

香港地質學會會訊

Newsletter of Geological Society of Hong Kong

VOL.12 NO.2

JULY 2005



貴州行

A Trip to Guizhou

...P. 1

攀登赤壁赤壁丹霞山

Climbing Danxiashan

...P. 3

黃竹角褶皺及斷層帶：正花狀構造

Bluff Head Fold and Fault Zone:

A Positive Flower Structure

...P. 7

NOT FOR SALE

非賣品





《貴州行》 表妹、表弟

貴州，簡稱黔，位於中國西南。億萬年前是一生機蓬勃的淺海，有無數的生物繁衍和成長。它們死亡後，遺骨沉於海底，日積月累、層層疊疊，漸次形成厚厚的石灰岩。後來在西南方的印度板塊緩緩逼向亞洲板塊，把長眠於海底的石灰岩層一一推出海面，在貴州造出廣袤的石灰岩地帶。地上和地下的流水以愚公之毅，在這片大地雕塑出千姿百態的喀斯特地貌。地質學會特地安排了考察團往貴州，以觀其貌、究其理。

我們走訪的馬嶺河峽谷和黃果樹瀑布，都是喀斯特地貌的地面特徵。馬嶺河峽谷呈窄長形，兩邊都是筆直的懸崖。水從崖頂和石縫中流出，沿崖壁滑下，不斷地在草類植物的莖葉上抹上一點點的碳酸鈣。不知過了多少年月，這些鈣質物和崖壁的植物膠結在一起，形成了傘形的、簷狀的、布幕般的懸空石層，名曰「吐花」(tufa)。時值貴州旱季之末，河水不多，水面一片安祥。不過在汛期，馬

嶺河是洶湧澎湃的。河段中就有一道被河水沖垮的石橋。在馬嶺河谷旁有一化石館，內藏貴州龍和海百合化石。貴州龍生活在水中，長約二米，頭細、頸長、尾長、四肢成鰭狀。海百合雖像花，其實是腔腸動物；其「莖」是身體，其「花」是觸手。往馬嶺河途中，我們順道一遊貴州最高的北盤江大橋。我們步至橋中，頂著呼嘯的風，探頭看橋下那蜿蜒的北盤江。真是登高山方知天高，臨深溪才知地厚。三百多米的落差，教我們住慣高樓的都不禁膽怯。

黃果樹瀑布是貴州的著名景點。適逢旱季，水量大減。為了維持流水量，更要在上游建閘蓄水，按時放流，以配合遊人。黃果樹原名黃葛樹或黃葛榕(即大葉榕、屬桑科)。因「果」、「葛」音近，被唸成黃果樹。黃葛榕不生黃果，其果未成熟時呈淡綠色，成熟後則呈紫紅色。在回程途中，我們經過「滑石哨」——中國第一個布依民族保護村。內裏有棵1600年的黃葛榕，主幹粗大，極枝雄渾。可惜當時它還沒長出新葉子，未能一睹它的丰姿。





溶洞則是喀斯特地貌的主要地下特徵。我們參觀了龍宮和織金洞。龍宮是個水浸溶洞，出入口均有水潭，須乘小艇進出。駛艇的小伙子熟練地划著槳，我們緩緩地前進。龍宮洞口懸著一巨大條幅，上書「頌龍大典」— 少不了的宣傳噱頭。洞內錯落地裝置了顏色電燈，照著景點。導賞的小妮子在槳聲燈影裏娓娓道著神仙故事。我們沒聽著，只顧看洞頂的鐘乳石和洞壁的侵蝕痕跡。洞壁上淺淺的水平線痕顯示了洞內的水位高度。春季正值貴州的旱季末，水位較低，要不然洞內水位還要漲一米。那時便得彎著身子進出了。洞內深處的一條鐘乳石尖端，長著一株羊齒小草苗。這大概是安裝電燈的工人不經意的把小草孢子帶來。它就靠著一點水和一絲泛青的燈光，在那裏發芽生長。龍宮是個小溶洞，不一刻我們已從另一端出洞了。

