and ostracods were found within the greenish grey bedding of the red-beds.

Meiling Range and Zhujixiang

Meiling Range is 45 km north of the town of Nanxiong, at the boundary between Guangdong and Jiangxi Provinces, where there is the old Mei Gate. Passing through this gate is an ancient path built by the government about 1,500 years ago in the Tang Dynasty.

Zhujixiang was famous for having an old Cantonese settlement about 1,100 years ago. The present residents of the Zhujiang River delta are believed to be the descendants of the ancient Zhujixiang population.

Nanhua Temple

Nanhua Temple is one of the four most famous Buddhist temples in China and was built in 502 A.D. The constructed area of the temple is about 12,000 m^2. Its most famous attraction is the corpse of a famous monk. There are also a lot of historically valuable antiques.

Fandong Dabaoshan Mine

About 10 km south of Nanhua Temple is the Dabaoshan Iron Ore Mine. We were welcomed by Mr Chu Ming-Chau, the Director of the Mine and Mr Chan Ping-cheung, the Chief Geologist, who gave each of us a set of minerals and rocks of the Dabaoshan Mine as a gift.

Cambrian, Lower to Middle Devonian clastic rocks, Upper Devonian limestone, volcanic rock and the Yanshanian granite intrusive mass are exposed in the mining area. The area is a synclinal structure (Figure 6).

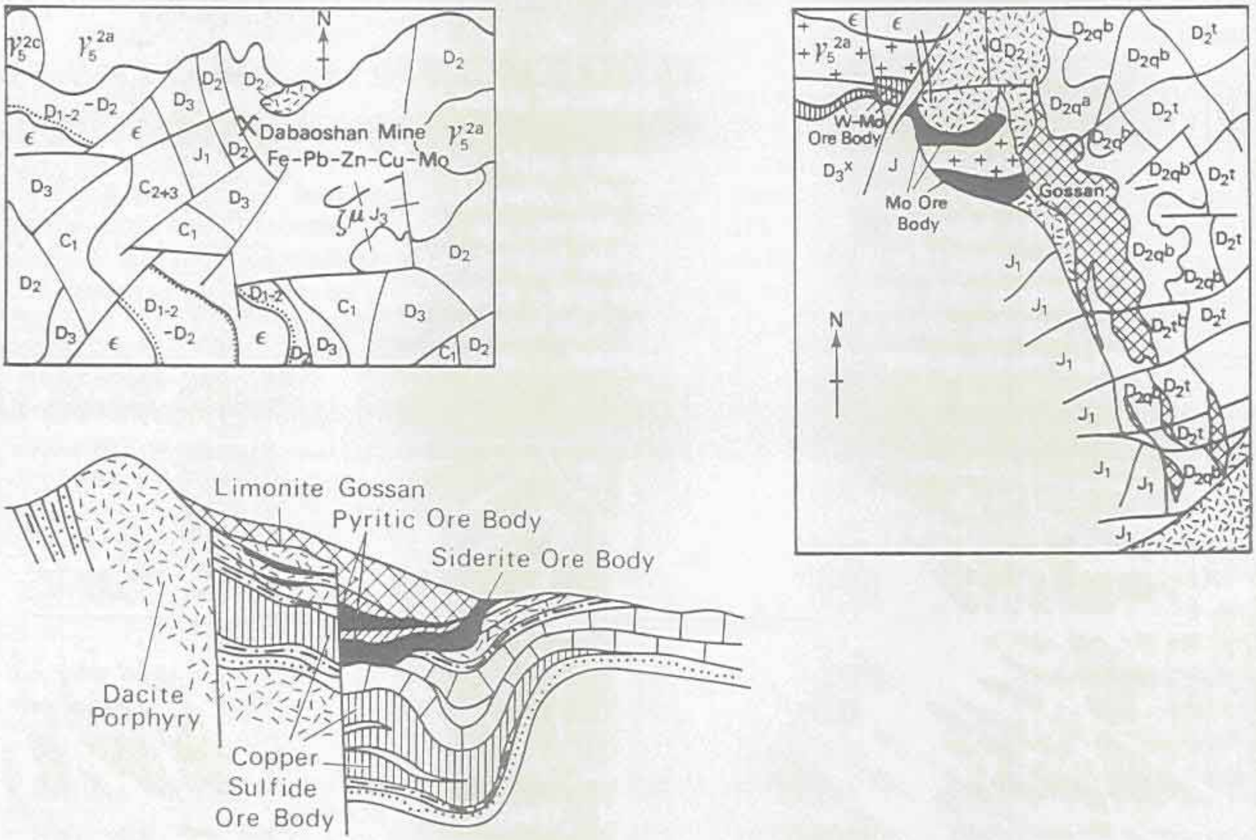


Figure 6 Sketch maps and cross section of the Dabaoshan Mine and ore bodies

Similar to Fankou, the ore body of Fandong is in Upper Devonian limestone, but they are located separately in the northern and southern limbs of the Northern Guangdong synclinorium. The ore body is massively laminated and lenticular in shape, and may be a sedimento-reformed iron ore deposit.

This mine is a very old, open-cut mine, copper being mined here about 1,000 years ago. The ore body is about 700 m above sea level. The exposure of the iron ore body at the surface is more than 2,000 m long and several metres wide, and the estimated thickness is more than 100 m.

Under the limonite is a polymetallic deposit of copper, lead and zinc. The syncline plunges to the northwest, where outcrops of chalcopyrite, galena, sphalerite and molybdenite can be found.

Lion Cave and Maba Man

Lion Cave is in the limestone karst residual hill of Lion Rock, near Fandong. The rock is of pure, compact limestone of the Middle to Upper Carboniferous. Fossils like Pseudoschwagerina sp. and Triticites sp. were found. Whereas many cracks evolved to form caves, the most important cause of cave formation was a northeast trending fault.

Maba Man is a type of ancient man who lived in these caves about 100,000 to 200,000 years ago. Fossils of Maba Man, as well as Ailuropoda sp., Stegoden sp., Hystrix sp. and Rhinoceros sp. were found in Lion Cave, making this cave one of the most important locations in South China to study the life of ancient man.

Postscript

This was a very successful geological field trip. On behalf of the GSHK, and of the participants in particular, we would like to thank the Institute of Geological Sciences of Guangdong Province, particularly Mr Chan Ting-kwong and Mr Nan Yee, for their warm reception and excellent arrangements. Also, we have to thank all the county authorities concerned who helped to make this a very successful trip.

Notice of forthcoming lectures:

GEOLOGY OF CHINA

Dr Zhang Bingxi
Ministry of Geology and Mineral Resources, Beijing

Dates: **Wednesday 13th, 20th and 27th April, 1988**

Venue: **Lecture Room, Ground Floor, Museum of History, Block 58, Kowloon Park**

Lecture Topics:

April 13th: Cenozoic tectonics of China - reactivation of older mobile belts; Development of Tertiary basins; Volcanic activity; Faults and earthquakes.

April 20th: Recent advances in understanding of the geology of the Qinghai-Tibet Plateau; Extent of Gondwana fragments in Western China.

April 27th: Different schools of thought on the tectonic history of China-recent developments.

The Speaker:

Dr Zhang Bingxi is Chief Geologist, Department of Science and Geology, Ministry of Geology and Mineral Resources, and Chairman of the Ministry's Advisory Committee for Science and Technology. During a wide-ranging career, Dr Zhang was Professor and Chairman of the Department of Geology and Exploration of Mineral Deposits, Beijing College of Geology for eight years before joining the Ministry of Geology in 1960.

In 1980-82, Dr Zhang went to the U.N. to head the Natural Resources Division of the Economic and Social Commission for Asia and the Pacific, in Bangkok.

Dr Zhang was educated at Beijing University and Harvard (Ph.D. 1950). He is a member of the Chinese Academy of Sciences (Academia Sinica) and is currently Vice-President of the International Union of Geological Sciences (IUGS).

Geological Society of Hong Kong Newsletter, Vol. 5(3), pp 8 - 12 (1987)

Geological notes on Sha Chau, Hong Kong

R.L. Langford

Geotechnical Control Office, Hong Kong

Introduction

Sha Chau is the largest of a chain of four islands, three of which are connected by sand bars. It lies about 5 km southwest of Castle Peak Power Station, western New Territories, Hong Kong (Figure 1). A fifth island, Tree Island, lies about 0.5 km to the north. Sha Chau consists of a low hill of granite 60 m high, and is about 500 m long and up to 300 m wide.

The island chain has been visited in the past by both geologists and archaeologists, as reported by Frost (1975). This report refers to the first joint Hong Kong Archaeological Society - Hong Kong Geological Society excursion on Sunday, 31 August, 1986.

