geological society of hong kong

NEWSLETTER

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GEOLOGICAL SOCIETY OF HONG KONG

GENERAL COMMITTEE

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Cover Photograph : Courtesy - Dr. S. R. Hencher
Dyke crosscutting folded columnar jointed volcanics,
High Island Reservoir, Hong Kong.

REPORT ON A FIELD VISIT TO SHENZHEN BY MEMBERS OF THE GEOLOGICAL SOCIETY OF HONG KONG

Dr. A.D. Burnett, Geotechnical Control Office

On Saturday 23rd April nine Society members gathered at Hung Hom railway station at 6.15 a.m. to take the train to Lo Wu. We crossed to Shenzhen and were met by our hosts for the day Mr. Zhou De-Yu, Senior Engineer of the Geological Bureau of Shenzhen and Mr. Liang Xi, Geological Engineer of the same Bureau.

After a short bus ride the party arrived at the Scientific Building for morning tea and an introductory welcoming and briefing speech, Mr. Zhou welcomed us on behalf of both the Shenzhen Geological Society and the Shenzhen Geological Bureau, the latter being a branch of the Guangdong Geological Bureau.

For the record the following took part in the day's activities:-

Hong Kong Party			Hosts from Shenzhen		
A.D. Burnett J.D. Bennett	))	Geotechnical Control Office	Zhou De-Yu Liang Xi	))	Shenzhen Geological Bureau
C. Grant D. Workman W. Yim	)))	University of Hong Kong	Zhang Qizhi	))	China Popular Science Press
M. Atherton C.M. Lee	))	Hong Kong Polytechnic	Zhao Xian Fan Yang Cheng Chen Yong Yuan	)))	Shenzhen Geological Bureau
K. W. Lee	))	Charles Haswell & Partners			
K.W. Lai	)	Binnie & Partners			

Mr. Zhou, with the help Mr. Zhang as translator, spent about an hour outlining the stratigraphy and structure of the area covered by the Shenzhen Economic Zone (SEZ). This description, despite having to be translated, was lucid and easy to follow as Mr. Zhou used the international chronological codes for each bedrock group in addition to a brief lithological description. The stratigraphic column he described is presented in Table 1.

Mr. Zhou was also able to point out the mapped location of most of the bedrock groups on the 1:50 000 scale geological map of the SEZ which was available for inspection throughout the day at the various field stops. This map, which is of course not freely available, was of particular interest to the Hong Kong geologists as it was the first time that any of us had been able to inspect the map, which is a direct extension of the familiar Allen & Stephens geological map of Hong Kong at the same scale.

The stratigraphic horizons which were to be visited during the day were pointed out by Mr. Zhou and these are also marked on Table 1. Mr. Zhou concluded his discussion on the regional stratigraphy by observing that although most of the geochronology was believed to be firmly established some doubt did exist as to the ages of the rocks classified as Sinian, Ordovician and Devonian sediments as well as of the suite of 'orogenic' granites.

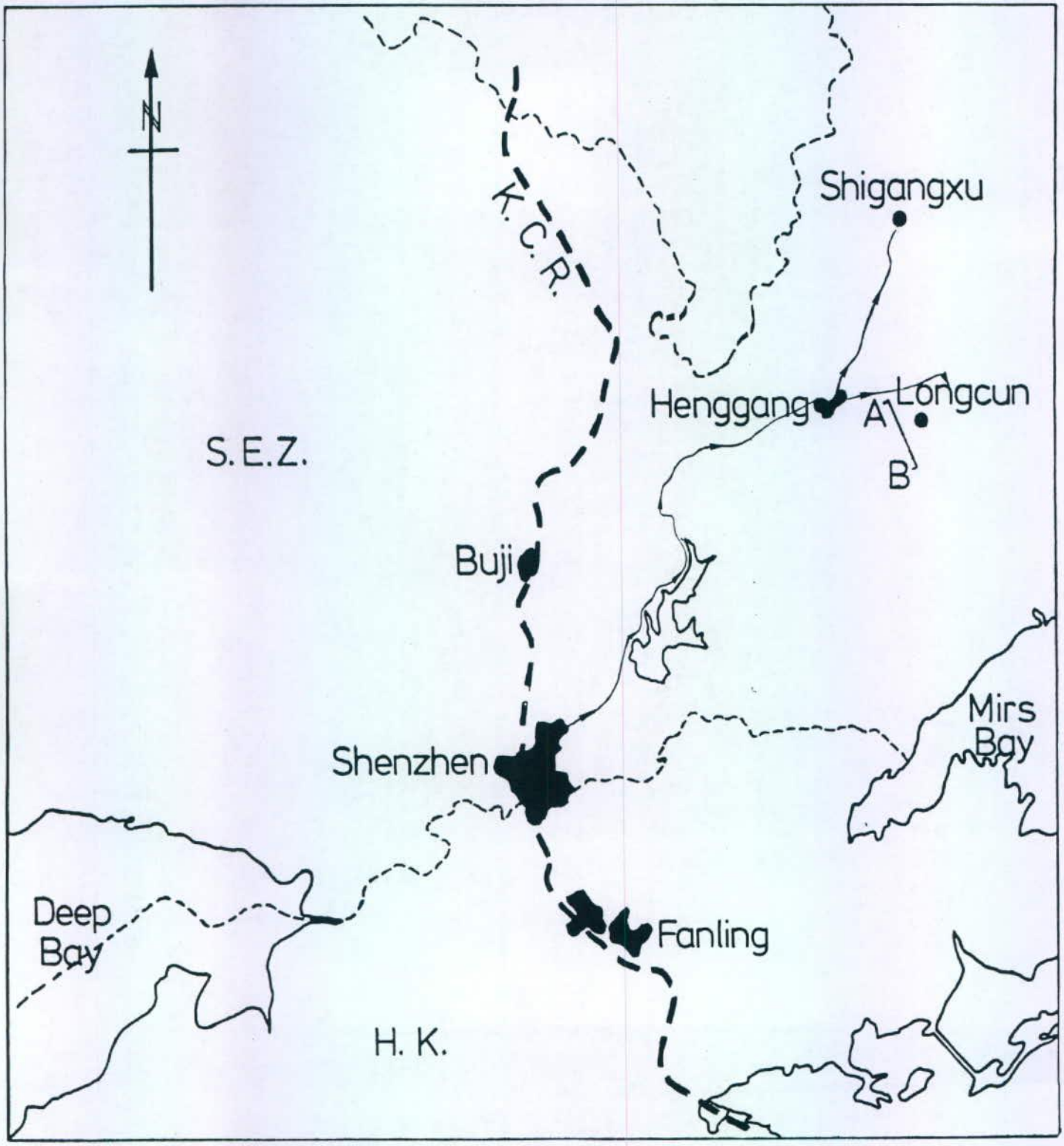


Figure 1 : Location plan of the areas visited in the Shenzhen Economic Zone (S.E. 2)
Line of cross section A-B also shown.
(⟶ Route followed)