織金洞則是全中國最大的地下溶洞，已探明的長度約12公里，現在只開放一半地方，其餘的仍在開發中。織金洞無浸水，可步行參觀。此洞兩端出入口較小，中間處則寬餘百米，高數十米，據說可容得下兩只飛機。洞內各樣石灰岩的侵蝕和沉積特徵發育完整。洞內有交錯的隧道，洞壁有不少懸空的出水口。這些大概都是昔日地下河支流所在。在這裏很多鐘乳石都是群集式的，在頂端接著洞頂處有一傘形結構，其下掛著多條鐘乳石，活像巨大的鯨魚和水母。在途中我們遇上從洞頂掉下來的龐然鐘乳石，見證了遠古在貴州發生的地震。原來在石灰溶液風乾留下鈣質之際，會有再結晶現象，使鐘乳石跟洞頂融合在一起，渾然一體，只有在巨大外力—如地震—加諸溶洞，才可令鐘乳石掉下來。鐘乳石的断面宛如年輪，揭示了它的生命歷程。那年水多、水少，何時水清、水濁，都一一記載著。不旋踵攢到鎮洞之寶的石柱花群。石柱花其實也是石筍之一，不過它的層疊花托狀結構卻是罕見，其中的「銀雨樹」更是一絕。

由於景點分散，少不了坐長途車。車途雖遠，但窗外景色怡人。經侵蝕後殘存的石灰岩體形成錯落有致的萬峰林，因就著落水洞地貌圍耕而鑿出「八卦田」。灰白色的石山和深邃神秘的落水洞被綠油油的小麥田和黃澄澄的油菜花田環抱著，阡陌相連，一望無際。就是山坡，也遍佈著巴掌大的梯田。諺說貴州「天無三日晴，地無三尺平，人無三分銀」。貴州的天然條件不利傳統農業，種糧者僅足糊口。改種商業作物後，收入增加，不少農家都有彩電和衛星天線了，人却依然純樸友善。

我們在萬峰林「八卦田」遇見了幹活大哥和途中遇見的老叟，就是過來人。大哥在落水洞旁農忙著，驀然發現我們從八方貼近，滿臉疑惑，心裏暗道：「這樣的小洞，有啥特別？」。但見我們對著洞口指點比畫，興致盎然，也由得我們。老叟穿一身黑衣，戴一頂黑帽，拿一根黑煙桿，幾十年前就經已開創了當下這股黑衣風潮。他眯著眼、抽著煙，凝望著油菜花田，享受著和煦的陽光，心平如鏡。不過我們卻興奮極了。大家都爭著跟老叟拍照，一下子打破了他的安寧。老叟是聰明人，心裏明白，也就不介意。團友還把手放在他的肩頭上合照。團友的热情，大概又觸動了他年青的心。這份按捺不住的歡喜，沒掛在老叟皺褶如麻的臉上，卻隱約地從他抽煙的節拍中透出來。

旅程的最後一天是星期一，剛巧又逢觀音誕，貴陽市內上學的、上班的、開店的、擺買的、上香的，人人忙著。我們漫步街頭，頓覺「但少閒人如吾兩」。城市人跟鄉下人分別明顯，前者一般比後者高，反映出鄉村的生活質素仍趕不上城市。我們在鄉間不時看見要普及九年教育的標語，農業發展欠缺農民們的現代智慧投入，也許亦是農民生活改善較慢的原因之一。

異地客別，難得有人熱情相送。在酒店外跟我們揮手道別的兩位長者，就是「王爺」的少時同窗與其夫人。機程短，只發餅乾。然而我們有團友自備了即食辛辣、鮑魚杯麵。於是我們和全機的有緣人就在九霄雲外、杯麵香中，告別了貴州的一抹夕陽。是行，二零零五年三月末。