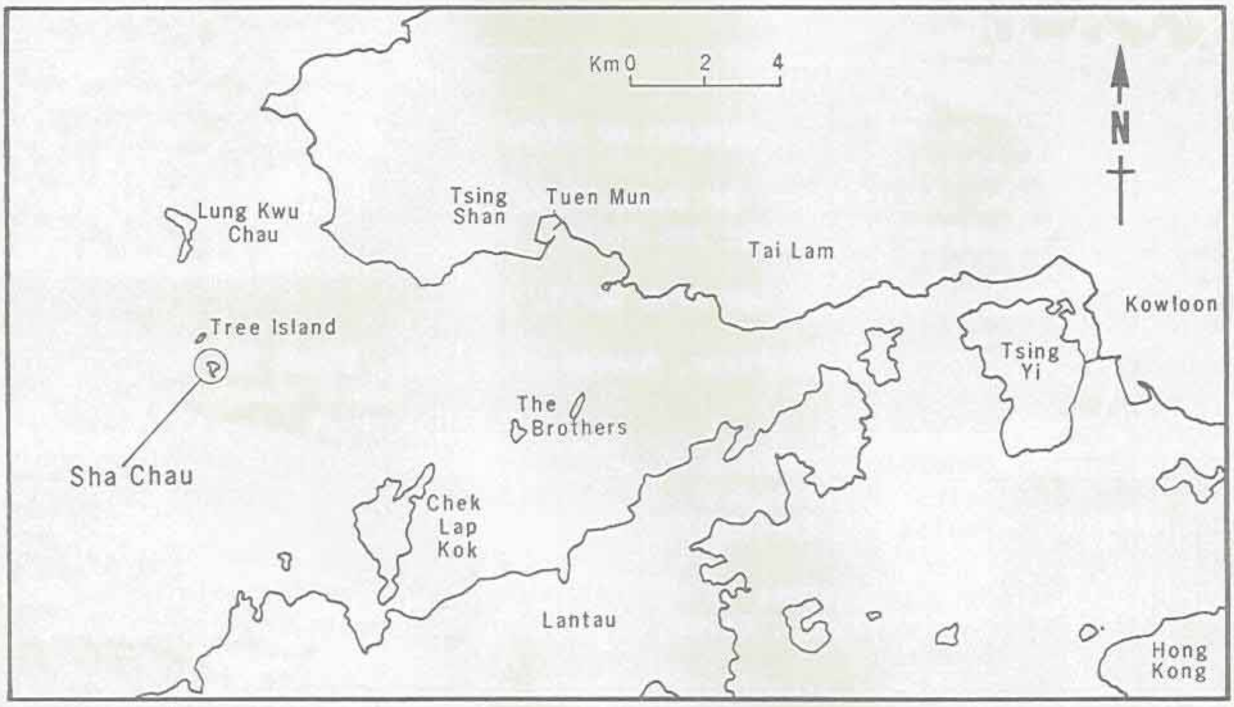


Figure 1 Location of the Sha Chau island chain in the western New Territories, Hong Kong

Previous work

The islands were noted for their dumb-bell shape by W. Schofield in the early part of the century (Schofield, 1920), and were reported as granite by Davis (1956). Mining of the quartz veins took place in the 1960s and 1970s, although at the time Prof. Davis at Hong Kong University thought the quartz was of sedimentary origin (written communication, November 1965). They were mapped as undifferentiated granite by Allen & Stephens (1971), who also recorded a marine sand and gravel bar connecting Sha Chau to a small northern island. Frost (1975) recorded that Sha Chau consists of granite intersected by a northwesterly-trending quartzite dyke about 1 m wide. He provided much detail on the superficial geology, largely related to the archaeological excavations, and noted the difficulty of interpreting the origin of the cobble colluvium (sic) at the northwest tip of Sha Chau. This he believed was created by marine reworking of hillside colluvium (sic), but also speculated that it might be a relict Pleistocene river deposit.

Physiography

Frost (1975) outlined the changes that occurred in the bars connecting the various islands of the group since they were first studied in the early part of the century. The continuous link between all four islands was broken after Schofield recorded it in 1938. In 1964 only two of the islands were connected by a sand bar, and this appears to be the situation when Frost visited. However, by 1982 another bar was developing to the north (Plate 1). By the time of the field excursion in 1986 the northern bar was complete, although probably only dry at low tide. The 1982 photograph also shows that this latest sand bar supports considerably more vegetation than in 1964.

A dyke-like feature is well seen on the 1964 photograph (Plate 1), trending northeast through the summit of Sha Chau. This photograph also shows extensive gullying, which by 1982 has largely stabilized and been covered by thick vegetation. The gullying almost certainly relates to the period of quartz vein mining which ended in the 1970s.

Geological features

The granite is coarse-grained, in parts megacrystic, with feldspars up to 50 mm, and is cut by fine-grained granite dykes, basalt dykes and quartz veins. Weathering features observed included block disintegration, tafoni, exfoliation and honeycomb structures. Drill holes were seen in the fresh rock on the most northerly island, and Frost (1975) gives an account of quarrying operations responsible for their formation.

The quartzite dyke noted by Frost (1975) is, in fact, a quartz vein, probably intruded along a fault zone, and sheared in parts. Sheared granite and basalt dykes were seen adjacent to the vein.

The bar extending north from Sha Chau is coarse sand, but offshore to both sides is a mud and cobbles deposit, with some coral. The clasts in the superficial deposits at the southern end of the main sand bar are locally derived granite, basalt and schistose granite. Oxidization and mottling were seen, with lateritized, cemented gravels at the base.

Frost (1975) noted that the raised beach (sand) deposit is 3000 to 4000 years old. He states that only the upper part of the underlying colluvium revealed any archaeological material, and was of the opinion that the main period of erosion of the granite, and therefore colluvium formation, was in the Pleistocene. The formation of this flat, terrace-like deposit provided a relatively stable site for settlement.

Discussion on the superficial deposits

The author believes that the distinction between an alluvial or mass wasting sequence is blurred in this sort of deposit. There are many areas of the northwest New Territories where Pleistocene debris flow deposits grade downslope into a terraced sequence of Pleistocene alluvium (Langford et al, in preparation). The deposits on Sha Chau probably fit into this category. They would therefore be Pleistocene, and can be correlated with the Pleistocene Chek Lap Kok Formation (Strange and Shaw, 1986) offshore. They have been eroded during the Holocene transgression, and the upper sand is probably a raised beach created during a slightly higher sea-level. Such raised beaches can be seen at Lung Kwu Tan and other places in the western New Territories (Langford et al, in preparation). The reworked material (cobbles and sand) from the Pleistocene debris flow deposit has been incorporated in the local Holocene sequence. It is likely that the cobble-strewn seabed to the west is the eroded top surface of this deposit. The sand bar and offshore grey mud are Holocene, the mud being typical of the Hang Hau Formation (Strange and Shaw, 1986).

Summary

Sha Chau clearly has geological and physiographic features that are important in understanding the archaeological sections found on the island. These sections have been eroded by marine action and possibly by gullying, but over the last 15 years the environment has been stable. There is evidence that the present beach deposits have grown in size in recent years.

The similarity in detail to other parts of the western New Territories leads to two conclusions. First, that the stratified cobble deposits of northern Sha Chau are the relict of Pleistocene debris flows which grade offshore into the alluvial Chek Lap Kok Formation found offshore beneath the grey muds. Second, that the raised sand beach is evidence of a slightly higher sea-level in the past 4000 years.

Acknowledgments

The author is grateful for all the comments and ideas freely given by members of the Geological Society of Hong Kong who visited Sha Chau in August, 1986 . Acknowledgment is made to the Director, Civil Engineering Services Department, for permission to publish this paper. Aerial photographs reproduced by courtesy of Director of Building and Lands, (c) Hong Kong Government.

References

ALLEN, P.M. & STEPHENS, E.A. (1971). *Report on the Geological Survey of Hong Kong, 1976-1969.* Government Press, Hong Kong. 107 p.

FROST, R.J. (1975). Sha Chau. *Journal of the Hong Kong Archaeological Society,* Vol. VI, pp 37-50.

LANGFORD, R.L., LAI, K.W., ARTHURTON, R.S. & SHAW, R. (in preparation). *Geology of the Western New Territories (1: 20 000 sheets 2,5 & 6).* Geotechnical Control Office, Hong Kong (Geological Survey Memoir No. 3)

SHAW, R. (1985). *Preliminary interpretation of the Quaternary stratigraphy of the eastern part of the Pearl River Estuary.* In *Marine Geology of Hong Kong and the Pearl River Mouth,* pp 61-67. WHITESIDE, P.G.D. and ARTHURTON, R.S.(editors). Geological Society of Hong Kong, Hong Kong, pp 61-67.