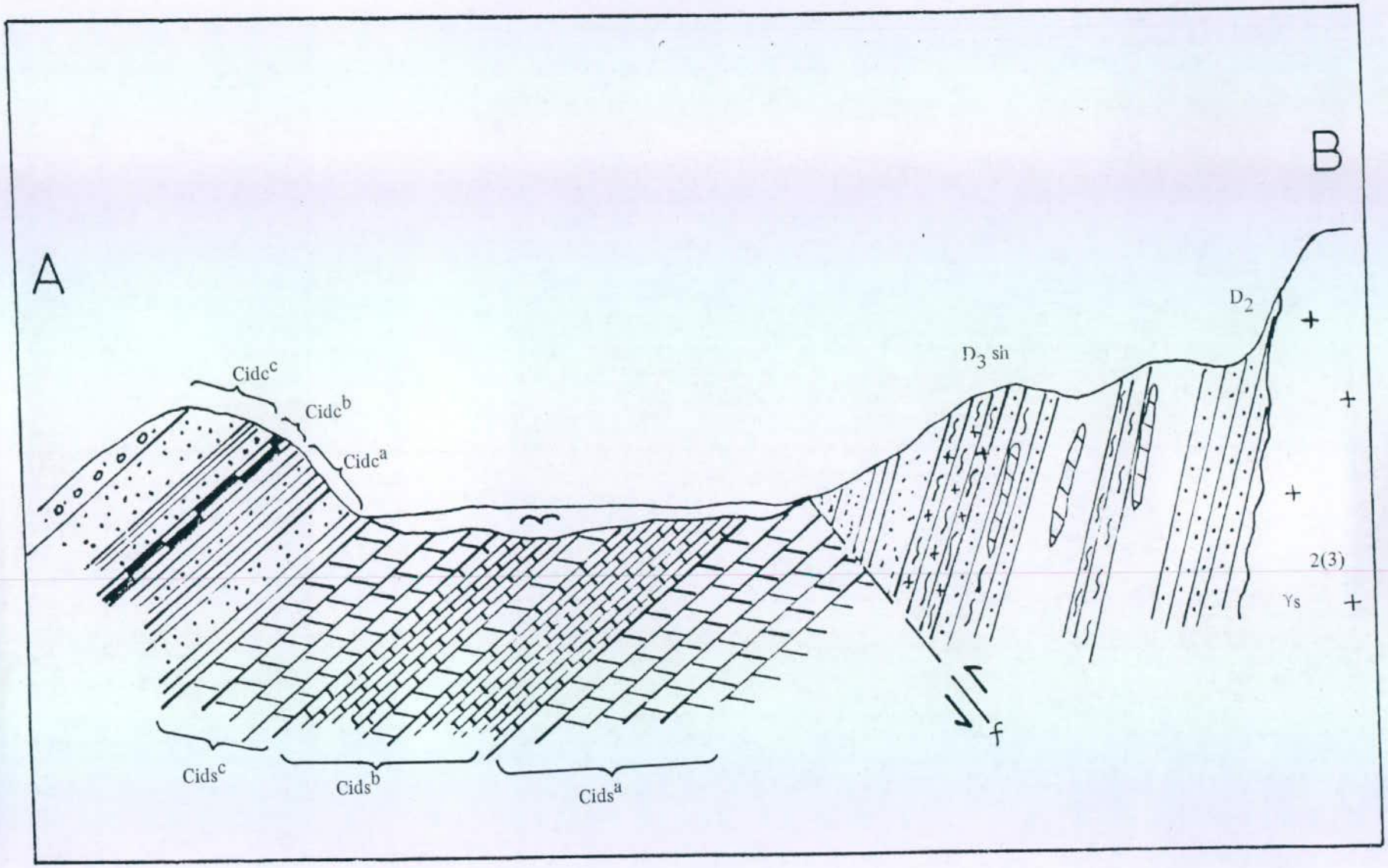


Figure 2 : Schematic cross section along the line A-B shown in Figure 1

Regarding the regional structural geology Mr. Zhou remarked that the main "grain" of the country and many of the faults, trend primarily NE with the majority of faults dipping NW. The second regional fault strike trend was NW and both of these major fault systems were affected by a later, minor, NNE trending series of discontinuities. Mr. Zhou explained that the major NE fault zone of the SEZ, which also passed into Hong Kong territory, was the Lianhua fault zone. The latter was made up of the Shenzhen fault in the south and the Haiphong fault in the north. These combined to form the Linghua fault zone, 6 km wide, essentially separating the volcanic from the other rocks and within which dynamic metamorphism was very strongly evident. The southern marginal block was evidently noticably uplifted as shown by the development of extensive cliff topography. The southern fault line is thought to be stronger than the northern one although it is the latter one that reaches and crosses Hong Kong territory.

The party, refreshed with tea and forearmed with knowledge, took to the vehicles and headed NE from Shenzhen City on the Longgang road, along and past the northern shores of the Shenzhen Reservoir, to Henggang and then eastwards to the village of Longcun. This village lies on the southern edge of a NE trending valley, about 1 km wide. The hills to the south of the village formed the first field stop and the valley or rather the bedrocks beneath the alluvial floor of the valley formed the second field stop. Figure 1 shows a location plan of the areas visited.

After partaking of a fine picnic lunch in the field the rocks exposed at the first stop were examined both on the natural hillside and in a number of long exploration trenches which traversed the countryside in the direction of the regional dip, i.e. SE-NW. The general geological cross section is shown on Figure 2. The strata examined included the steeply dipping, regionally metamorphosed D_3^2, i.e. middle Upper Devonian sandstones with grey schist, the latter being locally rich in biotite, staurolite and occasionally garnet. Although the coarse sandstones did not appear to be strongly metamorphosed it was very noticable that all the finer grained rocks of the area had been altered to schist.

As we proceeded over the crest of the first ridge, rocks of D_3^1, i.e. lower Upper Devonian, were encountered and examined in the exploration trenches and in the heap of discarded exploration drill core shown in one of the plates. These regionally metamorphosed rocks included sandstones, marble (in lenses), biotite and quartz schist. The trenching and coring operations had apparently been carried out some years ago in a search for deposits of lead and zinc.

The second field stop was at a core store in a farm yard on the northern edge of the valley shown in the section. Some forty holes had recently been sunk in this valley as part of a recent lead-zinc prospecting programme, the holes ranging in depth to 60 metres. The holes encountered between 3 and 20 metres of alluvium over beds belonging to the C_1ds^{a-c} series, i.e. three stages of the Lower Carboniferous. These latter rocks comprise dolomites, which were seen to be generally creamy white and fine grained with some tremolite, and marble, which was crystalline, white, coarse grained and locally known as "snowflake" marble. Overlying the C_1ds^c was a grey and brown phyllitic rock belonging to the C_1dc^a stage. One of the cores laid out clearly displayed the apparently conformable contact between the two rock types. The thickness of each of the C_1ds stages ranged from 60 to over 100 metres and the average dip was 30° to the NW.

The third field stop, near the village of Pengxia, was to examine in greater detail the C_1dc^a (Visean) beds overlying the C_1ds marble deposits described above. These C_1dc rocks, which are also all regionally metamorphosed, are of Lower Carboniferous age and comprise sandstone, shale and a key graphitic coal seam marker. The road cutting examined exposed a thick sequence of strongly folded, brown, weathered phyllite with several thin (1–2 metres) graphitic schist horizons. This sequence of rocks, whose age had apparently been determined from plant fossils at a location near Guangzhou, appeared from the mapping to strike toward the area in Hong Kong underlain by the very similar Lok Ma Chau Formation!