攀登碧血赤壁丹霞山

李作明

去年復活節學會組織了粵北地質旅行四日遊，時間短，安排緊湊，特別是參觀了聯合國批准的首個地質國家公園，收穫很大，美不勝收，故特以日誌記之。



四月九日

我們二十多位成員於中港城集合，乘早班船至蛇口福田碼頭。中旅社帶隊為我們上好巴士順高速公路北上，在穗郊區接佛山地質局委派的黎漢民高級工程師，他是為我們參觀活動的地質指導。

中午抵達從化市南段太平鎮北郊，北回歸線(22°30')標誌塔。門口留影便順流溪河北上，沿途森林密佈。下午抵達中國著名的名剎 - 南華禪寺，它是佛教禪宗祖庭，已有1500多年歷史的古寺。因禪宗六祖慧能(638-713年)在此弘法37年，誕生了中國佛教惟一經典 - <六祖壇經>和寺內供奉著六祖慧能真身(坐身)，而成為全國最具影響力的寺院之一，香火鼎盛。

接著，經過曲江縣府馬埧鎮，這裡曾在石灰岩溶洞中發掘過有12萬年歷史的「馬埧人」。然後，經過韶關市跨北江西去二十多公里，桂頭墟附近的武江邊，參觀了廣東省著名的泥盆系地層 - 桂頭群地層剖面。這裡可見泥盆紀早世中上部與寒武系不整合關係，代表了三億八千萬年地質歷史地層，發育了底礫岩、砂岩及頁岩，頁岩中產魚化石及植物化石，香港白沙頭洲的泥盆系和桂頭群相類似。夜了，我們趕回韶關市住麗晶酒店。



四月十日

早餐之後，即離開韶關市向北48公里處，到達目前中國乃至亞洲最大的鉛鋅礦基地－凡口鉛鋅礦。公司設茶點熱烈歡迎我們，介紹該礦區生產規模。礦石來自中上泥盆統石灰岩地層中，屬沈積類型大型礦床，礦與石灰岩共生。凡口鉛鋅 (Pb, Zn) 礦礦產豐富，礦石品位高，是目前中國已探明的地質儲量最大的鉛鋅礦山之一。礦石除富含15%左右的鉛鋅金屬外，還富含銀 (Ag)、鍮 (Ge)、鎵 (Ga) 等元素，是中國較大的銀礦生產基地，也是中國三大鍮鍮礦之一。礦山可稱為鉛鋅銀鍮鍮礦，是中國重要的重工業和信息工業的原料基地。

參觀完畢離礦山東行經仁化縣折向南，經過"五馬歸槽"盛景進入丹霞山紅層地區－到達中國紅石公園丹霞山。它面積達290平方公里，是廣東省面積最大，景色最美的風景區。1988年以來，丹霞山分別被評為國家風景名勝地區，國家級地區地貌自然保護區，國家AAAA級旅遊區和國家地質公園。2004年2月12日獲聯合國宣佈，成為中國首批世界地質公園 (World Geopark) 之一。



丹霞山也是中國「丹霞地貌」命名地，是上一世紀三十年代中國已故著名地質學家陳國達院士命名，以示紅色地層構成的赤壁丹崖為特色而命名。當時認為屬早第三紀，紅層以「色如渥丹，燦若明霞」為特色，正看成峰，橫看成林。在世界已發現1200多處丹霞地貌中，丹霞山是發育最典型，類型最齊全，造形最豐富，景色最優美的丹霞地貌集中分佈區。之所以丹霞山呈赤壁丹崖，是因為這處地層屬紅層沈積，當時在陸相盆地，河流和湖泊中，河水帶來的泥沙含大量氧化鐵 (即三氧化鐵 Fe_2O_3)，同時砂礫中的膠結物又富含鈣質 (碳酸質)，岩石脆多節理裂隙。因此在風化過程中，雨水溶解部份鈣質膠結物，雨水沿裂隙和節理連成赤壁空洞，以是產生假卡斯特的地貌。丹霞山紅層以基部為紅色底礫岩，往上為粗砂岩、細砂岩，少量粉砂岩，為一較大型河流和湖泊沉積，斜層理多見 (見上圖)。初期未遇化石，其時代定為早第三紀。最近十幾年已在薄層淺灰色層發現了介形蟲，時代為晚白堊紀。此外，在仁化紅層中又找到恐龍蛋化石，屬晚白堊紀為定論。

