geological society of hong kong

NEWSLETTER

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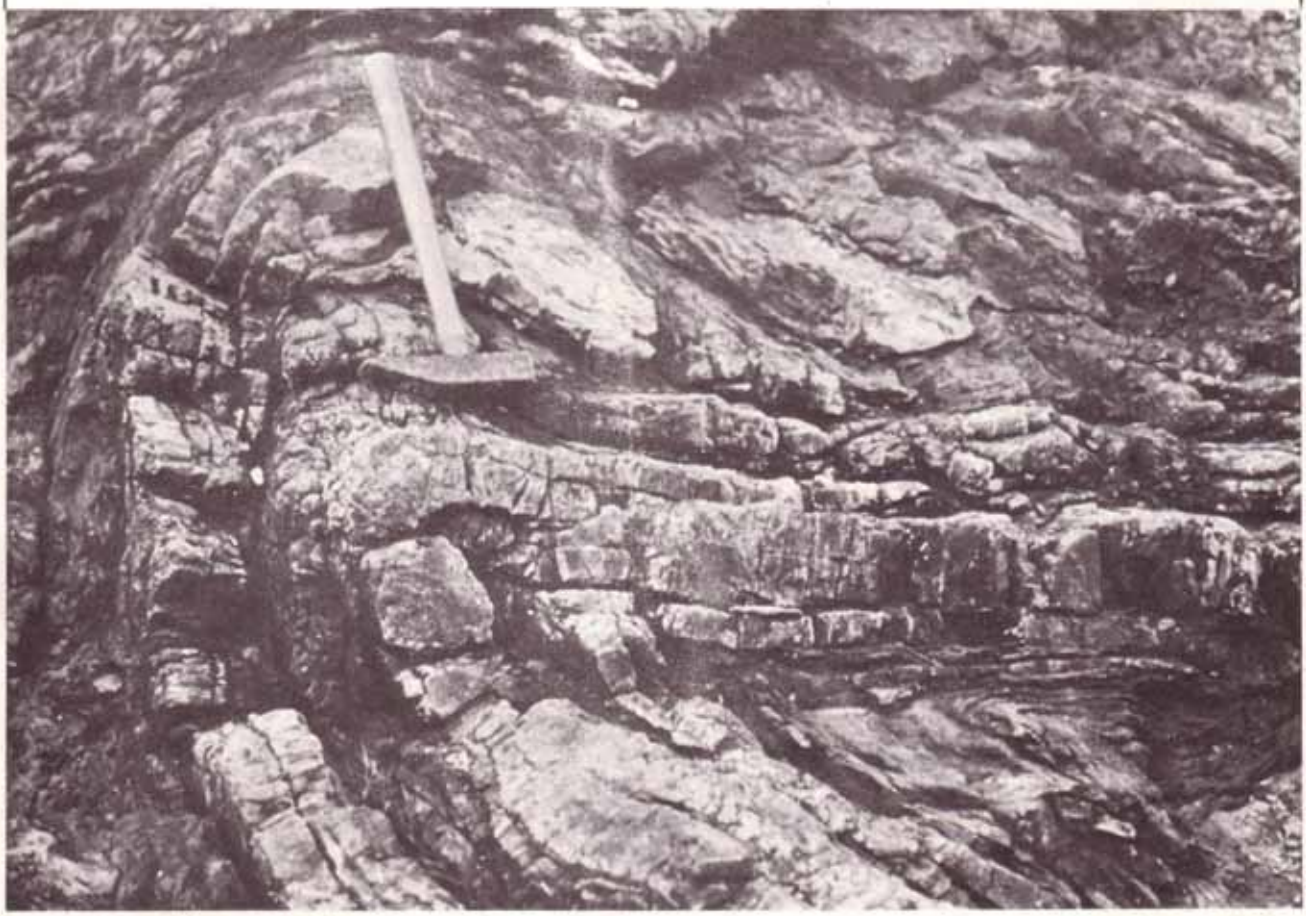

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Cover Photograph : Courtesy - Dr. D.R. Workman
Fold in Tolo Harbour Formation
Ma Shi Chau

REPORT ON SHENZHEN FIELD TRIP, 12-13 NOVEMBER 1983

J.D. Bennett*, R. Addison* and A.D. Burnett+
*British Geological Survey, Keyworth, U.K.
+Geotechnical Control Office, Hong Kong.

INTRODUCTION

The visit to examine rocks of the Shenzhen Economic Zone was arranged by the Geological Society of Hong Kong in conjunction with the Shenzhen Geological Bureau and the Geological Society of Shenzhen. Twenty-six members attended this two day excursion, which was led by Mr. Zhou Deyu, Chief Engineer of the Bureau, assisted by Mr. Liang Xi and other geologists from the Bureau.

Exposures of the following units were examined:

(i) Shekou Granite ($_5^{3(1)}$, Lower Cretaceous) at Chiwan, Shekou Peninsula.

(ii) Shiyan Granite ($_5^{2(3)}$, Upper Jurassic) near Shiyan Reservoir.

(iii) Pre-Devonian metamorphics near Yinhu Reservoir.

(iv) Guitou Fm. (D_2 gt, Middle Devonian), Tai Pang Peninsula, Daya Bay.

(v) Ceshui Fm. (C_1, Lower Carboniferous), near Shenzhenshi.

The route followed by the party and the stops made are shown in Fig. 1. Localities (i) to (iii) in western Shenzhen were visited on 12 November and localities (iv) and (v) in eastern Shenzhen on 13 November.

WESTERN SHENZHEN

The route west from Shenzhenshi to the first stop skirted the northern shore of Deep Bay and traversed alluvial deposits and low, gently undulating terrain with severe gully erosion, underlain by highly weathered granitoid rocks.

At the first stop near Chiwan, the Shekou Granite was examined. This was stated to be of Lower Cretaceous age although an Upper Cretaceous K-Ar biotite age of 80 Ma was reported to be available. It should be noted, however, that the biotite could represent a younger (?) cooling event occurring after the emplacement of the granite. The Shehou granite is a deep pink, variably chloritised, equigranular biotite granite, the biotite forming small plates of about 2 mm, mostly replaced by chlorite which also coats joint surfaces. Occasional xenoliths up to 75 cm are noted, with associated pegmatitic crystallisation in the host granite adjacent to the xenolith contact.

The Shekou Granite forms upstanding terrain and is strongly jointed, e.g. 012/85S; 202/40N; 280/76N; 300/85N. Slickensides pitching 12°W were noted on the 280° fracture. Subhorizontal joints are also prominent. The granite is cut at one locality by a 2 m thick quartz vein (053/74S) and this is in turn cut by a shear trending 335/85N. (Note: The convention adopted in this report for recording the orientation of planar structures (and veins and dykes) measures the strike direction (azimuth) such that the surface or vein/dyke dips to the right hand, e.g. 012/85S indicates a planar structure striking 012° and dipping at 85° to the ESE, the same structure dipping to the WNW would be recorded as 192/85N. The orientation of linear structures is defined by the plunge direction (azimuth or bearing) and amount, e.g. 200/44 defines a structure plunging at an angle of 44° on a bearing of 200°).