The fourth and final field stop was further northeast at Shigangxu, where a large quarry about 60 m deep had been developed to supply limestone for an adjacent cement factory. The rocks belonged to the C_{2+3} formations, i.e. Middle and Upper Carboniferous, and were thick horizons of intercalated limestone and dolomitic limestone. The dolomitic limestone zones, which were too high in Mg to be suitable for cement making, comprised a fractured, hard, brittle, fine-grained grey rock showing heavy red staining on discontinuity surfaces. These Carboniferous rocks had apparently been firmly dated primarily on the basis of fusulinid foraminifera, an excellent example of which was found during the course of the visit.

An interesting feature of this locality is that there are no rock outcrops in the flat alluvial valley, the limestone being entirely concealed beneath several metres of alluvium. Rockhead is a highly irregular karst pavement surface and the overburden is removed entirely by hand digging.

With the geological activities of the visit thus completed by about 5 o' clock the party headed straight for Shenzhen railway station where after thanking and bidding farewell to our hosts, we crossed to Lo Wu and returned uneventfully, if tired, to Hung Hom, after an enthralling first field trip into China, certain that following this successful "trial run" further trips into China and conversely visits from Chinese geologists will be organised by the Society in the future.

Thanks are due to Dr. C. Peng and Mr. C. M. Lee for their efforts in organizing the trip and ensuring that all went smoothly.

Plate 1 Party examining Upper Devonion (D_3) sandstones and schists in exploration trench.

Plate 2 Road cutting exposing Lower Carboniferous (C_1dc) strongly folded phyllite with thin graphitic schist horizons.

Table 1 Stratigraphic Column of Shenzhen

	Bedrock Group	Code	Age	Description
A	Sedimentary Rocks			
	12	K_{2nn}	Upper Cretaceous	Red sandy conglomerate with graniclasts, and red beds, pebbles are granite, inland basin (continental)
	11	K_{1tn}	Lower Cretaceous	Purple red tuffaceous sandstone shale with rhyolite crystal tuff
	10	J_{3gj}	Upper Jurassic	- an upper tuffaceous sandstone, crystal tuff and volcanic breccia
				- a lower volcanic rhyolite lava and tuff (tuffaceous sandstone) with agglomerate
	9	T_3-J_1	Upper Triassic to Lower Jurassic	Marine facies arkose, sandstone and shale with some local carbonaceous shale
	..... Unconformity			
	8(*4)	C_{2+3kl}	Middle and Upper Carboniferous	Intercalated limestone and dolomitic limestone containing fossils. Some metamorphism to marble.
	7(*3)	C_{1dc}	Lower Carboniferous (Visean)	- C_{1dc}c conglomerate + sandstone
				- C_{1dc}b marker horizon of shale (graphitic) and coal
				- C_{1dc}a sandstone and shale
	6(*2)	C_{1ds}	Lower Carboniferous (3 stages)	- C_{1ds}c Upper dolomite
				- C_{1ds}b Middle (marble dolomite marble)
				- C_{1ds}a Lower dolomite
	..... Disconformity			
	5	C_{1ym}	Lower Carboniferous	Calcareous siltstone and sandstone
	..... Unconformity			

4(*1)	D_3	Upper Devonian (5 stages)	-	sandstone and schist
			-	garnet schist with sandstone
			-	sandstone, biotite and quartz schist with marble lenses
			-	horn stone and schist
			-	sandstone with garnet and staurolite schist
3	D_{2g}	Middle Devonian		Sandstone with conglomerates
2	0	Ordovician?		Fine sandstone and arkose. Slate and shale.
..... Unconformity				
1	P_{z1}	Precambrian? (Sinian)		Quartzite schist with some gneiss

B Igneous Rocks

5	K_2	Upper Cretaceous?	$\gamma_5 3$	Small bodies of monzonite with diorite
4	K_1	Lower Cretaceous?	$\gamma_5 3(1)$	Pink medium to fine grained granite
3	J_2	Middle Jurassic?	$\gamma_5 2(3)$	Large body of porphyritic granite
2	T_3-J_1	Upper Triassiç to Lower Jurassic?	$\gamma_5 2(2)$	Hornblende biotite granite
1	T_3	Upper Triassic?	$\gamma_5 1$	Foliated granite

Note (*1) = field visit

A SUMMARY TABLE OF THE REGIONAL STRATIGRAPHY AND MINERAL DEPOSITS OF GUANGDONG BASED ON THE WORK OF Y. NAN

P.S. Nau & W.W.S. Yim, Department of Geography & Geology, University of Hong Kong

This is a translation of a tabulation of the geology of the Guangdong Province based on a publication in Chinese by Nan (1979). In view of Mr. Nan's contribution towards the understanding of Guangdong geology, he has been invited to become an honorary member of our Society. We felt that an English translation of the table would be beneficial to all those interested but are not yet familiar with the stratigraphic sequences on the other side of the border. Any mistakes in the translation we are entirely responsible.