丹霞山在距今1.4億年至0.7億年開始 (晚白堊紀時期)，是一個大型內陸盆地，受喜馬拉雅造山運動影響，四周山地猛烈隆升，盆地內接受大量碎屑堆積，形成了千米以上巨厚的紅色地層，包括底礫岩，河流間礫岩，粗、細砂岩以及層粉砂岩。在距今七千萬年前後，地殼上升而逐漸受侵蝕。距今六百萬年以來，盆地又發生多次間歇性上升，平均大約每萬年上升一米，同時流水下切侵蝕，丹霞紅層常依岩石節理初切割成一片紅色山群，成片成行，俗說說「豎看成峰，橫看成林」是也。



丹霞山最高峰高495米，區內有大小石峰、石牆、石柱、天生橋六百八十多座，辟峰如林，疏密相生，高下參差，錯落有序。山間高峽幽谷，古木蔥鬱，淡雅清靜，風塵不染。錦江秀水，縱貫南北。沿途丹山碧水，竹樹婆娑，滿江風物，一脈柔情。丹霞山尚有佛教別傳禪寺以及八十多處石窟遺址，歷代文人墨書，在這裡留下了許多傳奇故事，詩詞和摩崖石刻，具有極大的歷史文化價值。

長老峰景區分下、中、上三個景區。下層景區有始建於北宋（一千年前）的錦石岩石窟寺，長天一線，龍磷片石，五色間錯大斑石等典型丹崖景點。中層為別傳禪寺景觀層，有嶺南十大禪林之一別傳禪寺和鴛鴦樹等景點，登丹梯鐵索即至上層景觀區，長老峰，海螺峰，海珠峰等，環顧四周，丹霞秀色，一覽無遺。其中觀日亭是晨觀日出，昏賞晚霞好去處。

翔龍湖景區位於長老峰南則，因湖面輪廓酷似一條騰飛的青龍而得名。沿湖有龍角山、龍鬚洞、九龍嶂、仙居岩道觀等景點十二余處。山崖上有古今龍文化石刻。丹霞山還有多處觀景區，如九九天梯，雙乳峰，睡美人，七座天然橋，三處古山寨，及眾多擬人擬物，擬禽擬獸的山石造型。通泰橋是景區內最大的天然石拱橋，跨度38米，拱高15米。望畢上述絕倫絕妙景色，黃昏已來臨，我們匆匆離別五馬歸槽，夜宿丹霞山和景酒店。



四月十一日

早上參觀了仁化縣自然博物館。這裡存放著在丹霞山及南雄市地區發掘的恐龍蛋化石，其中有一窩共有三十六枚恐龍蛋化石，還有些恐龍骨骼化石。恐龍蛋的發現證實丹霞山紅層是晚白堊紀（七千萬年前）。此鉛尚展出許多奇形怪石，自然的或經人為加工，也很別緻。



接著經南雄市折向北趕車至粵贛邊界的大余嶺，到達全國保存最好的梅嶺古驛道，寬3-5米的卵石路。我們步行了近一里路到達梅嶺關，前面就是江西省大余縣境了。相傳宋朝宰相張九齡曾主持修寬闊馬車道，成為古的廣東與南嶺以北交通主要通道和快馬驛道。路兩旁山坡植有大量梅花樹，故稱梅嶺，而兩省交界和關口就叫梅關，以石碑豎立。關口城上刻有「南粵雄關」大字。梅關頂上出露的岩石都是綠色片岩，變質砂岩，石英岩，可能屬前寒武紀變質岩。古時南嶺地區北上應考，多從這梅關北上，所以梅嶺路上留下很多文人墨士古跡，如狀元樹、東坡樹古蹟，相傳是一千年前宋朝蘇東坡曾先後兩次經過梅關而留下文跡。