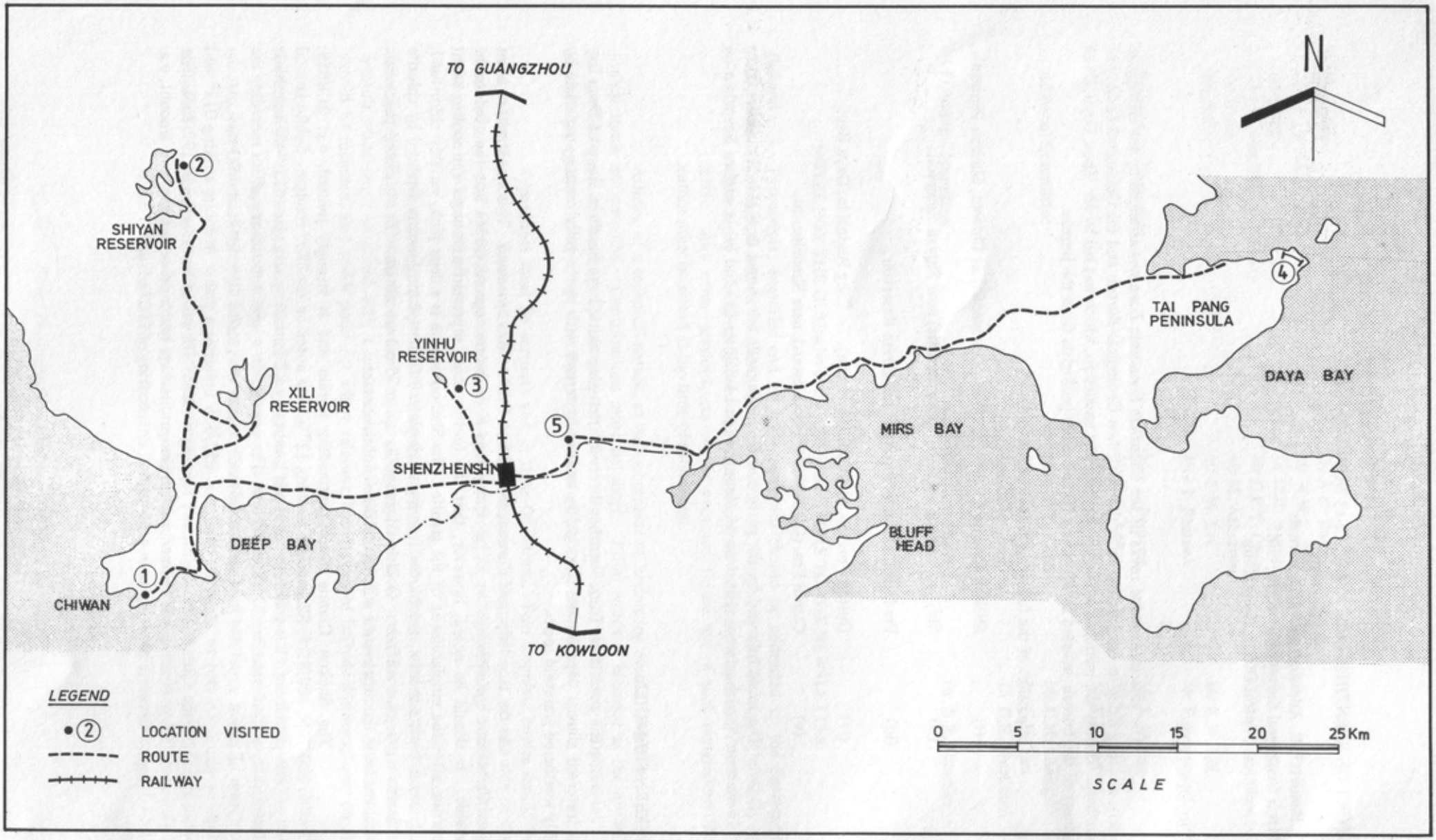


Fig. 1 Sketch map showing locations visited.

The Bureau compare this granite with the Needle Hill Granite in Hong Kong, classified by Allen and Stephens (1971) as phase 4, Upper Jurassic? No radiometric dates are available for the Needle Hill Granite and a younger, Cretaceous age cannot be excluded at present.

The group then travelled north to near Shiyan Reservoir where Shiyan Granite of Late Jurassic age was examined. At this type area, in the internal zone of a large ovoid pluton measuring c. 30 km across (major E-W axis), slightly pinkish grey, coarse-grained, somewhat prophyritic, biotite granite with large euhedral K-feldspar (2-3 cm) was examined and noted to show local subvertical flow alignment striking c. 085°. Quartz occurs in large irregular crystals, white plagioclase in anhedral clusters, and conspicuous fresh biotite forms clots (to 6 mm) and individual flakes (3 mm). Xenoliths are abundant and of varying size. They are dark, fine to medium grained, crystalline rocks which are considered (in part?) by the Bureau to be of sedimentary origin; rounded (detrital) quartz grains are reported in thin section.

The Shiyan Granite forms upstanding rounded, exfoliating outcrops with the development of large corestones. Jointing is widely spaced and is not prominent by comparison with Stop 1. A vertical joint trending 080° and an aplite vein (5 cm 150/65S) and dyke (c. 40 cm 055/80S) were recorded. The abundance of xenoliths possibly indicates relative proximity to the roof of the intrusion but the relative absence of jointing is ascribed by the Bureau to the position of the outcrops examined in the inner part of the granite body.

A K/Ar biotite age of 127 Ma is reported. This age and the overall appearance of the granite permits a general comparison with the Sung Kong Granite of Hong Kong which has yielded K-Ar biotite ages of 130+3 and 134+3 Ma.

Small scale quarrying operations were noted at the locality and along the road between Stop 2 and Xili Reservoir.

The party then travelled to Yinhu, Some 5 km NW of Shenzhenshi, where in the dusk a quartz biotite migmatite of ?Lower Palaeozoic age was examined. This is a dark coloured, variably chloritised biotite-plagioclase-quartz gneiss lacking pronounced preferred orientation of the micas but showing a variable degree of gneissic segregation (banding), with the development of irregular veins and plexi of coarse grained grey and pink quartzofeldspathic (granitoid) leucosome. The outcrops examined are strongly sheared (e.g. 232/76N, 232/90, 110/44S with down-dip plunging linear fabric on 200/44). They appear to have suffered considerable retrograde metamorphism (D.R. Workman, personal communication 1984).

These rocks have no readily correlatable equivalents in Hong Kong although it is not inconceivable that they could develop from volcanic rocks subjected to metamorphism and granitisation effects. They are presumably accorded a Lower Palaeozoic age mainly in view of their original high grade metamorphic nature. Their proximity to the Shiyan pluton can be noted in this respect although the ages assigned to each unit are very different.

EASTERN SHENZHEN

The visit to eastern Shenzhen focussed on an examination of the Devonian Guitou Formation on the northern shore of the Tai Pang Peninsula, Daya Bay.

The route to Daya Bay traversed (from W to E) rocks of the Ceshui Formation, volcanics of the Gaojiping Formation (c.f. Repulse Bay Formation), an extensive section of granitoids (including a porphyritic syenite dated at 76 Ma due N of Kat 0) along the northern shore of Mirs Bay, and sediments of Triassic and Devonian age on Tai Pang Peninsula itself.

The Guitou Formation is reported to comprise some 700 m of predominantly arenaceous and rudaceous sediments defining an anticlinal structure closing and plunging gently to the NE. The succession is divided by the Bureau into Devonian A in the core of the fold, consisting of conglomerates and conglomeratic sandstones, flanked by cross-bedded sandstones, siltstones and minor mudstones and shales (Devonian B), No fossils are reported. On the southern side of the peninsula, the formation is intruded by Jurassic/Cretaceous granitoids; elsewhere in Guangdong it is noted as post-dating the Silurian Caledonian event, and correlation is proposed with the Bluff Head Formation in Hong Kong, which lies along the regional strike to the southwest.