SCHOFIELD, W. (1920). Dumb-bell islands and peninsulas on the coast of South China. *Proceedings of the Liverpool Geological Society,* Vol. 13, pp 45-51.

STRANGE, P. J. & SHAW, R. (1986). *Geology of Hong Kong Island and Kowloon.* (1:20 000 sheets 11 & 15). Geotechnical Control Office, Hong Kong (Geological Survey Memoir No. 2). 134 pp.

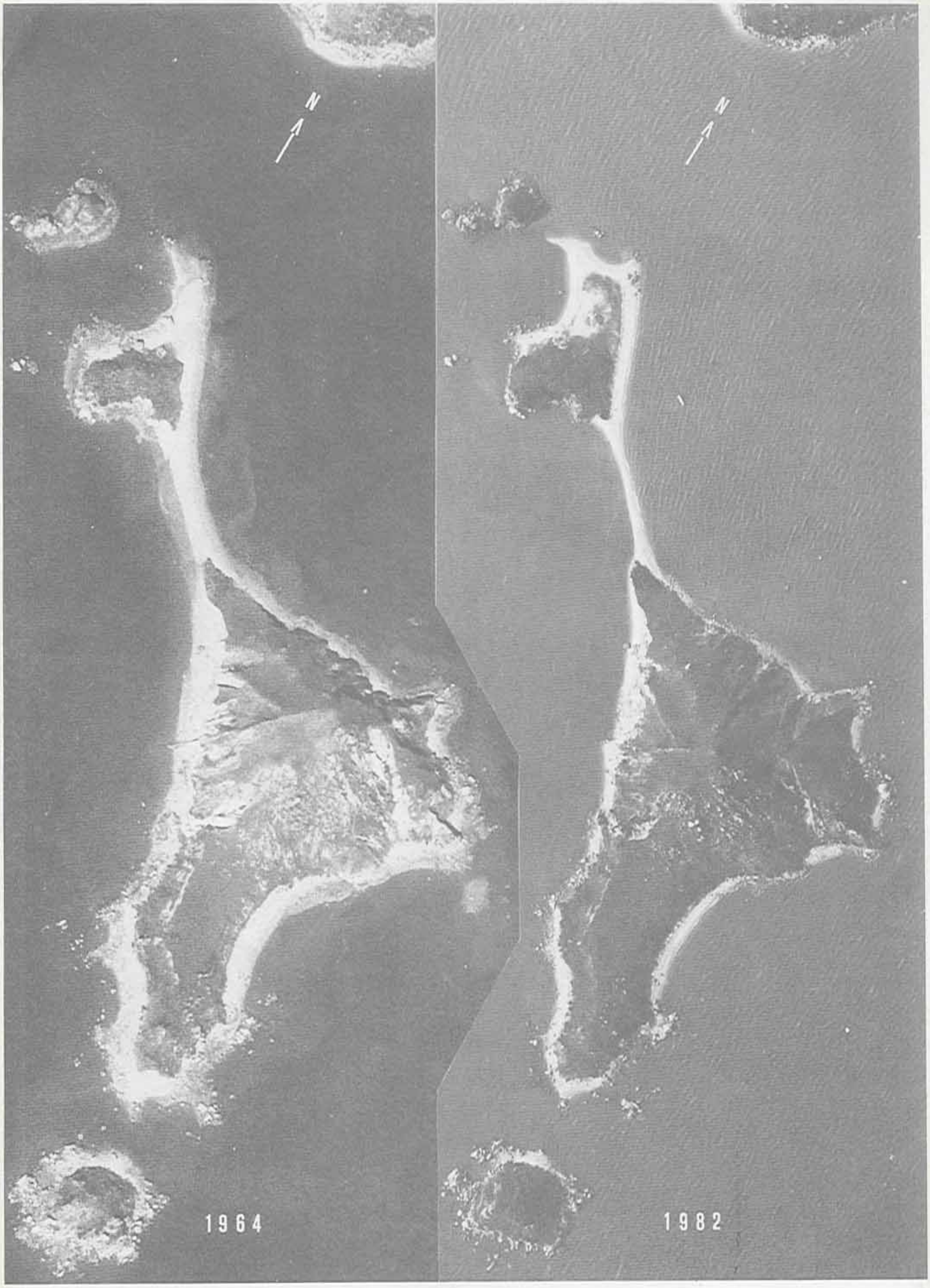


Plate 1 Aerial photographs of the Sha Chau island chain showing physiographic changes between 1964 and 1982 (scale 1:5 000).

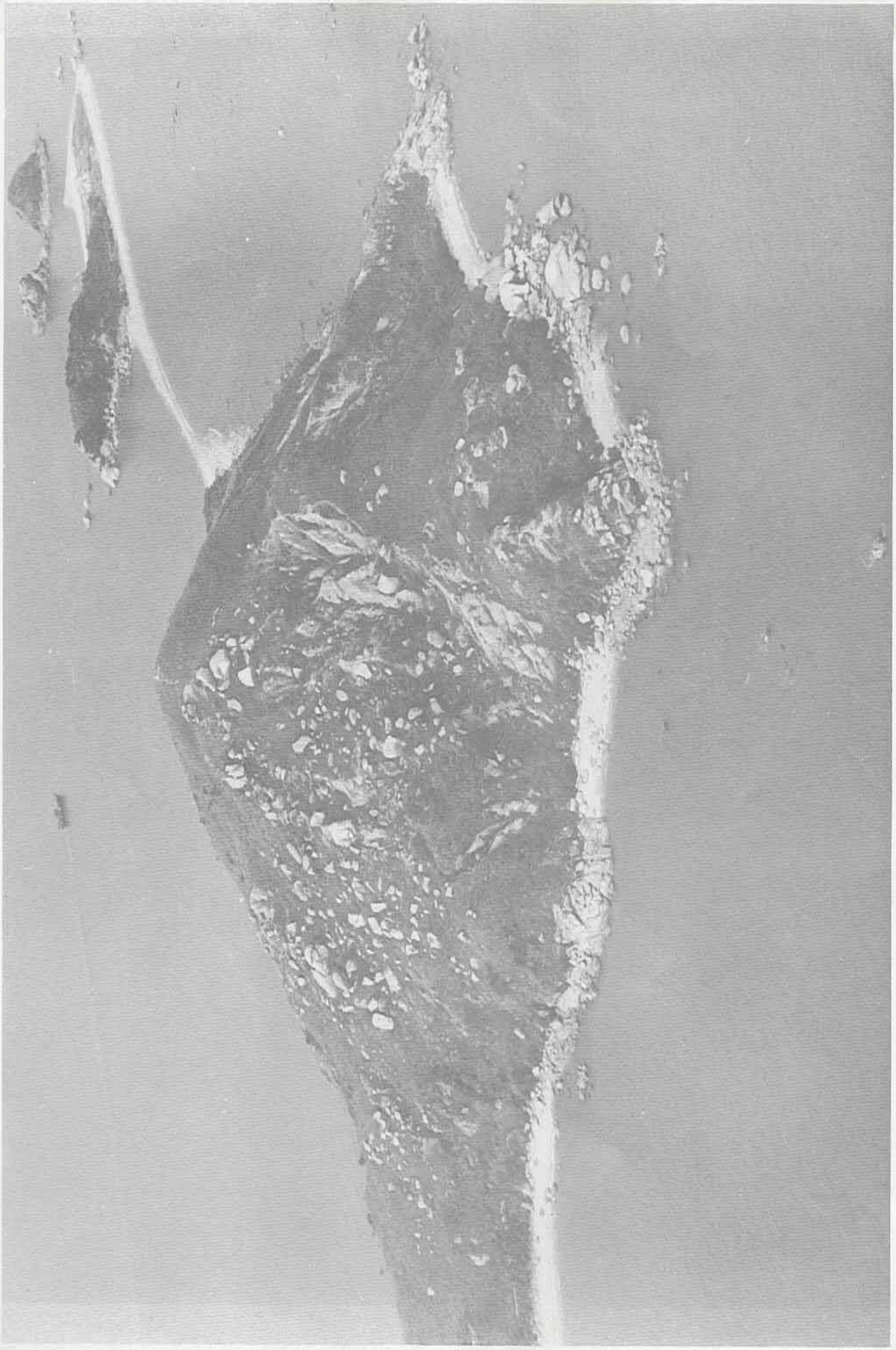


Plate 2 Sha Chau from the east, March 1987.