參觀畢又趕車南下經南雄寺以南的大鳳圩，由這裡再向北參觀典型標準南雄晚白堊世層剖面。南雄群地層剖面紅色底礫岩不整合於風化花崗岩之上，代表不整合之前花崗岩已先風化的現象。紅色底礫岩之上為紅色砂岩，向北傾斜堆積細砂岩，紅色粉砂岩和頁岩，時夾淺色鈣質層。由於發現了恐龍蛋化石和介形類化石，證實南雄盆地紅層如同省內外紅層一樣，都屬晚白堊世。看完紅層剖面，夜歸南雄市珠璣酒店。晚飯後許多同仁上街到中藥鋪買到了腕足類化石。石屏風都神奇景緻，目不暇給。

四月十二日

一早從南雄市出發，再經丹霞山離開韶關市，順北江南下，經英德市跨北江到寶晶宮。寶晶宮是上世紀七十年代發現的溶洞，經開發開放參觀。它有四級高低不同的溶洞，最低一級與現代北江水位相通，以上三級代表了數十萬年地下水水位變化，特別是地殼運動，導至四級溶洞出現。



寶晶宮風景區是欣賞湖光山色的好去處，它位於英德市西南面7.2公里處的燕子岩山脈中，佔地3.8平方公里，山體為石炭紀純石灰岩，厚層狀，層理清楚，溶洞發育。寶晶宮是一座層相疊呈金字塔形的山中溶洞，遊程長達1.5公里，因形似宮殿，鐘乳石晶瑩而得名。溶洞面積一萬六千多平方米，屬廣東溶洞之最，有「嶺南第一洞天」之稱。洞內分多個洞廳，最大的龍王寶殿高30多米，長100多米，寬30-40米，面積達5000多平方米，真正是別有洞天。洞內景觀千姿百態，疑虛疑幻，石鐘乳、石筍、石柱、石屏風都神奇景緻，目不暇給。

回想對比八十年代剛開放時的寶晶洞，多種石鐘乳都是白色雪晶，閃閃耀眼的景緻。現在還不到二十年，這些雪白的石鐘乳都不見了，而變成灰和灰黑色，殘蝕利害。也許是參觀人數過多，二氧化碳多引起石鐘乳風化污染，蝕變成殘舊的爛景，景物失色，保護不好，非常失望。

至此便匆匆快走趕深圳，數一數這四天內我們沿途觀賞粵北風光，有地質地貌、古跡、風物，共經過了十四個縣市，內容豐富，收穫不少。這裡還應多謝佛山地質局黎漢明高級工程師的協助講解，和學會的Winnie Ying的好安排。

Bluff Head Fold and Fault Zone: A Positive Flower Structure

LS Chan

Synopsis

The coastal section at Bluff Head in the northeastern part of the New Territories (Fig. 1) cuts across the Tolo Channel Fault, one of the most prominent fault zones in Hong Kong, exposing a series of faults and folds. The folds are best developed within the Devonian Bluff Head Formation, which is a series of massive quartzite and purplish-reddish siltstones and shales. Many of the folded structures exposed along the section are overturned, as indicated by the younging directions in the cross-bedding and graded layers. This section, with a length of about 500m, is one of the few localities in Hong Kong where tightly folded and overturned structures can be observed.