A traverse across the anticlinal axis was undertaken at the eastern tip of the peninsula which was reached by means of a junk. The eastern part of the section consisted predominantly of moderate to steeply dipping red sandstones and siltstones of massive to medium bedded type with cross-bedding (indicating a normal upward-younging sequence) locally well developed. Minor interbedded mudstone-clast breccias or conglomerates were also observed. The mudstone clasts appear to be clay galls (ref. Glossary of Geology, D.R. Workman personal communication, 1984). The sequence is locally faulted and in places strongly sheared on steeply dipping NE to ENE trending surfaces (e.g. 070°).

At the western end of the traverse the above sequence gave way to grey, more siliceous, well-bedded, rather platy sandstones often showing a pronounced fracture cleavage (e.g. 051/62S) and a well-developed S_0/S_1 intersection lineation on the bedding. These rocks are thought to be of Late Devonian age.

The proposed correlation with the Bluff Head Formation and the apparent recognition of Upper as well as Middle Devonian units is not, however, entirely convincing. Lithologically and structurally, particularly where the strong lenticular or anastomosing shear structure is developed, correlations could equally be suggested with the younger Palaeozoic and Jurassic sedimentary formations of Hong Kong (e.g. the Tolo Harbour Formation or the Tai O Formation). "Typical" Bluff Head Formation lithotypes, as seen on Harbour Island and most of the northern shore of Tolo Channel were not conspicuous in the section traversed.

At the final stop of the visit a few kilometers east of Shenzhenshi, rocks of the Lower Carboniferous Ceshui Formation were seen. These rocks are light coloured, fine-grained, psammitic and semipelitic low grade metamorphics (micaceous quartzites, quartz-sericite phyllites). Relationships between bedding and schistosity were difficult to resolve and the outcrops are strongly jointed and the structures undulose. The general impression gained under adverse light conditions (once again night overtook the party!) was that the two structures are broadly subparallel.

These rocks show clear resemblances to the Lok Ma Chau Formation, with which they are contiguous. Their assignation to the Lower Carboniferous is apparently by indirect correlation, however, and should be viewed with caution.

The Society owes a debt of gratitude to Mr. C.M. Lee for arranging and organising this extremely successful trip with the Geological Bureau and Society of Shenzhen and we now look forward to receiving in Hong Kong a delegation from Shenzhen.

ACKNOWLEDGEMENTS

This article is published with the approval of the Principal Government Geotechnical Engineer, Hong Kong Government, and the Director of the British Geological Survey (Natural Environment Research Council) United Kingdom.

THE STRUCTURE OF THE HONG KONG GRANITE - A PRELIMINARY APPRAISAL

T.I. Gamon and R.P. Finn, Freeman Fox & Partners (Far East)

INTRODUCTION

This paper is concerned with the origin of the primary structure within the Hong Kong Granite, and the possible effects of earth movements on the structural pattern.

Hong Kong Granite underlies much of the northern side of Hong Kong Island, Kowloon Peninsula and Kwun Tong, and is exposed on Stanley and D'Aguilar Peninsulas. The granite was intruded into the volcanic rocks of the Repulse Bay Formation during the Upper Jurassic period. Around the perimeter of the main exposed area of granite on either side of the harbour, the granite is capped by the more resistant volcanic rocks, which form steep scarp-like slopes rising to over 530 m.

The Harbour area is the drowned denuded centre of a dome of granite. (Berry and Ruxton, 1960). The structure of the granite in the exposed part of this dome has been examined and the dip and dip direction of several thousand discontinuities measured. The results of these surveys are summarised in Table 1 and presented as a structural map in Fig. 1.

EXISTING INFORMATION

Allen and Stephens (1971) have presented histograms of lineament directions in volcanic and granitic rocks, determined from aerial photography, which give the major regional trends of faults.

The comprehensive Mid Levels Study (Geotechnical Control Office, 1982) gives generalised dip and dip directions for a major sheeting joint set, two minor sets and a rarely encountered fourth set in the Hong Kong Granite.

Further useful information is provided by Berry and Ruxton (1960), who measured the orientation of joint faces, shear and fault zones, veins and dykes within the Hong Kong Granite in the Harbour area, and present the results as a rose diagram.

The most comprehensive available discontinuity data has been reported by Endicott, Tong and Kwong (1982), who measured over a thousand discontinuities for the design of a final face for Tai Sheung Tok Quarry in the Hong Kong Granite above Kwun Tong.

THE ORIGIN OF PRIMARY STRUCTURE IN GRANITE

The primary structure in granite is generally considered to be related to the direction of flow of the intrusion (Hatch, Wells and Wells 1975). The recognition of linear flow structures provides the key to the interpretation of the structure, and generally four sets of discontinuities are present:-

1) Cross Joints - striking perpendicular to the linear flow direction and developed by tension due to stretching.

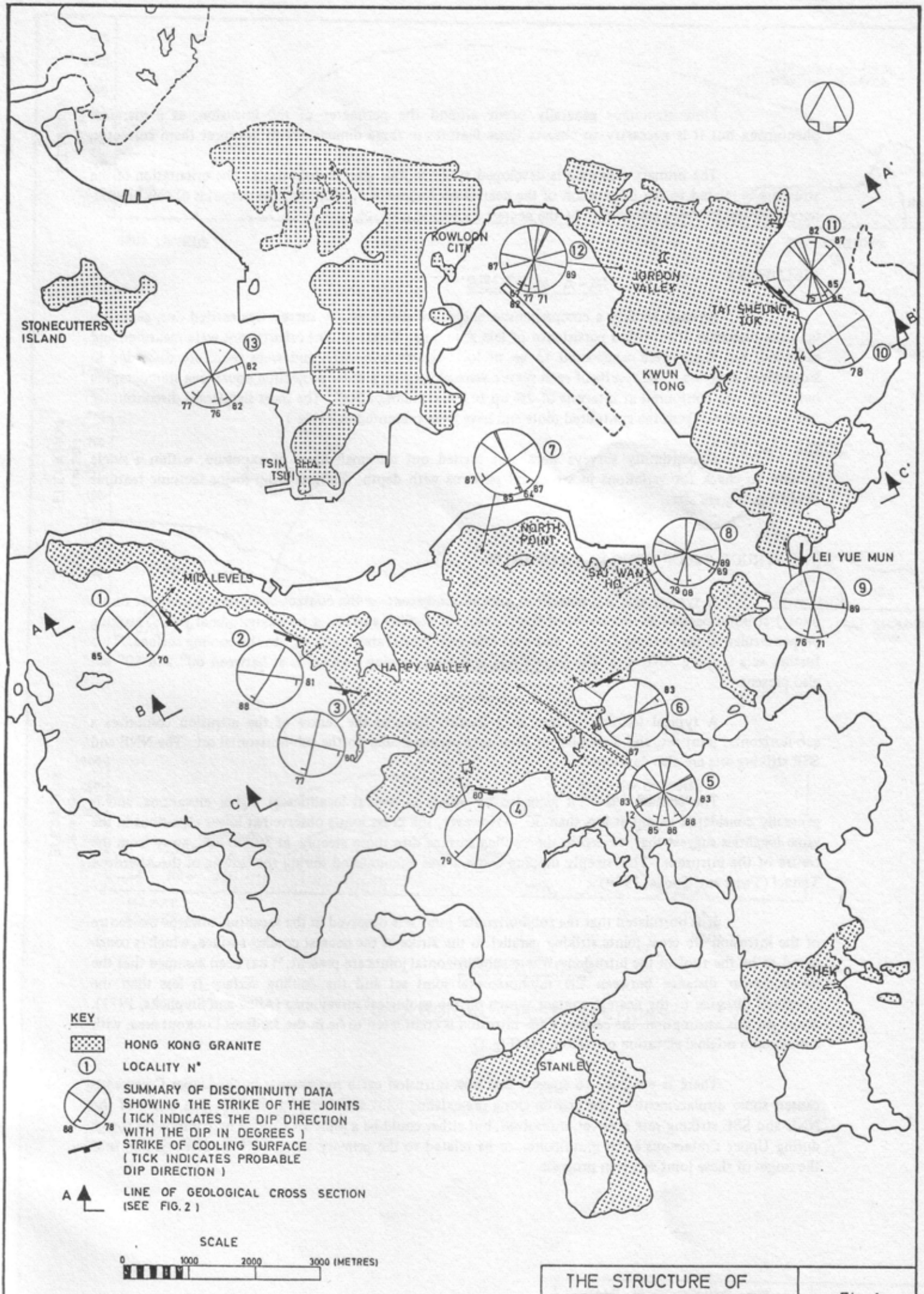
2) Longitudinal Joints - striking parallel to the trend of flowlines and probably developed as a result of weaknesses parallel to the aligned minerals.