Geological Society of Hong Kong Newsletter, No. 5(3), pp 13-14, (1987)

A further discussion on the source of groundwater at Yuen Long

K.L. Siu

Freeman Fox (Far East) Limited, Hong Kong

The author's previous paper (Siu & Wong, 1985) contains the following discussion on the source of groundwater in the marble formation at Yuen Long:

> 'The main source of groundwater in the marble formation has not yet been identified. Because of the large amount of water extracted, it seems unlikely that the groundwater is connate water. It may be merely rainwater which has been infiltrating into marble rock through the alluvium and the sedimentary rock above, or through the jointing system in the marble rock formation which extends to other locations.'

Further information suggests that rainwater may not be the only source of the groundwater in the marble rock.

From November 1985 to March 1986, the author was involved in the study of groundwater for flushing purposes at one site in Yuen Long. Available information showed that eight boreholes had been drilled to depths of 34.5m to 57m below ground surface, and the ground comprised alluvium overlying decomposed porphyry, with a thin layer of fill covering the whole site. No bedrock was recorded in the borehole logs. However, one pale white rock fragment was described in the log of one borehole at a depth of -33 mPD. The groundwater table recorded was between 0.5m and 4m below ground surface, in the alluvial stratum.

It was decided to recover groundwater from the rock stratum in order to avoid building settlement and negative skin friction on piles. One location for a deep well was finally selected at the position where marble rock might be located beneath the porphyry, as indicated from an adjacent site. A bored well was sunk at this location to the depth of -68 mPD. Marble rock was encountered at the depth of -45.30 mPD. It was a pale grey and white fine-grained marble with joints and cavities. A 7-day pumping test indicated that the safe yield was at least 50 m^3 per day.

The groundwater was found to be clean without suspension of solids visible to the naked eye. Tests on the groundwater were also carried out and the results are given in Table 1.

The groundwater was very hard (Siu & Wong, 1985) and the hardness could not be removed by filtration of suspended matter. Note that the hardness and salt content increased with the duration of pumping. Compared with rainwater, the groundwater has a high content of chloride ions of 1.8 g/l, increasing to 2.2 g/l; but this is still not as high as seawater which is usually 18 g/l.

Although no further tests were carried out, it was suspected that seawater may have contributed to the source of groundwater within the marble formation. However, it is still not known as whether the seawater was trapped within the marble formation in geological time or has been communicated with groundwater through the conduit network in the marble. Some geologists also suggest that the water tested could be brackish water that exists in the aquifer, as opposed to mixed saline. Brackish water does not necessarily originate from sea water or connate water.

It is hoped that this short note will encourage further study and discussion about the source of the groundwater below the Yuen Long Plain.

Table 1 Composition of Groundwater

Date	Time of Sample	SO_3 (mg/l)	pH	Cl- (mg/l)	Total Hardness mg $CaCO_3$/l	Total Suspended Matter (mg/l)
2/2/86	am	192	7.34	1835	1697	47
2/2/86	am	-	-	-	1725*	-
2/2/86	pm	182	7.23	1856	1675	76
4/2/86	am	156	7.15	1830	1675	60
4/2/86	pm	166	7.20	1845	1692	50
7/2/86	am	248	7.03	2267	2001	39
7/2/86	pm	220	6.96	2272	2056	33

Notes 1. * = after filtration of suspended matter.
2. am = sample taken in the morning,
pm = sample taken in the afternoon.

Reference

SIU, K.L. & WONG K.M. (1985). Concealed marble at Yuen Long. *Proceeding of the Conference on Geological Aspects of Site Investigation*, Hong Kong. (Published as *Geological Society of Hong Kong, Bulletin* No. 2), pp 75-88.

Field trip to Tai O and Sha Lo Wan, Lantau Island

Date: **Sunday, 1st May 1988**

Leaders: **D. Workman and P.S. Nau**

Bring your own lunch

Geological features: This trip aims to study the coastal section of the Tai O Formation between Tai O and Sham Wat. Features of note include sedimentary structures, and folded and faulted strata. Colluvial and waterlain deposits will be inspected near Po Chue Tam (Tai O). Metamorphism of the granite contact with the Tai O Formation can be seen at San Shek Wan.

Transport: Take HYF ferry from Central to Tai O, leaving Central at 8.15am. This ferry calls at Tuen Mun at 9.40am, it is possible for late risers to take a later HYF hoverferry from Blake Pier (Central) to Tuen Mun, overtaking the Tai O ferry en route to Tuen Mun!

Anyone wishing to go to Tai O by other means, e.g. via Mui Wo (Silvermine Bay), can meet the group at Tai O Market Street (outside the Hongkong Bank, at the hand-operated ferry in the centre of the village) at 11.00am.

Cancellation: Unless the weather is so bad that a prior decision has been made to cancel the trip, a decision will be made upon arrival at Tuen Mun whether to proceed on to Tai O or not. If the weather is bad, prospective party members making their own way to Tai O should use their own judgement.

Return Travel: The trip will end at Sha Lo Wan. Ferries from Sha Lo Wan:
(i) depart 3.30pm, terminating at Tuen Mun 4.10. Note that a HYF hoverferry connection can be made to Central.
(ii) depart 6.00pm, arrive at Tuen Mun 6.40pm, continuing on to Central, arriving at 8.20pm.

Those who wish to catch the 3.30pm ferry will be able to do so, but might have to go straight to Sha Lo Wan from Sham Wat, missing out on the San Shek Wan stop. It is also possible to return via the coastal path to Tai O.

The Geological Society has received the following two items from the GCO:

GEOTECHNICAL CONTROL OFFICE

PUBLICATION OF THE GUIDE TO SITE INVESTIGATION

The second of a series of Geoguides relating to geotechnical engineering in Hong Kong is now available to the public.

The Guide to Site Investigation (Geoguide 2), which has been produced by the Geotechnical Control Office (GCO), presents a recommended standard of good practice for site investigation in Hong Kong. The Geoguide is based on the British Standard BS 5930 : 1981, Code of Practice for Site Investigations, but the recommendations in the British Standard have been updated and partially rewritten to suit local conditions and practices. It has been produced after wide consultation throughout the public and private sectors of the industry.

The Geoguide is divided into five main parts. These cover general aspects of site selection, planning the ground investigation, methods of ground investigation such as excavation, boring and sampling, field and laboratory testing and the preparation of reports. It describes suitable ways of carrying out investigations both on land and offshore and is applicable to all types of rock and soil conditions found within the Territory.

The Geoguide will be invaluable to engineers, geologists and architects involved with the planning, execution and supervision of site investigations for engineering projects and building works. Because of its comprehensive coverage of site investigation methods, it should also be of interest to environmental scientists, planners, teachers and academics.

The 362 page document, which includes an extremely useful appendix on sources of information, is available from :

Government Publications Centre,
General Post Office Building,
Ground Floor,
Connaught Place,
Hong Kong.

Overseas orders should be placed with :

Publications (Sales) Office,
Information Services Department,
1, Battery Path,
Central,
Hong Kong.

Price in Hong Kong : HK$40
Overseas orders : US$9 (including surface postage)

ISBN 962-02-0060-8

For further information on the Geoguides, please contact :

Principal Government Geotechnical Engineer,
Geotechnical Control Office,
6th Floor, Empire Centre,
68, Mody Road,
Tsim Sha Tsui East,
Hong Kong.

The following press release was issued by the Geotechnical Control Office:

Geological maps of marble in the Yuen Long area

Considerable publicity has recently been given to the presence of marble beneath the alluvial plains of the Northwest New Territories. The marble is covered by many metres of superficial deposits. Cavities have been found in boreholes and piles into the marble in Yuen Long, and some of these cavities are known to be large. This has an important bearing on the planning, design and construction of large buildings in the area.

A major geological mapping project is now underway by the Geological Survey Section of the Geotechnical Control Office. The area to be covered is referred to as the 'Designated Area' of the Northwest New Territories (Figure 1). The Designated Area is the area which it is thought could be partly underlain by marble, based on the interpretation of the regional geology. The outline of the Designated Area may change as further geological information becomes available.