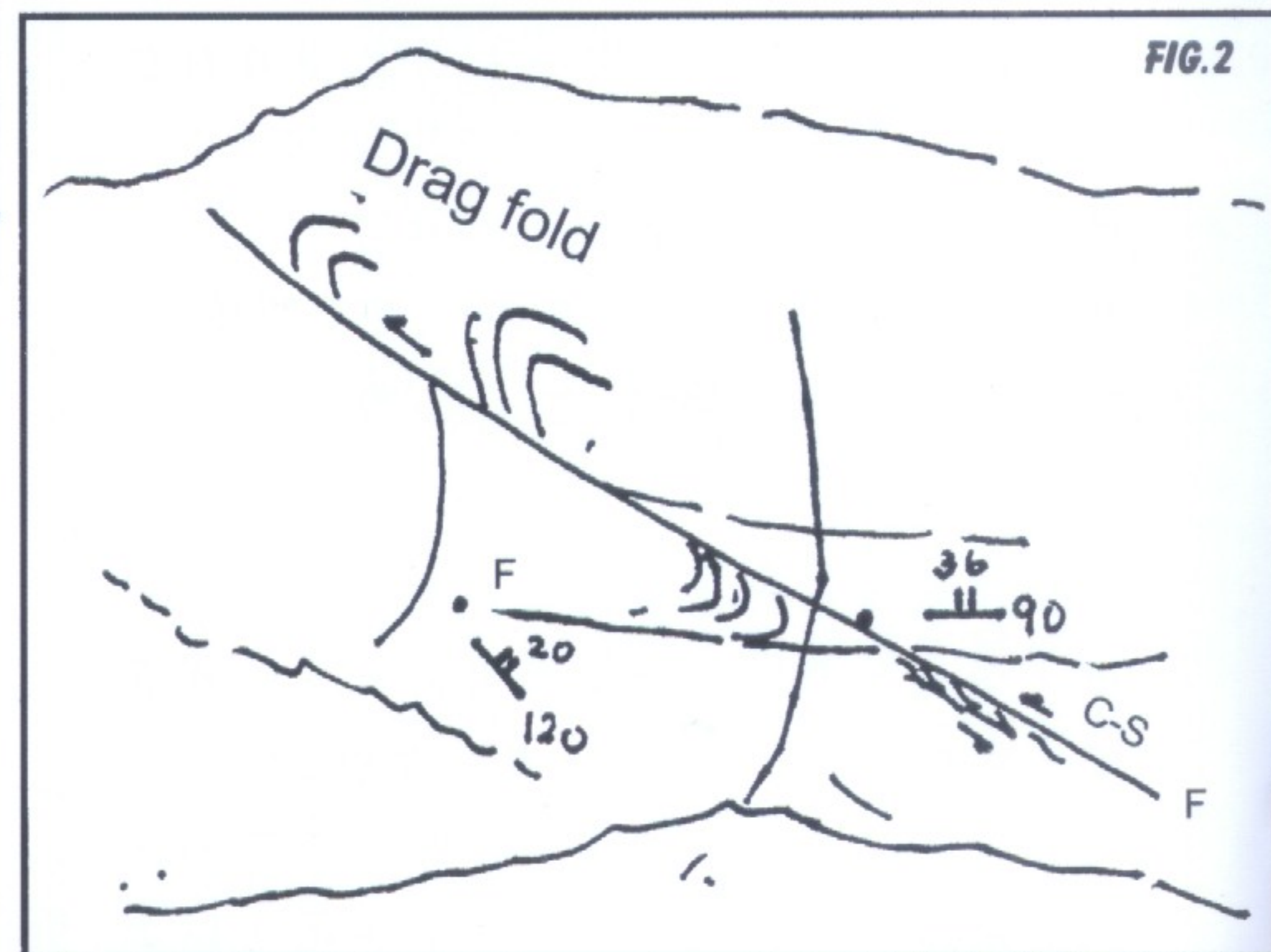
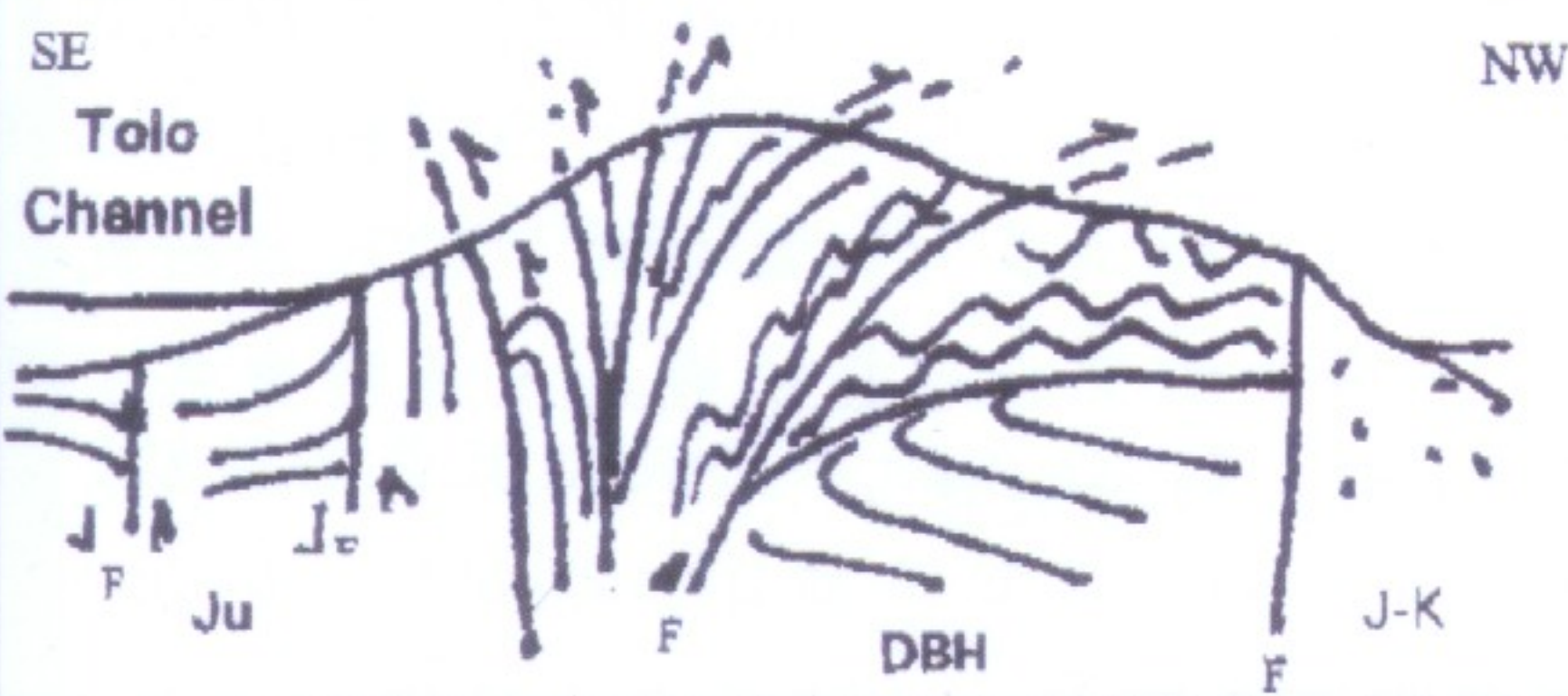
Earlier workers (Allen & Stephens, 1971) have suggested that Tolo Channel formed along the axis of an anticline and the Bluff Head Peninsula represented the northern limb of this anticline. This interpretation is questionable because (1) the southern limb of the anticline cannot be observed; (2) it does not account for the series of overturned folds in the Bluff Head section; and (3) folding on a regional scale is inconsistent with the nature of the Yenshanian Movement, which is mainly a magmatic event characterized by faulting movements. Also, the structural trend of the folds in the Bluff Head Peninsula is generally parallel to the Tolo Channel Fault, suggesting