3) Diagonal Joints - striking at approximately 45° to the trend of the flow lines, formed as a result of compression operating perpendicular to the flow.

4) Flat-lying joints

Locality No. (Fig 1)	Orientation of Major Discontinuity Sets								Orientation of Nearest Cooling Surface	
	Parallel to Cooling Surface		Perpendicular to Cooling Surface		45° to Cooling Surface		Others			
	Strike	Dip/Dip Dir^{n}	Strike	Dip/Dip Dir^{n}	Strike	Dip/Dip Dir^{n}	Strike	Dip/Dip Dir^{n}	Strike	Dip
1	135	70/225	045	85/315					135	70 SW
2	097	81/187	030	88/300					110	80 SW
3	103	80/193					013	77/283	103	80 S
4			005	80/275	043	79/313			095	S
5	060	12/150	113 145 170 009 064	83/023 88/235 86/260 85/279 83/334					060	12 SE
6	049 070	88/319 83/160			007	87/277			060	80 SE
7			128 157 053	87/218 85/247 87/323			153	64/243	000	0
8	000	08/090	108 120 076	89/198 89/210 89/346			016	79/286	000	08 E
9			095	89/005			164 012	71/254 76/282	005	E
10	152	78/242	055	74/325					150	NE
11	140 150	85/230 85/240	043	87/313	010	82/280	163	75/283	145	85 NE
12			102 025 046	89/192 82/295 87/316			170 009 023	71/260 77/279 67/293	000	0
13			145 066	82/235 82/156			036 168	77/306 76/258	000	0

Table 1 The Orientation of Major Discontinuity Sets within Hong Kong Granite



THE STRUCTURE OF HONG KONG GRANITE

Fig. 1

Flow structures generally occur around the perimeter of the intrusion, as a marginal phenomena but it is necessary to observe these features in three dimensions to interpret them correctly.

The primary structure is developed as the mobile granite mass cools. The orientation of the structure is related to the orientation of the nearest cooling surface, which for the purposes of this preliminary appraisal has been assumed to be the nearest geological contact.

FIELDWORK

At each locality a comprehensive subjective discontinuity survey was carried out, generally ignoring discontinuities with a persistence of less than 5 m. Sheeting joint orientations were measured and recorded, but these were considered to be of local significance only, and were therefore discarded in subsequent analyses. The results of each survey were plotted on a polar projection equal area stereographic net which was contoured at intervals of 2% up to a maximum of 20%. The most significant discontinuity sets were selected from the contoured plots and have been presented in Table 1.

Discontinuity surveys were also carried out on small areas of exposure, within a single locality to check for variations in structural patterns with depth, distance from major tectonic features or change in grain size.

THE STRUCTURE OF HONG KONG GRANITE

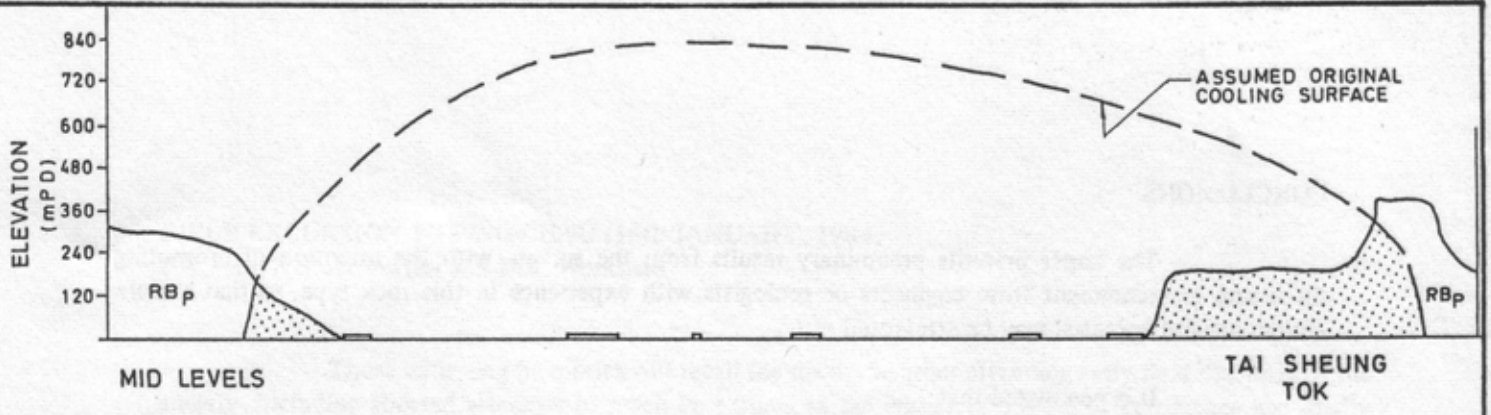
A typical jointing pattern in a locality adjacent to the contact comprises a joint set (cross joints) striking parallel to the strike of the contact, or cooling surface, a set (longitudinal joints) striking perpendicular to the cooling surface, and a set (diagonal joints) striking at 45^{o} to the cooling surface. Two further sets striking NNE and SSE respectively and both dipping westwards at between 60^{o} and 80^{o} are also present.

A typical jointing pattern in a locality towards the centre of the intrusion comprises a sub-horizontal joint set, and a number of joint sets perpendicular to the sub-horizontal set. The NNE and SSE striking sets are also developed.