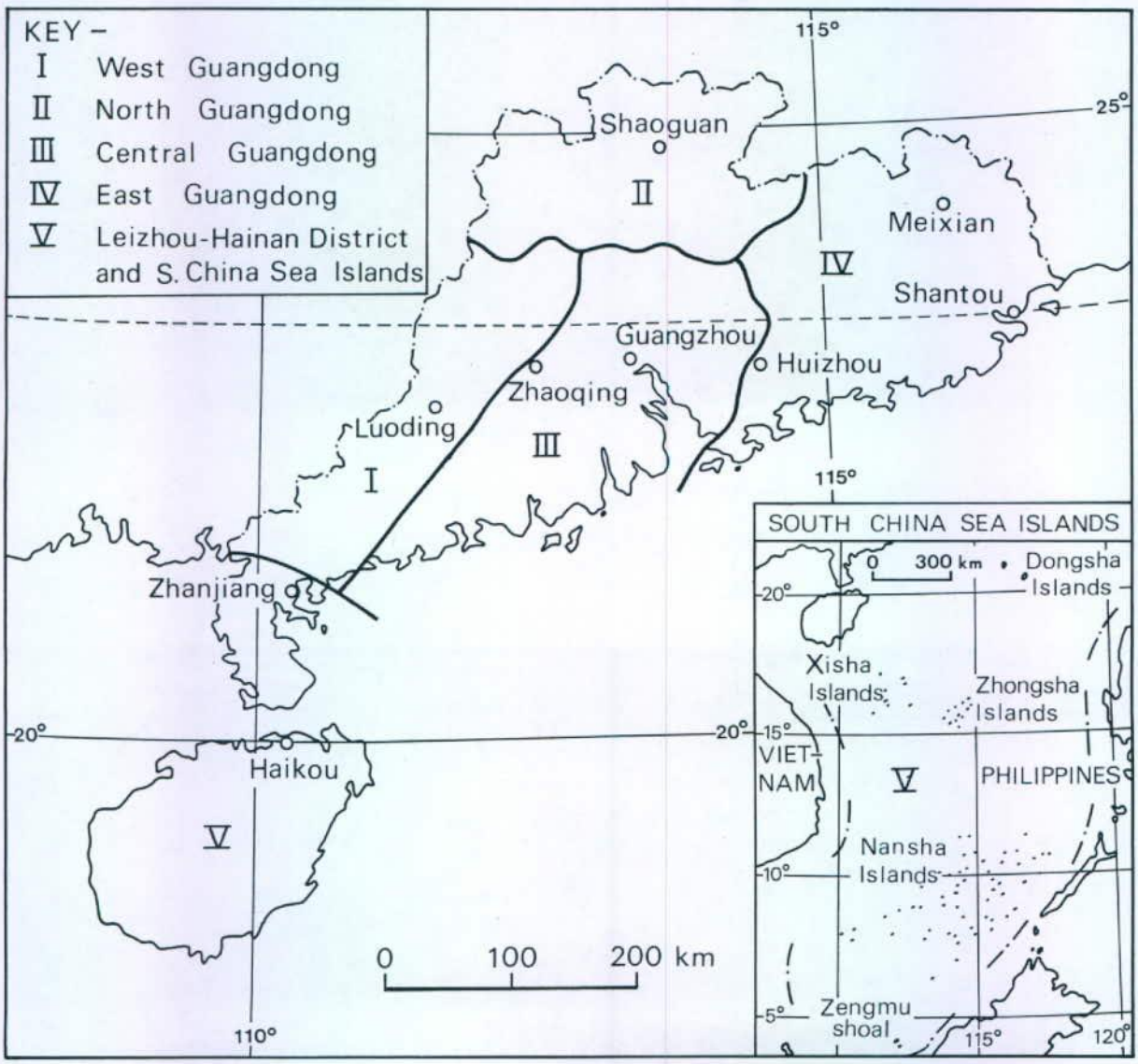
Reference

Y. Nan (1979). *Stratigraphy of Guangdong. School of Geology of Guangdong reprint, January 1979, 86 p.*

Key to the table

G. - Group	.....	Boundary uncertain
F. - Formation	————	Disconformity
M. - Member	~~~~~	Angular unconformity

Fig. 1 Regional stratigraphic divisions of the Guangdong Province



Age				Regions (Figure 1)					Type of lithofacies	Main fossils	Mineral deposits
Erathem	System	Series	Stage	West Guangdong	North Guangdong	Central Guangdong	East Guangdong	Leizhou-Hainan			
Cainozoic	Quaternary	Recent Holocene		continental deposits 0.5-25 m	continental deposits 0.5-20 m	continental and littoral deposits 0.5-60 m	continental and littoral deposits 1-40 m	continental and littoral deposits 0.5-57 m	terrestrial and littoral clastics (whole province)		phosphate deposits (South China Sea islands); bauxite (Leizhou-Hainan)
		Pleistocene Upper		continental and cave deposits 1-13.5 m	continental and cave deposits 10-33 m	continental, cave and littoral deposits 6-90 m	continental and littoral deposits 2-13 m basalt 150 m	Huguangyan F. 140-307 m	terrestrial and littoral clastics (whole province); fluvial and lacustrine clastics(Leizhou-Hainan); volcanic rocks including pyroclastics and lavas(Leizhou-Hainan, East Guangdong); lacustrine and ferruginous paludal clastics(West Guangdong)	Stegodon orientalis, Alluropoda sp., Cinnamamum sp.(Huguangyan F.); Bauhinia sp., Myrica sp., Rhus sp., Phyllites sp.(Zhanjiang F.); Dicranopteris linearis, Podocarpus nageia, Castanopsis hystrix(Datai F.)	karstic phosphorous ore(Central, West & North Guangdong); variety of marine placers
		Middle						Beihai F. 1-40 m			
		Lower		Datai F. 11-80 m				Zhanjiang F. 1-250 m			iron(West Guangdong)
	Neogene	Pliocene		Gaopengling F. >1212 m		>202 m	230-1056 m	Wanglougang F. 47-404 m	fluvial and piedmont clastics(West Guangdong); littoral and neritic zone clastics(Leizhou-Hainan)	Cushmanidea micra, Neomonoceratina dongtaiensis(Wanglougang F.); Leguminocythereis reticulata, Trachyleberis sp., Venericardia granulicostata, Corbula taiwanensis (Folou F.)	
				Laohuling F. 457 m				Foluo F. 39-574 m			
		Miocene		Shangchuan F. 547 m				Jiaowei F. 190-610 m; Changpo F. 249-629 m	fluvial and lacustrine clastics(West Guangdong); littoral and neritic zone clastics(Leizhou-Hainan); fluvial and lacustrine clastics with combustible organic deposits(Hainan)	Castanea mimollissima, Liquidambar miosinica(Shangchuan F.); Limacina sp., Triphora sp.(Jiaowei F.); Cyprinotus immanus, Potamocypris hainanensis(Changpo F.); Cythereis luminosa(Xiayang F.); Alnus kefersteinii, Carpinus miocordata (Huangniuling F.)	coal and oil shale (Hainan)
				Huangniuling F. 60-200 m				Xiayang F. 39-530 m			
	Palaeogene	Oligocene		Youganwo F. 116 m	Danxia G. 100-700 m	Huayong F. 755-1162 m	>120-2312 m	Weizhou F. 198-1095 m; Changchang F. 519 m	lacustrine and paludal clastics with combustible organic deposits(West Guangdong, Hainan); coarse-grained lacustrine clastics(North Guangdong); gypsum and halite -bearing chemical deposits in fine-grained clastics and volcanic rocks(Central Guangdong); alternating marine and continental clastics(Leizhou-Hainan)	Limnocythere jiangsuensis, Sinocypris reticulata, Cyprois reniformis, Hornichara huachongensis(Huayong F.); Osmunda lignitum(Changchang F.); Phacocythere inflata, Disauritocypris trapezoidea(Weizhou F.); Anosteira maomingensis, Cyprinus maomingensis Youganwo F.); Sinocypris arca, Eopelocypris changzhouensis(Liushagang F. Xibu F. Buxin F.); Osteochilus linliensis(Buxin F.)	coal and oil shale (West Guangdong, Hainan); petroleum and natural gas (Central & West Guangdong); gypsum and halite(Central Guangdong)
		Eocene				Xibu F. 100-630 m		Liushagang F. 969-1107 m; Changtou F. 513 m			
						Buxin F. 393-1143 m					
		Palaeocene		Tongguling F. >926 m	Luofozhai F. 120-630 m	Daliangshan F. 13-450 m			lacustrine clastics(North & Central Guangdong); fluvial and lacustrine clastics(West Guangdong)	Linnania lofoensis, Dissacus feiganensis, Lofochaius brachyodus, Asiatosuchus nanlingensis(Luofozhai G.)	
Mesozoic	Cretaceous	Upper		Nanxiong G. 117->1045 m	Nanxiong G. 100-2415 m	Nanxiong G. 680->1963 m	Nanxiong G. 152->4024 m	Baowan G. 2589 m	lacustrine clastics with volcanic rocks(West, North, Central & East Guangdong); intermontane basin clastics(Hainan)	Nanhsiungchelys wuchingensis, Oolithes rugustus, O. spheroides, Nanshiungosaurus brevispnius (Nanxiong G.)	gypsum and halite (East, Central & North Guangdong); cupriferous sandstone(North & East Guangdong)
		Lower		Luoding G. 1329-2916 m	Luoding G. 725-2024 m		Guancaohu G. 788-1125 m	Lumuwan G. 1920-2520 m	lacustrine clastics(West & North Guangdong); lacustrine clastics with volcanic rocks(East Guangdong); intermontane basin clastics(Hainan)	Trigonioides kodairai, Onychiopsis sp., Dictyestheria elongata, Bairdestheria sp.(Luoding G.)	