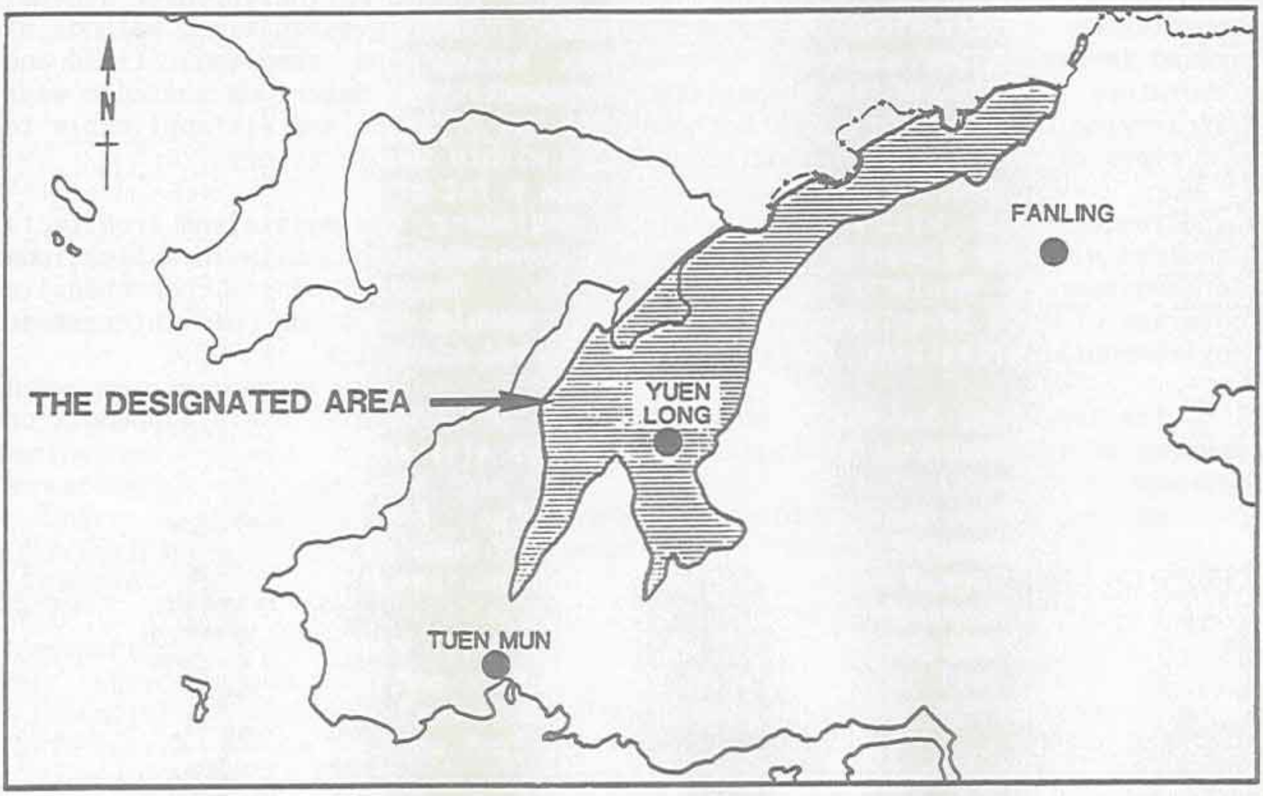


Figure 1 The Designated Area in the Northwest New Territories

The geological mapping project involves the drilling of deep boreholes and the assessment of existing borehole data. It will result in a series of detailed geological maps (Figure 2) based on the 1:5 000 series of existing topographical maps. These new geological maps will contain information on the areas of reclamation or fill, the types of superficial deposits, the types of bedrock, and the areas of marble known to contain cavities.

The maps will be produced over the next eighteen months, with priority being given to the Yuen Long town area. The lowest priority will be given to areas where there is a high probability that marble will not be found. All the maps will be prepared as line drawings, for speedy production, and it is hoped that the Yuen Long sheet will be in this form by the middle of 1988. The Yuen Long sheet will later be produced as a printed coloured map, with publication scheduled for April 1989.

In addition to the published 1:5 000 scale geological maps, the geological survey will produce a series of 1:1 000 and 1:5 000 scale data maps showing the locations of boreholes used in compiling the geological maps. The borehole records may be inspected at the Geotechnical Information Unit of the GCO housed in the Civil Engineering Library in the Empire Centre, East Tsim Sha Tsui. The data will provide a valuable source of information and will enable practitioners to make their own interpretations of existing borehole records within the area

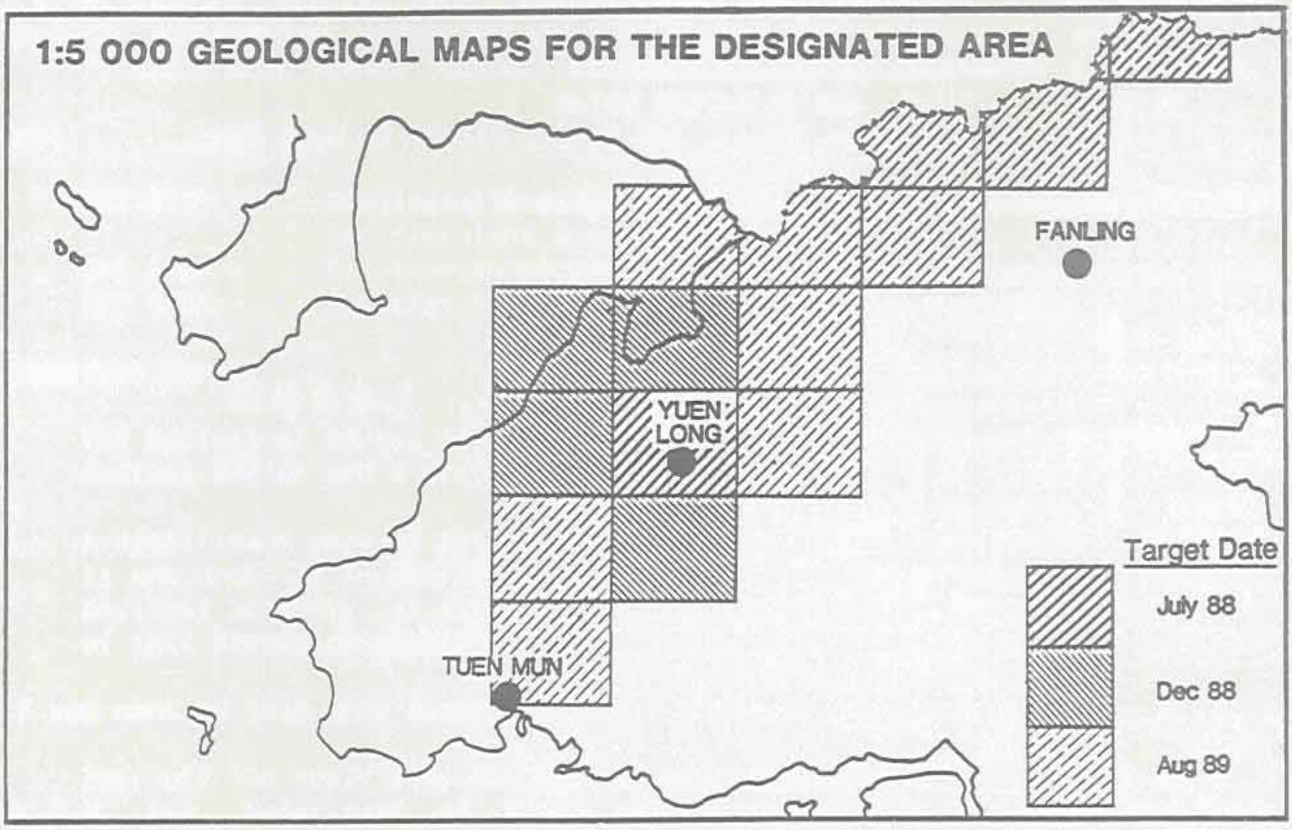


Figure 2 1:5 000 scale maps for the Designated Area

Field Excursion to the Tibetan Plateau

Organisations involved:

GSHK, in cooperation with the Geological Academy of China and the Geological Bureau of Tibet.

Proposed dates:

20 days, during late July to early August. This will include:

- 2 days - travelling from Hong Kong, via Guangzhou and Chingdu, Sichuan Province, to Lhasa.
- 20 days - in Tibet, see itinerary below.
- 3 days - in Kathmandu, Nepal, and return flight to Hong Kong.

Itinerary (Refer to the map of the excursion on page 19):

Hong Kong - Guangzhou 廣州
- Chingdu 成都

Tibet
- Lhasa 拉薩
- Yangbaching 羊八井
- Nienchingtangla Mountain (7 088 metres) 念青唐拉山
- Machang (Tuilungtechim) 麻江
- Wuyu 烏于
- Jihkatse (Shigatse) 日喀則
- Latzu (Chuhsa) 拉孜
- Tingjih (Hseihkoerh-Shekar) 定日 (協格爾)
- Tingri 定日
- Hsihsiapangma Peak (8 012 metres) 希夏邦馬峰
- Niehlamu (Chungtui) 聶拉木
- Changmu 樟木

Nepal
- Kondari
- Kathmandu
- Hong Kong 香港

Numbers limit:

There is a limit of 20 only. GSHK members will have the first choice, first come, first served.

BOOKING FORM: Geological Excursion to the Tibetan Plateau

To: Mr C.M. Lee, Department of Civil & Structural Engineering, Hong Kong Polytechnic, telephone 3-638344, ext 591. Return by 30th April 1988.
I wish to reserve ... place(s) on this geological excursion.