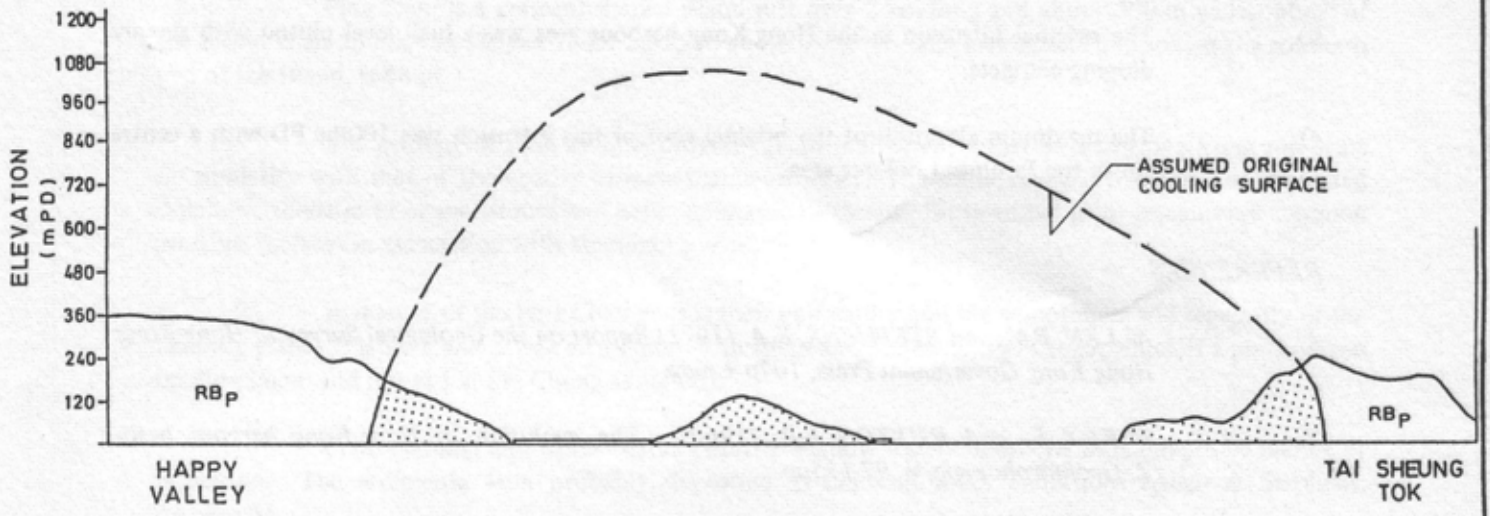
The contact has been recorded by others in several localities at higher elevations, and is generally considered to dip at less than 30^{o}. However, the cross joints observed at lower elevations in the same localities suggest that, at depth, the cooling surface dips more steeply, at 70^{o} to 80^{o}, away from the centre of the intrusion. This steeply dipping contact was encountered during the driving of the Aberdeen Tunnel (Twist and Tonge, 1979).

It is postulated that the sub-horizontal joint sets observed in the localities towards the centre of the intrusion are cross joints striking parallel to the strike of the nearest cooling surface, which is considered to be the roof of the intrusion. Where sub-horizontal joints are present, it has been assumed that the perpendicular distance between the sub-horizontal joint set and the cooling surface is less than the measured distance to the nearest contact shown on the geological survey map (Allen and Stephens, 1971). Based on this assumption, the centre of the intrusion is considered to be in the Jardines Lookout area, with a maximum original elevation of 1000m PD (Fig.2).

There is evidence to suggest that post-intrusion earth movements in the Upper Cretaceous caused some displacement of the granite along pre-existing joint sets trending NE-SW. The origin of the NNE and SSE striking sets is as yet unresolved, but either could be a joint set formed by component forces during Upper Cretaceous earth movements, or be related to the primary structure. An investigation into the origin of these joint sets is in progress.



SECTION A-A'



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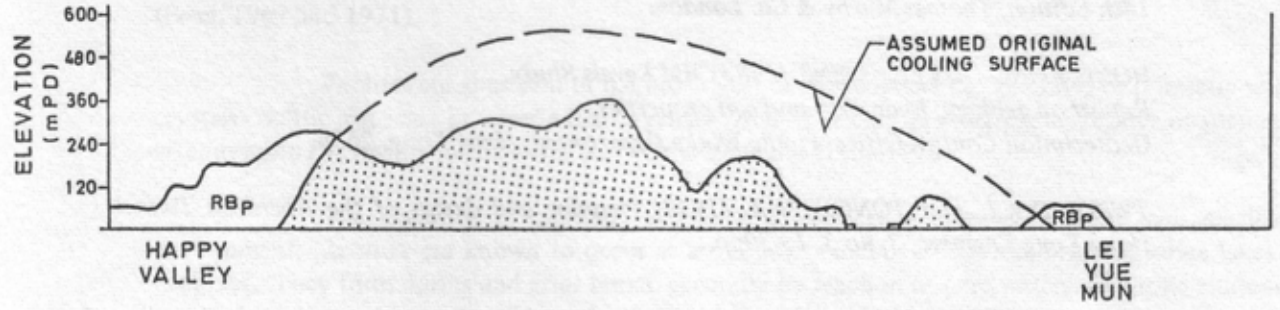

SECTION C-C'

GEOLOGICAL CROSS SECTIONS

KEY

RBP REPULSE BAY FORMATION

HONG KONG GRANITE

THE STRUCTURE OF HONG KONG GRANITE	Fig. 2

CONCLUSIONS

The paper presents preliminary results from the survey, with the intention of promoting discussion and comment from engineers or geologists with experience in this rock type, so that a more comprehensive appraisal may be attempted.

It is postulated that:-

a) The structural pattern of the Hong Kong Granite is related to the nearest contact or cooling surface.

b) The original intrusion in the Hong Kong harbour area was a high level pluton with steeply dipping contacts.

c) The maximum elevation of the original roof of this intrusion was 1000m PD with a centre above the Jardines Lookout area.

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NEW MEMBERS SINCE 1 JANUARY 1984

The Society is pleased to welcome as Honorary Members, Professor Ding Yuang Zhang (丁原章) of the Guangdong Seismological Bureau and Professor Liu Tung Sheng (劉東生) of the Institute of Geology, Beijing.

The following new Members are also accorded a warm welcome: R.S. Arthurton, M.L. Chalmers, Y.C. Chan, R.P. Finn, K.W. Kwok, H.W. Lee, M.K. Lee, S.Y. Li, K.W. Leung, P.J. Strange, Y.C. Suen and W.Y.F. Wong.

FIELD EXCURSION TO PING CHAU (15th JANUARY, 1984)

P.S. Nau, R.S. Arthurton and D.R. Workman

Those with long memories will recall the dismal weather attending early field meetings of the society, including aborted attempts to reach Ping Chau, in the winter of 1982-83. Persistence was finally rewarded with a calm, dry and mainly sunny day on 15th January, and about 70 members and guests were able finally to land on this remote island in Mirs Bay.

Ping Chau is a crescent-shaped island just over 2 km long and about 500 m wide. Much of the island is an undulating plateau about 20-25 m above sea level. The maximum elevation, at the southern end of the island, is 48 m.

The geology of Ping Chau is different from that of any other part of Hong Kong and bears no similarity with that of the nearby Chinese mainland either. The whole island is composed of laminated dolomitic mudstones or marlstones and hard, laminated siltstones. Bitumenised plant remains are common on some surfaces in association with abundant pyrite.

A feature of the Ping Chau beds is their uniformity and the smoothness and regularity of the bedding planes (Plates 1 and 2, see also Plate IV in Allen and Stephens, 1971 p.25, which is a photo taken on Ping Chau, and not at Lai Chi Chong as stated).

Cross-bedding and ripple marks point to shallow water conditions which might be marine or lacustrine. The sediments were probably deposited in brackish water conditions (Allen & Stephens, op.cit.p.5).