Mesozoic	Jurassic	Upper		thickness uncertain		Gaojiping G. >1080 m	Gaojiping G. >132->5385 m	>800 m	lacustrine clastics and volcanic rocks including intermediate to acidic lavas and pyroclastics(East & Central Guangdong)	Euffordia sp., Onychiopsis elongata, Coniopteris burejensis, Yanjiestheria chekiangensis(Gaojiping G.)	iron(East Guangdong)
		Middle			Baizushan G. 200->1100 m	Baizushan G. 170-1450 m	Zhangping G. >770->2229 m		intermontane lacustrine clastics intercalated with pyroclastic rocks (North & Central Guangdong); paludal clastics and pyroclastics(East Guangdong)	Tutuella rotunda, Pseudocardinia sp. (Zhangping G.); Ferganoconcha sp. (Zhangping G. & Baizushan G.)	
		Lower			Jinji F. 235->900 m	Jinji F. 196->652 m	Jinji F. 343->5153 m		neritic sands and muds(North, East & Central Guangdong)	Hongkongites hongkongensis, Arietites semicostatus, Psiloceras planorbis, Pleuromya oblonga	coal(North & East Guangdong)
	Triassic	Upper		Lesser Yunwu Mountain G. >40-402 m	Xiaoping G. 243->1099 m	Xiaoping F. 273->820 m / Lesser Yunwu Mountain G. 70-961 m	Dading F. 1315->2720 m / Xiaoping F. 149->2907 m	Upper Triassic (?) 350-586 m	intermontane coal-bearing lacustrine and paludal clastics(West & Central Guangdong); coal-bearing paludal clastics(North, Central & East Guangdong); neritic ferruginous and phosphatic carbonates and clastics(East Guangdong)	Ptilozamites chinensis, Pterophyllum ptilum, Anthrophyopsis crassinervis (Lesser Yunwu Mountain G., Xiaoping F. & Dading F.); Oxytoma dabaoshanensis, Bakevelloides hekiensis(Xiaoping F. & Dading F.)	coal(North & Central Guangdong); iron(East Guangdong)
		Middle			Huangpin G. >498 m				neritic and littoral clastics(North Guangdong)	Isocrinus candelabrum, Cervillia sp.	
		Lower			Daye G. 550-573 m	Daye G. 170 m	Daye G. 50-800 m		neritic carbonates and clastics(North, Central & East Guangdong)	Clavaia wangi, C. griesbachi, Anoptophora fassaensis, Eumorphotis inaequicostata	
Upper Palaeozoic	Permian	Upper			Dalong F. 12 m / Changsing F. 4-45 m	?	Dalong F. 28-136 m		neritic carbonates(North Guangdong); neritic siliceous clastics(North & East Guangdong)	Palaeofusulina fusiformis, P. sinensis, P. wangi(Changxing F.); Pseudotirolites asiaticus, P. mapingensis Dalong F.)	
					Longtan F. 222-862 m	Longtan F. 108-1096 m	Longtan F. 312-773 m	Longtan F. 400-420 m	marine and continental clastics both coal-bearing	Gigantopteris nicotianaefolia, Lobatannularia ensifolia, Codonofusiella schubertelloides, Palaeofusulina sinensis	coal(North & Central Guangdong)
		Lower		Gufeng F. >10 m	Dangchong F. 16-105 m / Maokou F. 40-195 m	Gufeng F. 50-170 m / Maokou F. 60-100 m	Gufeng F. 20-80 m	Eding F. 560-600 m	neritic carbonates with manganiferous and phosphatic siliceous rocks locally (North, West, Central & East Guangdong); neritic carbonates(Hainan)	Neoschwagerina simplex, Verbeekina verbeeki, Ipiciphyllum(Maokou F.); Kufengoceras shengi(Gufeng F.); Minojapanella elongata, Parafusulina sapperi(Eding F.); Misellina claudiae, Parafusulina multiseptata(Qixia F.)	phosphorus and manganese(North & East Guangdong)
					Qixia F. 40-142 m	Qixia F. 65-270 m	Qixia F. 110-260m	Echa F. >185 m			
	Carboniferous	Upper		Hutian G. 220-660 m	Hutian G. 365-905 m: Chuanshan G. 58-325 m	Chuanshan G. 10-250 m	Chuanshan G. >150 m	Guangpianshan F. 180 m / Ledonghe F. >370 m	neritic carbonates(West, North, Central & East Guangdong), neritic carbonates and clastics(Hainan)	Pseudoschwagerina moelleri, Triticites parvulus, Quasifusulina longissima (Chuanshan G. & Guangpianshan F.); Fusulina cylindrica, Fusullinella pseudobocki, Profusullinella parva, Chaetetes lungtunensis(Huanglong G.)	cementstone(North & East Guangdong)
		Middle			Huanglong G. 115-500 m	Huanglong G. 25-520 m	Huanglong G. 150-320 m	Shiling G. 500 m			flux limestone(North & East Guangdong)
		Lower	Datang	Zimenqiao M. 60-80 m	Zimenqiao M. 10-170 m	Zimenqiao M. 15-80 m	Zhongxin F. 185-520 m	Qingtianxia F. 450-580 m	neritic carbonates and coal-rich clastics(North, West & Central Guangdong); coal-bearing littoral, neritic and paludal clastics(East Guangdong); neritic clastics(Hainan)	Yuanophyllum kansuense, Neoclisiophyllum yengtzeense, Gigantoproductus edelburgensis, Kansuella maxima(Zimengiao M.); Neuropteris gigantea, Rhodea shiangshiangensis, Kansuella kansuensis(Ceshui M. & Zhongxin F.); Kueichowphyllum sinense, Thysanophyllum asiaticum, Antiquatonia insculpta (Shidengzi M. & Qingtianxia F.)	
				Ceshui M. 45-320 m	Ceshui M. 25-590 m	Ceshui M. 90-330 m					coal(North & East Guangdong)
				Shidengzi M. 180-590 m	Shidengzi M. 280-800 m	Shidengzi M. 20-290 m					cementstone(North Guangdong)
			Yanguan	Menggongao F. 160-575 m	Menggongao F. 123-660 m	Menggongao F. 130-690 m		thickness uncertain	neritic carbonates with clastics locally	Fusella tornacensis, Eochoristites neipentaiensis, Cystophrentis kolaohoensis, Pseudouralinia gigantea (Menggongao F.)	