Name (English and Chinese) : ______________________ Sex ___ . Age ___.

Profession & Employment : ______________________________________.

Organisation : __________________________. Office tel. : __________.

Contact Address : _______________________________________.

__________________________________. Resid. tele. : __________.

Nationality of Passport ____________________. Passport No. : __________.

Home Visit Certificate No. : ___________________________________.

Content of Tibetan Excursion:

1. Lhasa - Visit the Butala Palace (布達拉宮), Dazhao Temple (大昭寺), etc.
2. Yangbaching (羊八井) - geothermal field and geothermal power station, about 100 km north of Lhasa.
3. Nienchingtangla Mountain and stone deserts, north of Lhasa.
4. Suture line between the Eurasian Plate and the Indian Plate, and its ophiolite series along the Yaluzhangbu River.
5. Himalayan geology, tectonic movement and magmatism of the Great Himalayas.
6. Glacier, glacial lake, debris flows and morphology of the Himalayan Plateau.
7. Visit some famous temples, antiquities, and do some other sightseeing.

Cost:

HK$ 2500.-	for travelling Hong Kong to Lhasa, via Guangzhou, Chingdu and overnight accommodation;
HK$ 7500.-	for Tibetan excursion;
HK$ 4000.-	for stay in Kathmandu, and flight to Hong Kong.

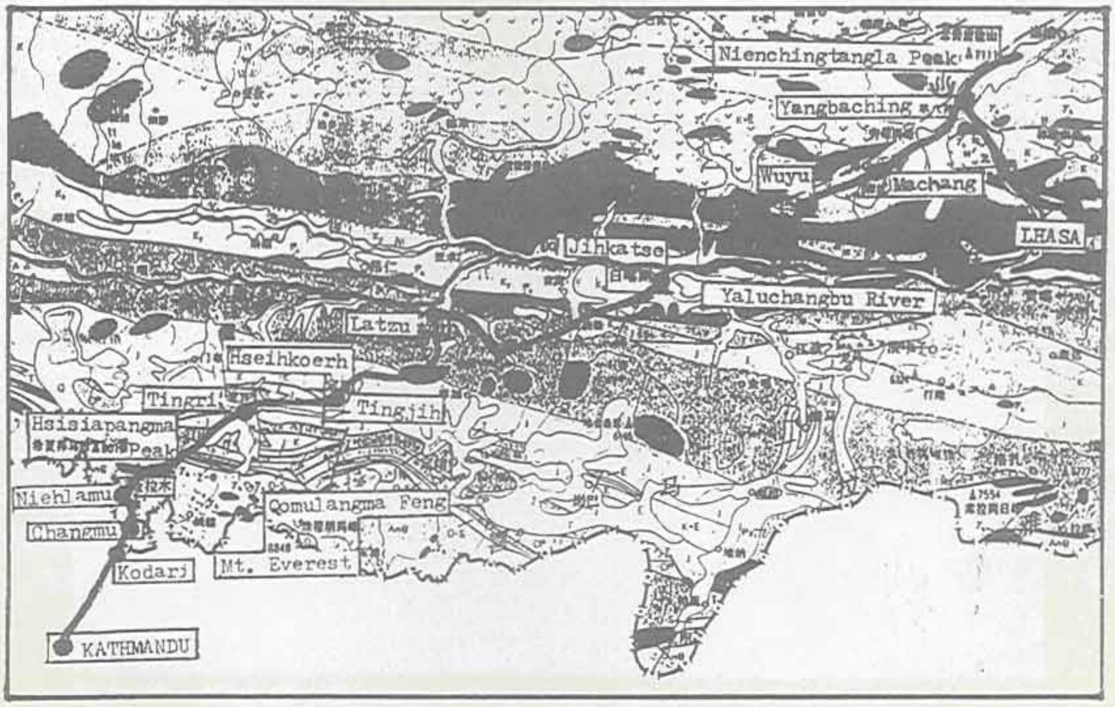
Important notes:

1. The Geological Bureau of Tibet will provide 1 leader, 1 geologist, 1 medical doctor and 2 drivers.

2. A significant part of this excursion will visit high altitudes. If there is any doubt as to health, or ability to undertake reasonably strenuous physical activity at altitude, it is important that prospective members of this excursion seek medical advice.

If you want to join this excursion:

Tear off the reply slip on page 18, and return the completed slip to: **Mr C.M. Lee, Department of Civil and Structural Engineering, Hong Kong Polytechnic**, as soon as possible, and by **30th April, 1988 at the latest. It is also advisable to contact Mr Lee directly by telephone, to register your interest, telephone number: 3-638344, ext. 591**



Map of the proposed route for the Tibetan Excursion (see notice opposite)

元朗區的大理岩地質圖

最近在元朗區發現有溶洞大理岩的問題後，土力工程處爲了盡量協助在新界西北部進行工程的私人發展商及政府部門，一直致力於搜集有關的地質和岩土資料。土力工程處今日發表的資料，便是介紹該處在元朗一帶進行詳細地質圖測繪工作的概況。

數月前，該處曾宣佈在新界西北部沖積平原底下證實存有大理岩。這些地方的大理岩爲厚層的地表沉積所覆蓋。在元朗從一些打入大理岩的鑽孔和樁柱中，更發現有溶洞的存在，其中有些溶洞還很大。對區內大型建築物的規劃、設計和興建，都有極大的影響。

土力工程處轄下的地質測量組爲了確定大理岩的位置，正進行一項大規模的地質圖測繪工作。計劃包括的地區稱爲新界西北部「指定地區」(附圖一，請參照第十六頁)。根據區域地質資料作出的推斷，部份「指定地區」的地下可能有大理岩。如發現新的地質資料，「指定地區」的範圍可能需作修改。

地質圖測繪工作包括深孔鑽探，和對現有鑽孔資料的評估。獲得的資料會繪製成一系列比例爲一比五千的詳細地質圖(附圖二，請參照第十七頁)。新的地質圖會包括填土範圍、不同類型的地表沉積和基岩，以及查明存有溶洞的大理岩地區等方面的資料。

地質圖測繪工作會在十八個月內完成，獲得優先處理的是元朗市區，稍後是那些不大可能發現有大理岩的地區。爲儘快完成測繪工作，所有這些地質圖先以黑白圖形式繪製，而元朗市區的黑白地質圖可望在一九八八年中完成，稍後會印製成彩色圖，並計劃在一九八九年四月出版。

除出版比例爲一比五千的地質圖外，地質測量組還會繪製一系列比例爲一比一千和一比五千的實際材料圖，列出在繪製地質圖時所用的各個鑽孔的位置。尖沙咀東部帝國中心土木工程圖書館內的土力工程處岩土工程資料室，亦備有鑽孔編錄資料，可供查閱。這些資料極爲有用，可供業內人士參考，讓他們能夠利用該區的鑽孔紀錄進行有關的分析研究。

九龍尖沙咀東部帝國中心 6 樓
土木工程署
土力工程處

一九八八年二月

後記

結束了粵北的地質旅行，大寶山礦長朱明洲先生於中午設盛宴歡送我們，席上山珍野味盛情款待，我們十分感謝。

下午一時自大寶山啓程，經翁城、英德、從化，於晚上八時半抵廣州，廣東省地質局周德壁副局長及研究所劉公民所長及周樹強總工程師等已在酒店等候並設宴爲我們洗塵。

二十五日早乘車到深圳，於下午二時過關回到香港。

這次地質旅行，按計劃如期順利完成，有賴于廣東省地質局及研究所精巧的安排，特別是陳挺光、南頤兩位先生親力親爲，一直陪同我們安排食宿，並沿途介紹地質地貌，風土人情，名勝古蹟，使我們收獲不少，我們謹致衷心感謝。同時感謝各縣政府的熱情款待，感謝廣東省地質局周德壁先生，大寶山礦長朱明洲先生，仁化縣侯振杰副縣長及南雄縣科委主任，凡口礦林紹標工程師及凡洞礦陳炳泉先生等。

Plate 3 Took a photo with Mr. Zhu Min-Zhou, the Director of Da Bao Shan Mine
圖片三 與大寶山礦礦長朱明洲先生等留影合照