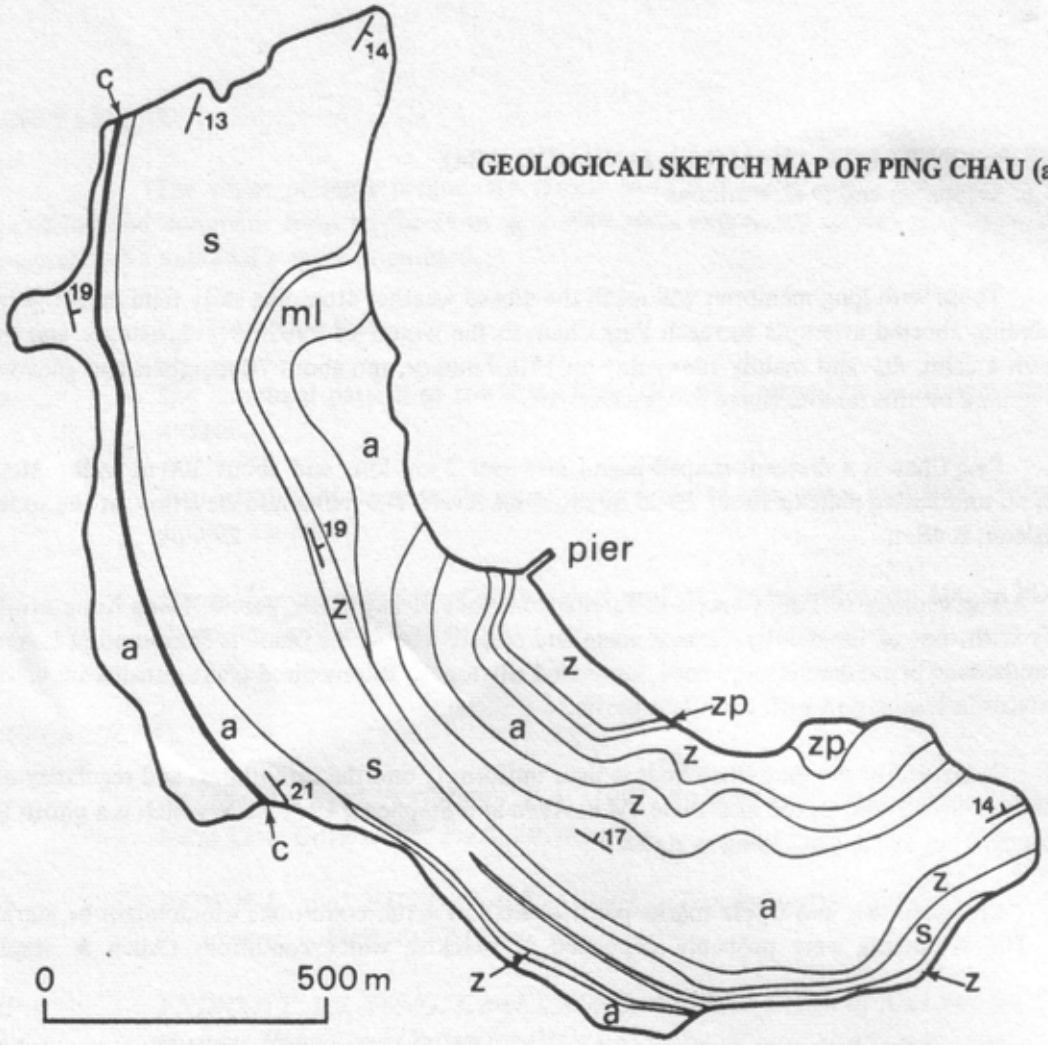
One of the distinctive features of the rocks is the abundance of mineral-filled moulds left by solution of crystals of some salt mineral. No trace of the original salt mineral remains although its crystal outline is well preserved. A variety of minerals is found as casts in these moulds, including calcite, apatite, pyrite and some silicates, the most interesting species of which are zeolites and the sodic pyroxene, acmite (Peng, 1967 and 1971).

Zeolites are abundant in the upper part of the sequence as aggregates of prismatic or granular crystals, oolitic particles or rosette-like crystals. Acmite occurs as radiating aggregates or pseudomorphs after gypsum (?), mainly in the lower part of the sequence (Peng 1978).

The presence of zeolites, acmite and also calcite suggest a saline and alkaline water environment. Zeolites are known to occur as authigenic minerals in the sediments of saline lakes and the deep sea. They form during and after burial, generally by reaction of pore waters with solid aluminosilicate materials such as volcanic glass, biogenic silica, and clay minerals (Hay, 1978).

Many acmite-filled crystal casts were recognised as pseudomorphs after gypsum, either as individual crystals or as radiating aggregates. The former existence of such gypsum crystals would suggest that the Ping Chau sediments may have formed as a 'sabkha' type of supralittoral sequence, similar to those of certain modern coastlines in arid-semi-arid climates such as the Persian Gulf. This suggestion is supported by the recognition of fenestral fabrics (? after algae) in some of the dolomitic sediments of the Ping Chau sequence.

The rocks of Ping Chau have been folded into a broad syncline plunging NE at a low angle. The crescent shape of the island, convex to the SW, and the occurrence of cliffs along the western (up-dip) side of the island reflect this structure. Dips are in the range 10-20°, between N (in the south) and SE (in the north). At the southern extremity of the island the cliffs reach a height of about 40 metres. Some interesting joint-controlled rock falls and slides were observed, including one large wedge failure (Plate 3).



a acmite-bearing siltstones and mudstones; c cherty siltstone; ml marlstones; s siltstones; z zeolite-bearing siltstones and mudstones; zp zeolite-pyrite bearing mudstones.

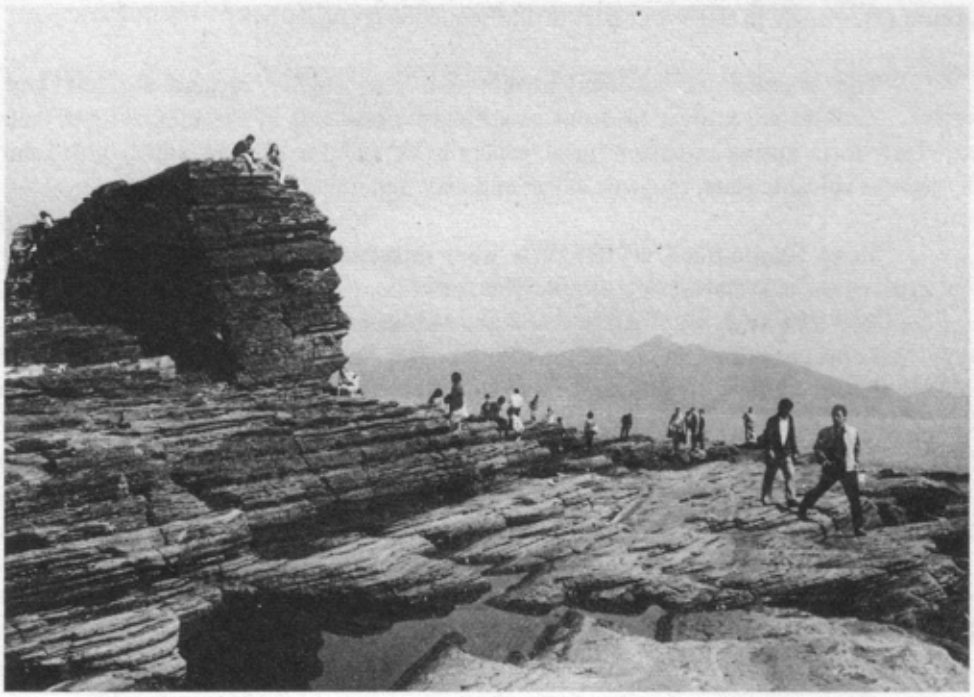


PLATE 1 The southern tip of Ping Chau

PLATE 2 The west coast

PLATE 3 Rock slide on southwest coast

The age of the Ping Chau beds is not known. Indeterminate plant remains are common, and a beetle has been recorded (Williams, 1943). The beds were grouped with the Jurassic Repulse Bay Formation by Allen and Stephens (1971), although they are not like any of the other sedimentary rocks in that formation. Peng (1978) was in favour of calling the rocks the 'Ping Chau formation' as was originally proposed by Williams (op.cit.) who suggested a Cretaceous age although the succession could just as well be Tertiary.