Upper Palaeozoic	Devonian	Upper		Maozifeng F. 200-400m	Liujiang F. 633 m	Liujiang F. 421-614 m	Maozifeng F. 83-400m	Maozifeng F. 65-970 m	Shuangtou G. 540-1110 m	Shanpo G. > 745 m	neritic carbonates and fine-grained clastics(North, West & Central Guangdong); neritic carbonaceous and manganiferous siliceous rocks (North & West Guangdong); littoral and neritic clastics(East Guangdong & Hainan)	Cyrtospirifer subextensus, Hunanospirifer wangi, Tenticospirifer tenticulum, Leptophloeum rhombicum (Maozifeng F. & Shuangtou G.); Cyrtospirifer sinensis, Disphyllum longiseptatum, Manticoceras sp. (Tianzhiling F.)	iron(North & East Guangdong); phosphorus (North & Central Guangdong)
				Tianzhiling F. >380 m			Tianzhiling F. 140-600m	Tianzhiling F. 20-790 m					
		Middle		350-800 m	Qiziqiao F. 100-360m	Qiziqiao F. 140-850 m		Laohuao F. 70-850 m	Laohuao F. 100-500 m		neritic sands and muds(Central & East Guangdong); neritic carbonates(West & North Guangdong)	Bothriolepis taishanensis(Laohuao F.); Emanuella takwanensis, Stringocephalus burtini(Qiziqiao F.)	iron pyrites and iron (North Guangdong)
					Guitou F. 1030-1620 m	Guitou F. 200-1250 m		Guitou F. 535-1530 m			fluvial, neritic and littoral clastics	Lepidodendropsis arborescens, Bothriolepis sinensis, Hunanolepis tieni (Guitou F.)	iron and phosphorus (North Guangdong)
		Lower		225-800m							neritic and littoral clastics with minor amounts of carbonates	Hysterolites(Orientospirifer) nakaolinpensis(Lower Devonian)	
Lower Palaeozoic	Silurian	Upper		Lingxia G. > 31 m							marine fossiliferous shales	Coronocephalus rex, Otarion diffractum (Lingxia G.)	
		Middle		Wentoushan G. 20-2440 m							graptolitic shales	Cyrtograptus murchisoni, Monograptus riccartonensis(Wantoushan G.)	
		Lower		Liantan G. 410-1860 m								Demirastrites convolutus, Monograptus sedgwicki, Streptograptus crispus (Liantan G.)	
	Ordovician	Upper		Sanjian G. 500-1730 m		Longtouzhai G. 1000 m		Longtouzhai G. > 315 m		Shanye G. >190 m	neritic clastics(West Guangdong); graptolitic shales(North & Central Guangdong); graptolitic carbonates (Hainan)		
		Middle				Changkengshui F. 55-90 m		Changkengshui F. 20-64 m		Shatang F. >280 m		Nemagraptus gracilis, Glossograptus hincksii(Changkengshui F. & Shatang F.)	
		Lower		Suoweiling G. 50-1895 m		Xiahuangkeng F. 78-115 m		Xiahuangkeng F. 45-130 m		Yahua F. >400 m		Illaenus sinensis, Metorthis delicata (Suoweiling G.); Amplexograptus confertus, Didymograptus hirundo (Xiahuangkeng F. & Yahua F.); Anisograptus matanensis(Xinchang F.)	
						Xinchang F. 55 m		Xinchang F. 70-185 m					
	Cambrian	Upper		Bacun G. >2438- >2652 m		Bacun G. >2312- >2603 m		Bacun G. >1034- >3277 m	Bacun G. thickness uncertain	F. 'c' 282 m	Dakui G. >254 m	neritic flysch clastics(West, North, Central & East Guangdong); neritic clastics and phosphatic and manganiferous carbonates(Yaxian in Hainan); neritic clastics and ferruginous carbonates(north-west Hainan)	Protospongia sp., Homotreta venia, Palaeobolus rotulus(Bacun G.); Shiluites hainanensis(F. 'c'); Xystridura hainanensis, Dawsonia dawsoni(Damao G.)	iron and phosphorus (Hainan)
		Middle								F. 'b' 360 m	Damao G. 363 m			
		Lower								F. 'a' 676 m				
Proterozoic ?	Sinian			F. 'd' 30-55 m		F. 'd' 5-50 m			F. 'd'	F. 'd' 92-220 m		neritic siliceous rocks	spore assemblage containing Trachyrytidodiacrodium	
				F. 'c' >2700-5200 m		F. 'c' 1450-5000 m			F. 'c' 2600-2700 m	F. 'c' 500-740m	?	neritic flyschoid clastics of sands and muds	spore assemblage containing Protoleiosphaeridium	
				F. 'b' 6000-7000 m		F. 'b' 1300-3600 m		F. 'b' > 3000 m	F. 'b' 3800-5400 m	F. 'b' >2600 m		neritic lagoonal clastic muds associated with volcanic rocks, pyrite and manganese, grading into neritic flyschoid clastics with carbonate intercalations		iron(West & North Guangdong); phosphorus and iron pyrites (West Guangdong)
				F. 'a' 1900-2500 m		?		F. 'a' >1836 m	F. 'a' thickness uncertain	?		neritic flyschoid clastics of sands and muds, regionally metamorphosed and migmatized		

NOTICE

Meeting on Geology of Surficial Deposits in Hong Kong September 19-21, 1983

Twenty-three papers have been received for this meeting covering most aspects including engineering applications. Interested members of the Society are requested to register for this major event as soon as possible because the size of the lecture theatre is limited. Further copies of the Second Circular and Registration Form are obtainable from either Dr C.Y. Jim or Wyss Yim by calling H-4097229.

LETTER TO THE EDITOR

Dear Sir,

Logo

I refer to the article on the proposed ammonite logo in the newsletter of January 1983.

I agree that an ammonite is a good idea, but it might be best to use the original Hong-Kongites hongkongensis specimen which is still kept by the Nanjing Geological and Palaeontology Institute.