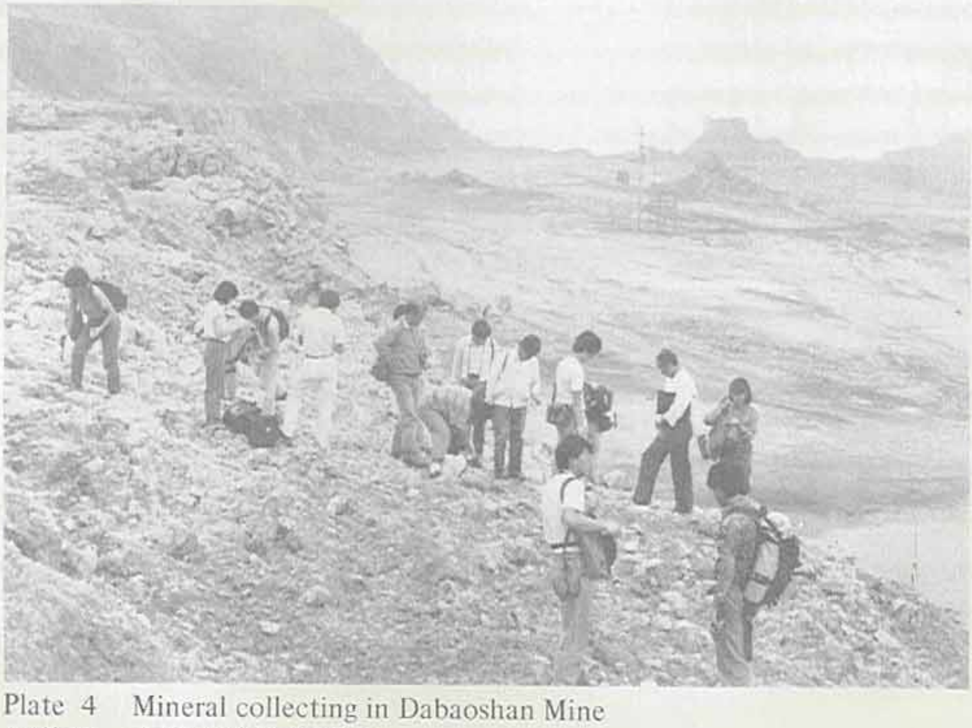


Plate 4 Mineral collecting in Dabaoshan Mine
圖片四 大寶山礦採集標本

九、梅嶺、鐘鼓和珠璣岩

二十二日早乘車向北訪距南雄縣城四十五公里的粵贛交界的梅嶺。嶺上有一關口，古稱秦關，又名橫浦關，世人一般稱之爲梅關，它是全中國保存最佳的古代官道，又稱紅梅驛道，爲古人上京考試必經之路，據說秦始皇三年，第一次在此築起關隘。

古道據說是唐開元年間廣東韶關籍著名首相張九齡主持開鑿梅關的隘口和驛道，關山口最高處達三十多米，路寬五米，工程浩大，如今仍見卵石路寬2－3米。隘口現存的朝向嶺南的門額上鐫「嶺南第一關」，登關樓而遠眺，五嶺逶迤，北望江西廣濶盆地，煙嵐縹緲，風景雄奇。

在南雄城北十公里處，還訪問了已有一千一百多年歷史的著名的珠璣巷。相傳南宋自中原南遷至珠璣巷的三十三姓，九十七戶人家因避難再遷至廣州一帶，聞說廣州的珠璣路及珠江三角洲的居民均是他們的後裔。

下午啓程南下，途經南華寺。

十、曲江南華古寺

南華寺距曲江縣南約十公里，是中國著名佛教四大名刹之一，始建于南北朝梁武帝天監元年，至今已有一千五百年的歷史了。

南華寺殿宇屬古代建築，歷代幾經修葺，全寺建築面積一萬二千平方米，寺後有卓錫泉，水流終年不絕，寶林中，古樹繁茂，特別是幾株稀有的「活化石」古老水松，生長期已有數百年，高數十丈，直插雲天。寺中有「六祖殿」，殿堂中坐者爲六祖眞身，左邊爲明代德清和尚眞身，右邊爲明代丹田和尚眞身。南華寺至今香火不絕。

這座千年古刹還珍藏着許多有價值的歷史文物，如古建築、碑銘、玉雕、泥塑、刺綉、隋唐鐵鑄「天女」立像，北宋木雕羅漢，南宋萬斤大銅鐘；還有清代千佛鐵塔，都十分珍貴。

結束參觀，便向南繼續進發到大寶山鐵礦。

十一、凡洞大寶山露天鐵礦

大寶山鐵礦山位於南華寺以南十多公里，抵達礦山總部時受礦長朱明洲先生等領導的隆重歡迎（圖片三及四）。

二十三日早礦山主任地質師陳炳泉工程師介紹了礦山地質及生產概況，並帶我們參觀了礦區開發及礦石生產流程，並贈送每人精緻的礦石標本。

礦區出露寒武系，下、中泥盆統碎屑岩，上泥盆統石灰岩，火山岩及燕山期花崗岩侵入體。礦體賦存于上泥盆統灰岩之中，與凡口鉛鋅礦賦存條件相類似，在構造位置上，凡口礦與大寶山礦礦體分別賦存於粵北複式向斜的北、南兩翼，呈大型層狀及透鏡體狀，可能是沉積一改造型鐵礦床類型（圖六)。該礦古已開採，一度爲古代採銅重要產地之一。

礦體海拔七百米，目前主要開採對象僅僅是氧化帶的褐鐵礦，屬露天鐵帽礦床，長二千多米，品位富達百分之五十，儲量二億多噸，目前年產鐵礦數百萬噸。其他有用礦產爲銅、鉛、鋅和鉬，尚未開採利用。我們參觀了露天採礦和礦山生產流程，包括破碎、分選、輸送等，除鐵索道外，礦石以火車輸送到全國各地。

十二、馬壩獅子岩及馬壩古人

二十四日早，我們前往曲江縣城(馬壩)西南一公里處的獅子岩及馬壩古人陳列館。“馬壩人”遺址是重點文物保護單位，“馬壩人”已聞名中外，爲人類發展史上重要階段的古人。

獅子山是由獅頭峯與獅尾峯兩座石灰岩喀斯特孤峯組成裸露石岩，岩石屬質純而緻密的中上石灰紀石灰岩，山崖發育大小裂隙，溶洞縱橫，洞境高大、寬濶，可容數百至數千人，這些冬暖夏涼的洞穴，正是若干萬年前古人類棲生的天然居所，又妥善保護他們的遺物、遺址。馬壩古人就在這裡留下了珍貴的遺產——化石。

被發現的馬壩人化石，主要是頭部顱頂蓋，額骨、頂骨右眼眶和鼻骨的大部份。同時還發現大熊貓、劍齒象、豪猪及犀牛等十幾種動物化石。根據人骨體質形態特徵和共生的動物群判斷，這頭骨的年代距今一、二十萬年，屬舊石器時代中期的人類。

下中泥盆統分上下兩組，下部爲楊溪群，底礫岩以明顯的角度不整合覆于震旦系紫紅色含綠簾石砂岩與板岩三層之上，礫岩成份複雜，其上爲紫色褐礦質中細粒砂岩，厚約 300 米，上部爲中泥盆統老虎頭組，下有灰白色石英質礫岩，往上爲砂岩，含泥質砂岩，漸變爲砂岩與砂質泥岩之互層，厚度大於三百米，中上部有三個化石層。我們採集了古植物化石和很好的溝鱗魚化石，有完整的頭部骨片，背骨片，鰭骨片等，極爲珍貴。

六、凡口地下鉛鋅礦

下午四時許，乘車直奔仁化縣的凡口鉛鋅礦，受到礦領導的歡迎，當晚主任地質師林紹標先生介紹了礦山地質及礦石生產流程等。

凡口鉛鋅礦位于廣東省韶關市東北四十多公里，是中國有色金屬工業總公司所屬的最大型鉛鋅採選企業，礦山于一九五六年開始勘探，一九六五年開始礦山建設，年產精礦鉛鋅金屬含量十二萬噸。

礦床賦存于晚泥盆紀灰岩之中，屬沉積一改造型層控礦床，礦體厚大，形態複雜(圖四)。礦石儲量大，品位高，除富含鉛、鋅、硫、銀外，尚有鍺、鎵、鎘、汞等多種伴生組分，可綜合開採。

翌晨我們換上工作服，由林先生帶領參觀地下二百四十米的礦坑，實地參觀了鉛鋅的開採，礦山採用中央豎井集中開拓，初期採用上向分層充填法和淺孔留礦法回採。近年運用機械化盤區分層充填採礦法和大直徑深孔崩礦法生產，同時引進了大型的鏟運機，大直徑潛孔鑽機等先進採礦設備，使採礦技術大爲提高。