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Advance Notice

CONFERENCE ON GEOLOGICAL ASPECTS

OF SITE INVESTIGATIONS

17-19 December 1984

Make a note of these dates and see

the separate insertion in this newsletter

TREASURER'S REPORT

I acknowledge receipt of the following old members' subscriptions for 1984:

Beggs C.J.	Cox D.C.	Li W.C.	Sladen C.
Bennett J.D.	Downing J.H.	Li K.S.	Smith R.C.
Borrie G.W.	Hansen A.	Liao C.C.	Speak C.M.
Carbray M.E.	Ho N.C.	Lo K.K.	Tsui C.
Chan P.F.	Ho T.M.	Lovegrove G.W.	Tsui Y.M.
Chan S.O.	Kei C.H.	Mui H.C.	Wallis P.F.
Chen T.T.	Lee C.S.	Pearson A.	Yeung H.C.
Choy W.M.	Lee C.M.	Roberts P.A.	Yuen N.Y.
Chiu K.	Li Y.C.	Sham C.F.	Yung P.Y.
			Yip C.N.

I would also like to remind members that their 1984 subscription (of HK$60) is in some cases overdue. Payment should be made by crossed cheque made out to the Geological Society of Hong Kong and sent to me at

Dept. of Civil Engineering,
H.K. Polytechnic,
Hung Hom,
Kowloon.

M.J. Atherton
2nd March 1984

PROCEEDINGS OF MEETING ON GEOLOGY OF SURFICIAL DEPOSITS IN HONG KONG

The editorial work on the papers submitted for publication in the volume of proceedings is now in an advanced stage. It has been decided to issue the volume as Bulletin Number 1 of the Society and we are at present aiming to get it out by June.

A number of abstract volumes (80 pages), and satchels with the Society's logo in gold, both produced for the meeting, are still available for sale, at $10 and $20 respectively. If interested please contact Mr P.S. Nau (H-4097232) or Mr W.W.S. Yim (H-4097229).

For the information of those who missed the meeting, the abstract volume included 22 abstracts and 5 papers. Titles of the papers included are as follows:-

L.W. LeRoy: Weathering, erosion and landforms in construction
W. Meacham & W.W.S. Yim: Coastal sand bar deposits at Pui O
W.W.S. Yim & Q.Y. Li: Sea level changes and sea-floor surficial deposits off Chek Lap Kok
H.W. Lai: Geotechnical aspects of the construction of the Shek Pik earthfill dam
W.J. Dickson. Tai O subsurface conditions.

FORTHCOMING INTERNATIONAL MEETINGS (1984)
(see also Vol. 2, No. 1)

14-18 May

4th Australia-New Zealand Conference on Geomechanics, Perth. **Information**: Conference Manager, 4th A.N.Z. Geomechanics Conf., Inst. Engineers-Australia, 11 National Circuit, Barton, ACT 2600, Australia.

9 12 July

3rd International Conference on Ground Movements and Structures, Cardiff, Wales. **Information**: Conference Secretary, Dept. of Civil Engineering and Building Technology, Univ. Wales Inst. Science and Technology Colum Drive, Cardiff, U.K.

24-26 July

Rock-Olympic USA. International symposium on rock engineering/ trip to Olympic Games, Las Vegas/Los Angeles. **Information**: Dr Yung Sam Kim, Conference Director, Nevada Inst. of Technology, P.O. Box 8894, Campus Station, Reno, NV 89507, U.S.A.

3-6 September

International symposium "Design and Performance of Underground Excavations", Cambridge, UK. **Information**: Secretary, GSHK, or ISRM 1984 Symposium, Conference Office, Inst. Civil Eng., Gt. George St., London SW1, U.K.

8-13 October

Association of Engineering Geologists: 27th Annual Meeting "New Concepts and Applications" plus a symposium "Computer Applications in Engineering Geology", Boston, U.S.A.
Information: Secretary, GSHK, or Richard Sherman, Metcalf & Eddy, 50 Staniford St., Boston, Ma 02114, U.S.A.

9-11 October

International conference "In Situ Soil and Rock Reinforcement", Paris. **Information**: Conference "In Situ Soil and Rock Reinforcement", FNPC/DFCAI, 52 rue Madame, F-75006 Paris.

25 October - 5 November

International Symposium on Geology of Tin Deposits, Nanning.
Information: Zhang Sihui, Deputy President, Chinese Academy of Geological Sciences, Baiwanzhuang Road, Fuchengmenwai, Beijing **or** Co-ordinator, Regional Mineral Resources Development Centre, P.O. Box 19, Bandung, Indonesia.

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And in **1985** (11-15 August) 11th (ISSMFE), San Francisco. **Information**: Chairman, Organising Committee, 11th Int. Conf. on Soil Mech. and Found. Engg., 440 Davis Hall, Univ. of California, Berkeley, CA 94720, U.S.A.

MARINE STUDIES GROUP ANNOUNCEMENT

This recently formed specialist group is meeting regularly every month at the Society's Room, Hong Kong Museum of History, Kowloon Park. If anyone is interested in contributing please contact the secretary, Mr Jonathan Gammon (Tel. No. 5-779023) for details. The next meeting is scheduled on Tuesday 17th April from 6 to 8 pm.

FORTHCOMING PROGRAMME

Hong Kong rocks - discussion meeting **Monday 30 th April**

This will be an informal meeting at which rocks from the Hong Kong University collection, including original Ruxton and Allen & Stephens samples and other, recently collected, material will be on display.

It is proposed to focus attention on the volcanic rocks and devote future meetings to other types of rock, but everything in the geology lab. at the university will be available for inspection.

There will be facilities for microscope examination and projection of thin sections. Bring along any samples, thin sections or colour slides you would like to show. Ring David Workman (5-4097231) or Wyss Yim (5-4097229) beforehand if you would like to make a short presentation.

The meeting will be held in the Geology Laboratory, Room 2-10, Hui Oi Chow Science Building, Hong Kong University, commencing at 5:45 p.m. Tea and coffee will be available.

Annual General Meeting **Tuesday 8th May**

The AGM will be held in the Geology Laboratory, Hong Kong Polytechnic at 6:30 p.m. You are all encouraged to come along and speak up, if you can, on what you expect of the Society.

Field meeting at South Ap Lei Chau **Saturday 12th May 9:30 - 12:00**

Following on the meeting of 25th April it is planned to visit Ap Lei Chau to see some of the best exposures of welded tuffs and associated rocks in Hong Kong. The characteristic features of these rocks, including eutaxitic banded structure, abundant compacted pumice clasts in various stages of flattening, and fiamme, can be seen in beautiful shoreline exposures along the south coast of Ap Lei Chau. You'll never see better exposures of welded tuffs than these. Other interesting things to be seen include the very regular joint system of the volcanic rocks and an intriguing Recent deposit.

The party will set off (on foot) from the Ap Lei Chau CMB bus terminus at 9:30. Come prepared for rock scrambling (good-grip footwear essential). Route is southward along the coast via the oil depot road and on past the cement company plant, immediately beyond which the shoreline outcrops begin. It is usually possible to find somewhere to park on the reclamation at the cement company plant, but No Waiting signs have been put up along the dirt approach road, which is scheduled for paving, and there is a constant flow of ready-mix concrete trucks. Travel to Ap Lei Chau by bus is strongly recommended but if proceeding by car to the cement company plant meet there at 9:45. Convenor David Workman.