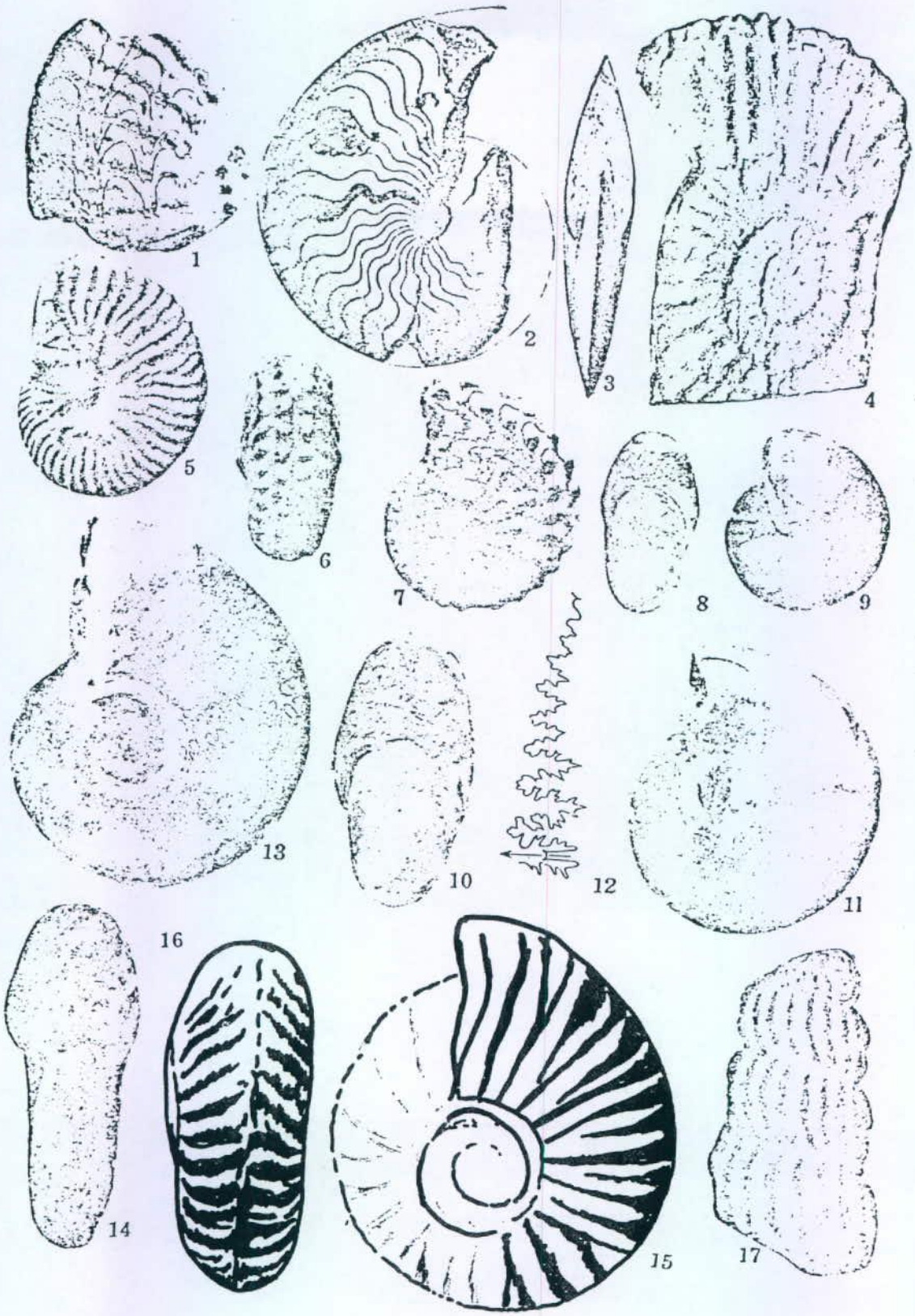
It is illustrated in the reference book 'The Standard Fossils of China (Invertebrate)'.

I enclose a photocopy of the fossil - No. 15 & 16 and my suggested logo based on the original photographs.

Yours faithfully,
Signed C.M. Lee

CLASSIFICATION OF DEGREE OF DECOMPOSITION (ANON)

Grade	Degree of Decomposition	Diagnostic features in geologists during fieldwork
VI	Gutted	No recognisable eyeball movement; subject horizontally bedded.
V	Completely inebriated	Subject completely blotto but still standing and able to distinguish light from dark.
IV	Highly inebriated	Subject weakened so that fairly large rounds will be bought. Speech is slurred and walking is difficult.
III	Moderately inebriated	Large pieces of information (e.g. where the car is parked) cannot be remembered offhand.
II	Slightly inebriated	Strength approaching that of sobriety - slight staggering
I	Fresh sabriety	



15 & 16 above show drawings of the original Hongkongites hongkongensis [Photocopied from 'The Standard Tossils of China (Invertebrate)']

FORTHCOMING PROGRAMME

Field Excursion to Port Island and Double Island **(Sunday 14th August)**

Bring the family along on this junk trip and spend an enjoyable day away from it all. A stop will be made at Port Island to study the type locality of the Port Island Formation and particularly the excellently exposed contact with the Repulse Bay Formation. We shall then go on to a sandy beach on Double Island for a picnic and swim. A sampan will be available to take members ashore.

The junk will leave the Chinese University Ferry Pier at 9.30 a.m. Bring your own lunch and refreshments.

Please return the slip below to Toni Pearson as soon as possible. Numbers are limited so book early to avoid disappointment. The cost is $32 per adult and $16 per child below the age of 16. No charge for infants under 2.

Field Excursion to Chaiwan MTR Depot **(Saturday 8th October)**

Substantial site formation works for the depot have included cut slopes upto 80m high. These cuttings are mainly in rock and expose granite, monzonite and Repulse Bay pyroclastics including some unusually coarse agglomerates. The contacts between these rock types area also exposed. The influence of the rock types and of faulting on the topography is very distinct and a fault zone within the granite can be seen in the cuttings.

The cut slopes also provide, from their tops, spectacular views of this busy site involving reclamation, seawall construction, retaining wall, foundation and road construction as well as the building of the depot structure itself.

For safety reasons the group will be limited to 20 people and each must bring his own safety helmet.

A bus will leave the car park of the Murray Building, Garden Road, at 9:30 a.m. and the charge will be HK$10, payable on the day. To book your place please telephone Peter Randall on 5-283031. If the trip is over subscribed it may be possible to re-run it on a subsequent Saturday.

Lecture on the Engineering Properties of Relict Joints **(Wednesday 2nd November)**

Last November Richard Harris won the Cooling Prize awarded by the British Geotechnical Society, a sub-group of the Institution of Civil Engineers. He has kindly agreed to repeat his award winning lecture for us and to illustrate it with photographs and examples from throughout Hong Kong. The lecture was entitled "Mass or Massive - a technique for jointed soils" and includes the application of rock mechanics principles to the analysis of soils with relict joints.

The nature, extent and influence of relict joints on Hong Kong slopes and cuttings is still very poorly recorded or understood. If you have any observations or photographs of these factors please bring them along and share them with us after Richard's talk.

The venue will be confirmed in the next newsletter.

TREASURER'S REPORT

I would like to acknowledge the following 71 subscriptions received since the last newsletter No. 4.

Au K.C.
Barry A.J.
Chan C.L.
Chan P.Y.
Chan O.P.
Chou F.S.
Chee M.H.
Chu P.K.
Cowland J.W.
Cox D.
Gammon J.R.A.
Hale R.E.
Ho S.
Ho K.
Ho N.C.
Jones R.
Koon Y.K.
Kwan C.Y.
Kwok K.Y.
Kwan C.Y.
Lam H.C.
Law R.S.Y.
Lee E.Y.
Lee W.M.
Lee W.C.
Leung C.H.
Ling S.F.
Lo N.
Lo K.S.
Lo W.B.
Low E.
Man K.F.
Matson C.R.
Mak S.C.
Mak P.
Man F.T.
Nash J.M.
Ng C.K.
Ng C.O.
Nixon T.J.P.
Peng C.J.
Poon Y.H.
Purser R.J.
Ringis J.
Roberts P.A.
Ridley-Thomas W.N.
Sen J.C.H.
Siu K.L.
So C.L.
Shirlaw J.N.
Tam S.L.
Tam Y.W.
Tattersall J.
Tang Y.Y.
Thompson J.A.
Thompson D.M.
Tovey N.K.
Tsui K.K.
Tsui C.
Woods N.W.
Wang H.F.
Wong K.K.
Wong N.
Wong S.F.
Wong P.H.
Wong C.K.
Wong C.S.
Yuen K.W.
Yuen S.
Yuen A.
Yung P.Y.

M.J. Atherton, 7/7/83

REPLY SLIP (Field Excursion to Port Island/Double Island) Sunday 14th August

I wish to attend and will be accompanied by ( ) adults and ( ) children*. I enclose payment of ( ) dollars.