下午參觀了地面上的礦山生產流程和選礦廠。

林紹標先生代表礦山贈送我們精緻的礦石標本。

下午三時許，結束凡口鉛鋅礦的訪問，然後抵仁化縣城。

七、丹霞地貌

二十日晨仁化縣政府李小姐帶領我們遊覽了丹霞山。

丹霞山位于仁化縣南約九公里，是和羅浮、西樵、鼎湖等齊名，素有"廣東四大名山"之稱，以"奇、險、美"著稱，丹霞山山上有三峰、九岩、十二景以及古剎、錦石岩，分上中下三層，上層有助老峰、海螺峰；中層爲別傳古剎；下層是錦岩洞天，沿錦江還有茶壺峰、姊妹峰等幾處奇峰異石。

我們由丹霞山大門北入，經寺觀門，看一線天，上別傳寺，二關門，澹歸和尚墓，至觀日亭，在那裡俯瞰丹霞全景，丹霞山那深淺顏色不同的紅色岩層，加上山上的層層林海，如同一幅層次分明的山水畫，接著我們上海螺峰、螺頂浮屠，轉回半山亭，參觀剛修葺的丹霞古剎，向西經夢覺天，幽洞迴天，天外一線，尼姑庵到錦石懸崖。

下山後乘遊艇暢遊錦江，沿江兩岸峭壁陡崖，襯托層層重叠的丹山碧水，眞是美不勝收。

丹霞山主要岩石爲白堊紀至早第三紀紅色碎屑岩，由厚層狀礫岩與砂岩相間成層，夾細砂岩或粉砂岩，下部爲南雄群，此後地殼逐漸上升隆起形成如今孤峰林立陡崖獨特的地貌形態。其形成主要以機械風化剝蝕作用爲主，與桂林岩溶喀斯特地形以化學溶解爲主廻然有別。這裡是岩石內部存在近于垂直的裂隙，加以岩石的鈣質膠結物，受到水的侵蝕，岩石體沿裂隙逐漸裂開以致分離、崩塌、經年累月，就變成了兩壁陡峻，孤峰屹立、谷底平坦狹窄的雄偉景觀，這種地貌在中國甚爲特殊，命名爲丹霞地貌。

遊罷丹霞山，仁化縣侯振杰副縣長在午餐中熱情地會見了我們，下午我們乘車到達南雄縣。

八、南雄恐龍蛋

南雄縣位于大庾嶺南麓，湞、淩兩江合流之處，已有一千二百多年的歷史，在海路、鐵路未通前，是南北交通要道。我們在南雄縣城湞江南岸，參觀了恐龍蛋產地，這裡發育的紅層爲上白堊統南雄群棕紅、紫紅色砂礫岩、砂岩、中夾泥質粉砂岩、泥質砂岩及粉砂質岩，間夾綠灰色砂岩及泥質砂岩、泥岩(圖五)，南雄群在南雄盆地自南向北是單面山緩傾斜，在紅層以及灰綠色夾層中，存恐龍化石，恐龍蛋，介形類及輪藻化石。當晚在南雄縣科學技術委員會主任及發展公司經理的帶領下，還參觀了南雄博物館，闢有恐龍陳列室，有很多恐龍及恐龍蛋的化石及模型，南雄盆地已多處發現恐龍及恐龍蛋化石，可稱爲廣東恐龍之鄉，被中外學者所重視。

粵北地質旅行紀實

李作明　廖國雄

我會十七位成員參加了由廣東省地質科學研究所與我會聯合主辦的粵北地質旅行，由四月十六日至廿五日途經韶關市及十個縣，參觀了兩個大礦山；觀察了泥盆系及白堊系等地層剖面，採集了礦石標本及有意義的化石，參觀了馬壩古人遺址；丹霞地貌，還參觀了名勝古跡，收獲不小(圖一)。

一、粵湖交界——坪石

四月十六日，全體成員於下午五時乘火車經深圳轉穗，廣東省地質局研究所劉公民所長、王文校副所長，周樹強總工程師及陳挺光工程師在車站熱情迎接我們。

翌晨乘火車北上，在韶關以北看見了當時快要打通的中國最長的火車複線隧道——長達 14km 的大瑤山隧道。下午二時許抵粵湘交界的坪石，受到廣東省地質科學研究所南頤工程師的熱烈歡迎，並帶領我們參觀了坪石鎮及橫跨武水的鐵索橋。

二、金鷄嶺登高

十八日早，我們登金鷄嶺，金鷄嶺位于坪石以東，因嶺上屹立着一塊維肖維妙的"金鷄石"而得名，是廣東八大名勝之一，山高 338 米，四周懸崖如刀削，垂直石壁高達 130 米，只能沿幾條小道蜿蜒而上，上山的隘口均築有城牆古寨，嶺上巨石崢嶸，百態千姿(圖片一)。我們參觀了東門，一字峰，一點天，海螺峰，摩崖石雕，百步梯，金鷄石，笑佛等勝景和紀念太平天國駐守金鷄嶺的女將洪宣嬌的雕像，宣嬌閣，練兵場和勝清亭。

"金鷄石"鷄身長20.8米，高8.4米，寬3.8米，昂首北望，尾朝南方，引頸欲啼，它是第三紀始新世的紅層組成(最近則認爲屬晚白堊世)，是遭受長期風化作用的結果。

金鷄嶺坪石一帶，在中生代侏羅紀，形成狹長盆地，到白堊紀時，盆地沉積了南雄群的紅色砂岩、砂礫岩、厚達七百米，到第三紀時，沉積了厚層鈣質砂岩與中粒交錯層砂岩夾礫石透鏡體，總厚近四百米，通稱丹霞群。到第四紀時盆地處于上升剝蝕階段，岩層垂直節理發育，所含鈣質易于溶解，長期地風化剝蝕，發育今天的紅層"岩溶"景觀。即常稱之丹霞地貌。

三、上泥盆統剖面及化石採集

下午乘火車南下樂昌，再乘車到達西崗寨，觀察了上泥盆統灰岩，特別是下部佘田橋組深灰色含疊層石藻類生物碎屑泥晶灰岩及核形石灰岩，我們採集了大量珊瑚化石，還有腕足類、腹足類及藻類礁石灰岩標本等(圖二及圖片二)。

四、古佛岩喀斯特勝景

十九日早前往樂昌西南五公里處的古佛岩——一個規模較大的石灰岩溶洞，洞口建有古佛寺，因而得名。

古佛岩的溶洞，最高處有三十米，最寬處四十餘米，總面積一萬多平方米，洞內常年氣溫保持在19－20℃，洞內風景有玉皇、西遊、逍遙三宮，及古佛、觀音、王母、金龍四殿，層次分明，廊廻路轉，遊程五百七十米。各式石筍、石花、石柱、石鐘乳、石幔，或挿其中，或懸其上，景象萬千，色彩斑斕，景緻交錯，蔚爲奇觀，其中還有罕見的大型石腦，亦堪稱一絕。最低層卵石遍地，說明溶洞曾發展成地下河流。

古佛岩發育於上泥盆統石灰岩中，岩溶順裂隙及層理發育，約一百萬年以來，地殼活動導致三次升降活動，形成上中下三層結構的溶洞，地下水的活動，在洞頂形成石鐘乳，滴在地上形成石笋，甚至聯接成石柱，以及其他形態，最後與洞外河流貫串，形成地下河，接受溶洞堆積，而今上升成丘陵。參觀溶洞後又登高峰頂，向下瞭望可見多處落水洞。

五、中泥盆統標準剖面及魚化石

中午到樂昌西南十多公里，桂頭墟至游溪公路五公里許的河谷中，觀察了泥盆系與下伏震旦系不整合接觸關係，和中下泥盆統的標準剖面(圖三)。

香港地質學會

1987－88年度常務委員會

主　席：Dr. D. R. Workman

副主席：李坤榮先生

秘　書：Dr. R. L. Langford

編　輯：Mr. A. Hansen

司　庫：李作明先生

上任主席：Dr. A. D. Burnett

委　　員：Mr. M. Atherton，周邦彥先生，張志德先生
Mr. C. Dutton，鈕栢燊先生，蕭江林先生

編譯小組：Mr. A. Hansen(編輯)，張志德先生(助理編輯)
周邦彥先生，Dr. I. McFeat-Smith，Dr. D. R. Workman
嚴維樞先生，黃朝恩先生，黃廣美先生

秘　　書：鈕栢燊先生

節目小組：Dr. R. L. Langford，Mr. C. Dutton，黎權偉先生
李作明先生，李坤榮先生

籌劃小組：蕭江林先生(秘書)，Dr. A. D. Burnett，Mr. M. J. Atherton
李作明先生，姜漢銘先生

海洋研究組：主席：Dr. A. W. Malone
秘書：Mr. P.G.D. Whiteside

教師小組：秘書：姜漢銘先生

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，及將所有引用雜誌之全名寫出。

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：蒲台島席裂節理形成的花崗岩地形(J. M. Nash)

ISSN 1010-335X

香港地質學會

通　訊

目錄

第五卷　第三號　一九八七年