Buses to Ap Lei Chau

From Central (Douglas Street) via Queensway	90M
From Sai Ying Pun	91
From Aberdeen	91, 95
From Causeway Bay	92

本會通訊 — 讀者調查
GSHK NEWSLETTER - READERSHIP SURVEY

本會常務委員全人欲知會員們對本通訊之意見
The General Committee of the Society is interested to ascertain members opinions and ideas regarding the Newsletter. Please help by completing this form and returning it to the address below.
請填寫回條並寄回下述地址以便參考。

1) Are you generally satisfied with the Newsletter:
閣下對本通訊是否感到滿意:

Yes ( ) 滿意 No ( ) 不滿意 Room for improvement ( ) 有待改善

2) Which sections do you read?
閣下通常是閱讀

English ( ) 英文版 Chinese ( ) 中文版 Both ( ) 兩者

3) Do you feel both languages are necessary?
閣下是否認為需要中英文兼備

Yes ( ) 是 No ( ) 否 Less English ( ) 太多英文 Less Chinese ( ) 太多中文

4) Have you contributed any news/technical items?
閣下曾否投稿本刊

Yes ( ) 有 No ( ) 未有

5) Regarding the Newsletter content do you want to see more: 有關內容閣下希望多些:

技術性的Technical Notes ( ) Advertising ( ) 廣告
專業消息Professional News ( ) Reprinted items ( ) 轉載文章
其他Others ( )

6) Regarding format and layout I have the following suggestion: 關於形式我有下述意見:

7) Six Newsletters are produced per year - do you feel this is: 每年六期通訊閣下認為:

Too few ( ) 少 Too many ( ) 多 About right ( ) 正好

8) The Committee would like to see more regular interesting articles, e.g. description of interesting sites/exposures, have you any other suggestions for regular contributions:
會方希望能有多些固定性的有趣味的特寫,如描述有吸引力的地点或露頭等;閣下能否建議一些固定性專欄?

Name:
姓名

Contact Tel No.:
联絡電話

Return this form to :
請寄回

Geological Society of Hong Kong, c/o Geography and Geology Dept., University of Hong Kong, Pokfulam Road, Hong Kong.

榮譽會員

本會歡迎廣東地震局之丁原章教授及北京地質學院之劉東生教授接受我們的邀請成爲本會的榮譽會員。

司庫報告

繼上期通訊後，續有會員交來1984年度會費，芳名列於英文版。

在這裏提醒還不曾繳交1984年度會費的會員，請將劃綫支票（ $60 ）寄給 M.J. Atherton, Dept. of Civil Engineening, H.K. Polytechnic, Hunghom。

一九八四年將要舉行的國際性會議

（請並參閱通訊第二卷第一號）

各會議之查詢地址，請參閱英文版：

五月十四日至十八日

第四屆澳紐區地力學會議，在西澳洲柏斯市舉行。

七月九日至十二日

「地基移動對結構影響」之第三屆國際會議在威爾士加的夫市舉行。

七月廿四日至廿六日

「岩石工程」國際研討會及參觀奧運會，在美國拉斯維加斯及洛杉磯舉行。

九月三日至六日

「地表下掘挖工程之設計及成果」之國際研討會，在英國劍橋市舉行。

十月八日至十三日

工程地質師協會之第廿七屆週年大會，主題爲「新的概念及其應用」及「電腦在工程地質之應用」，在美國波士頓市舉行。

十月九日至十一日

「原地坭土及岩石之鞏固」——國際會議在法國巴黎市舉行。

十月廿五日至十一月五日

「錫鑛之地質」國際會議在中國南寧舉行。

又一九八五年八月十一日至十五日國際土壤力學及地基工程學會將在美國三藩市舉行第十一屆週年大會。

節目預告

（詳見本期英文版）

香港岩石——研討會　四月三十日星期一

地點：香港大學地質實驗室

週年大會　五月八日星期二

地點：理工學院地質實驗室

南鴨脷洲野外考察　五月十二日星期六

集合地點：鴨脷洲巴士總結

香港地表沉積地質學討論會記錄滙編

編纂刊載在記錄內各論文之工作已接近完成。本會決定在六月間將該册記錄發表爲本會之第一號會報。

開會時大會所印發的摘錄册（共80頁，每本售價$10）及印有金色會徽之公文袋（每個$20）現仍有售。有興趣購買的請與鈕柏燊先生（電話5-4097232）或嚴維樞先生（電話5-4097229）聯絡。

下列資料是爲沒有參加會議者提供的：該册摘錄刊有22篇摘要及下述五篇論文：—

L. W. Le Roy: 建築工程與風化、侵蝕及地形之關係。
W. Meecham & W. W. S. Yim: 赤鮭角對開之海平面變動及海床面沉積。
H. W. Lai: 建造石壁土壩之土力問題。
W. J. Dickson: 大澳之地表下情況。

深　圳　行

共有二十六位會員參加的深圳野外觀察在本期的英文版已有報導。下期的中文版裏李作明先生將會另作報導。

東坪洲野外考察

1984年1月15日七十位地質界同仁及其家屬，在陽光明媚的晚冬季節中到此一遊，許多同仁在1982—1983的冬天曾來過一次，這是第二次來此大鵬灣中的小島。

坪洲是個新月形海島。長二公里寬五百公尺。它的地形主要是一個海拔20—25公尺的波狀起伏的平台。最高處在島嶼南端，是海拔48公尺。

坪洲的地質十分不同於香港的其他地區，甚至包括附近的中國海岸地區。全島由薄片狀白雲白雲質泥岩或泥灰岩與薄片狀粉砂岩互層組成。某些層面富含瀝青質植物化石及黃鐵礦顆粒。

Allen 和 Stephens 說：交錯層理及波痕構造的存在，指示此地層爲海相或湖泊相的淺水沉積。並可能在一個黑色水域中沉淀。

岩石中的一獨特現象是存在許多食鹽假晶。在假晶印模中充填許多礦物。假晶晶形清楚，但沒有留下任何食鹽的殘迹，充填的礦物有方解石、磷灰石、黃鐵礦和某些硅（矽）酸鹽類。其中最有意思的是含有沸石，鈉輝石和綠輝石（彭1967,,1971）。沸石主要分布在上部層位，綠輝石則主要含在下部層位之中（彭1978）。

坪洲的地層褶皺成爲一個北東向傾伏的開闊向斜。海島呈新月形並向西南突出，西北海岸具岸具長條陡崖，這些地形都反應了這種構造現象。西北翼向東南傾斜，東南翼向西北傾斜，傾角約在10°至20°之間。南端的最高陡崖可達四十公尺。還可見一些倒石堆及滑坡現象，包括一個巨大的楔形滑動體。

本區地層時代不清。1971年 Allen 和S tephens 放在侏羅紀的淺水灣組之中 雖然它和淺水灣組中的所有沉積層都不同。1978年彭仍按 William（1943）的定義稱爲“坪洲層”。William 據其中的植物化石及甲蟲化石，定爲白堊紀。但，仍懷疑屬更年青的第三紀。

＊礦物成因分析略，請參看原文。

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。來稿以簡爲主。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爲限。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爲準。

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
馬屎洲：吐露港組中之摺曲岩石

香港地質學會

通　訊

目錄

第二卷第二號一九八四年三月