NAME

ADDRESS

TEL. NO.

* 2 to 15 years of age.

Send this slip to Mrs A. Pearson, C7 Hillgrove, 18, Cape Drive, Chung Hom Kok, Hong Kong. Make cheques payable to Geological Society of Hong Kong.

會員來信

會員李作明先生來函同意本會於本年一月份通訊所提議用菊石來作爲本會的標誌。但李先生指出我們應該用現藏於南京地質及古生物學院內的香港菊石作爲藍本。李先生並附來影印本作爲我們的參考。

活動節目預告

赤洲及往灣洲野外考察　八月十四日星期日

這是一個合家歡遠離鬧市遨遊海外的好機會。行程中將會踏上赤洲去觀察赤洲組和淺水灣組的接觸。接着我們會去往灣洲的一個沙灘野餐及海浴。將會備有舢舨接載我們登岸。

接載我們的船隻將會在當日上午九時卅分在中文大學碼頭開出。請自備午餐及飲料。

因爲人數有限請及早將附刊回條及劃線支票寄給Toni Pearson以免向隅。

參觀柴灣地下鐵路車廠工地　十月八日星期六

柴灣車廠的地盤整理工程包括削高至八十米之斜坡。削坡面現出極多之地質有趣現象如多種岩石之接觸及花崗石裏之斷層等。

在削坡頂上更可觀察到各種不同的大型工程的進展。

爲安全理由起見，參觀人數每次只限二十人而每人必須自備安全帽。

接送的車輛將於當天上午 9 時30分在花園道美梨大厦停車場開出。收費每位 $10，到時繳費。請與Peter Randall電話（5-283031）聯絡登記。如果參加人數超額的話，我們會在隨着的星期六再辦一次。

演講——殘餘節理的工程特性　十一月二日星期三

Richard Harris於去年十一月以一篇關於殘餘節理的工程特性的論文而獲得英國土力學會（英國土木工程師學會的一個屬會）的Cooling Prize。Richard Harris準備再爲我們講解一次他的得獎論文，並以香港的實例和圖片說明。講題是"Mass or Massive ——a technique for jointed soils"。內容涉及將岩石力學的原理應用到具有殘餘節理的坭土的分析。

殘餘節理對香港斜坡影響的程度的資料仍然很貧乏。會員們如有任何有關的資料請來參與這個講座及會後的研討會。

演講會地點將於下一期的通訊內通知。

深圳市地質旅行簡報

土力工程處：A. D. Burnett博士

四月二十三日我會A. D. Burnett, J. D. Bennett, C. Grant, D. Workman, W. Yim, M. Atherton, C. M. Lee, K. W. Lee, K. W. Lai 等九位成員結伴前往深圳市作了首次專業訪問，受到了深圳市地質局周德雨總工程師等同業熱情接待。

清早甫抵深圳市，由周先生代表深圳市地質局及深圳市地質學會在深圳科學館設茶會表示歡迎，他展示一比五萬比例尺深圳市經濟特區地質圖並結合當日野外參觀地點介紹了深圳地質構造特徵。

周先生介紹了該市各時代地層發育情況，也指出所劃分的雲旦系、粵陶系、泥盆系及一切被認爲屬造山運動產物的花崗岩類，其時代仍待商榷，該市主要構造特別是主要斷裂呈東北走向，傾向西北；其次是西北走向斷裂，這兩組系統斷續受後來形成的北東北走向斷裂干撓影響。上述東北走向斷裂稱深圳斷裂，屬蓮花山斷裂帶北帶；其南帶即海豐斷裂，經過香港地區以南海域。深圳斷裂成帶，由數條大斷裂構成，闊6公里，沿斷裂帶岩石具强烈動力變質特徵並分佈侏羅紀火山岩。斷裂東南側往往呈上升陡峭地貌形態。斷裂南帶區域變質程度比北帶强，往南伸入香港橫切新界。

茶會後，即乘車沿深圳市東北向經橫崗折向東南到龍村谷地，開始第一個參觀點。由該村向東南沿山腰順岩層傾向的探槽觀察了上泥盆統上部產狀陡峭的區域變質石英砂岩和富含黑雲母、十字石和偶含石榴子石的片岩，爲圖2所示，非常令人注目的是粗石英砂岩受變質程度不高，而所有細粒岩石則全部已變質爲片岩。越過山脊，則見上泥盆統下部岩石，在丟棄的岩蕊中可見受變質砂岩、大理岩透鏡體及黑雲母石英片岩。

折返龍村沿該谷地北緣岩蕊庫參觀數十個鑽探岩蕊。這個第二個參觀點是原地大理石礦普查區，大理石礦均在2－30米冲積層之下，由下石灰統石磴子組大理岩及白雲岩組成，原60－100米。大理岩乳白色，粗粒晶質，俗稱漢白玉；白雲岩細晶質，形如雪花，含透閃石。另可清楚見及覆於石磴子組之上的測水煤組岩蕊爲灰褐色千枚狀岩層，兩組之間整合過渡。

接着往北部地區參觀第三個點，在公路切面詳見受變質測水煤組，岩石爲一系列强烈褶皺的褐色風化的千枚岩、石英砂岩，頁岩和1至2米薄層狀石墨煤層標誌層。該組在廣州附近已有植物化石鑑定。根據圖上所示，岩層順走向伸入香港即類似落馬洲組地層。

最後參觀遠在石崗墟東北的深約六十米的石灰岩採石場，石料供應鄰近水泥廠。灰岩完全被數米冲積層所覆蓋，經手工剝土，可見岩石表面呈不規則的喀斯特地貌形態。岩石屬中上石灰統壺天羣，由厚層狀石灰岩和白雲灰質岩組成，性脆硬易碎裂，沿縫合線及斷口常示暗紅色鐵質渲染。可見紡綞蟲化石。

下午五時結束參觀訪問，直奔深圳火車站，向主人表示感謝和告辭後，過關進入羅湖回紅磡。

通過這次成功的首次“試航”訪問，希望今後組織更多的專業訪問團到中國參觀，同時希望不久將來邀請中國同業回訪香港。

最後，謹向爲組織和努力促成這次旅行訪問並保證行程順利進行的彭琪瑞博士和李作明先生致謝。

廣東區地層及礦物沉積一覽表

在英文版內所見的撮要表是根據南頤先生1979年的著作「廣東的地層」所輯譯。全文可向香港大學地理地質系嚴維樞先生或鈕柏燊先生借閱。爲對南頤先生於廣東地層作出的貢獻表示敬意，本會已邀請南先生爲本會榮譽會員。

通告

香港之地面沉積地質研討會（1983年9月19－21日）

主辦當局經已收到23份參加這次研討會的論文，內容包羅甚廣，工程應用方面亦有涉及。因議會場座位有限，有興趣參加的會員請儘早登記，以免向隅。如欲再索取有關這次會議的第二號通告及登記表格，可與詹志勇博士或嚴維樞先生電話接洽（5－4097229）。

香港地質學會

常務委員會

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. S.R. Hencher借出

香港萬宜水庫：岩脈橫切摺曲之柱狀火山岩

香港地質學會

通　訊

目錄

第一卷　第五號　一九八三年七月