a causal relationship between the Fault and the formation of the folded structures.

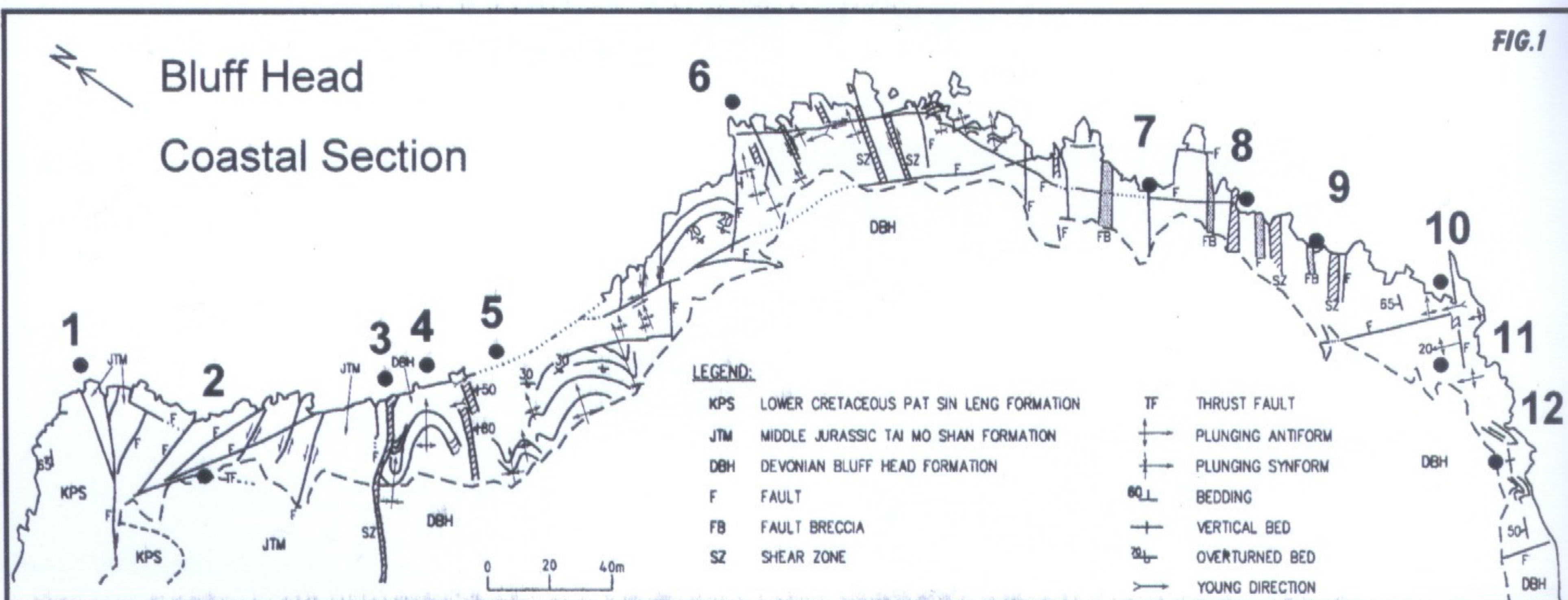
Recent advances in tectonic studies have improved our understanding of the structural deformation processes at transpressional plate boundaries. The author and his colleague Manuel Pubellier of Ecole Normale Supérieure in Paris have suggested that the Bluff Head Fold and Fault Zone basically represent a positive flower structure (palm-tree structure), comprising a series of subvertical faults and compressional folds parallel to the parent fault. Such positive flower structures often developed at compressional restraining bends of transcurrent fault systems. This interpretation is also consistent with the northward subduction along the southern margin of South China Block during the Jurassic-Cretaceous time, causing a partitioning of the strain into a left-lateral strike-slip and a compressional component along NE-striking fault zones.

The series of faults and folds in the Bluff Head section (Fig. 2) are probably part of this flower structure that formed during the Jurassic-Cretaceous subduction event, with the principal compression occurring at an oblique angle to the strike of the Tolo Channel Fault. The following short field descriptions are intended to assist geology students to acquire a better understanding of the geological structures at this coastal section.

Positive Flower Structure at Bluff Head



Bluff Head Coastal Section





STOP 1



STOP 2



STOP 4

Stop Descriptions

Stop 1

Contact between Cretaceous Pat Sin Leng Formation (KPS) and Jurassic Tai Mo Shan Formation (JTM). The KPS are sandstones and poorly sorted conglomerates with pebbles occasionally exceeding 5 cm in diameter. Graded beds within the conglomerates indicate a younging direction towards the west. JTM is a grey-greenish massive coarse-grained lapilli tuff and ash tuff. The contact between the two formation appears to be conformable since a few lenses of conglomerates similar to those in KPS are present within the JTM tuff. The clastic layers (strike=55, dip=65 N) contains a set of cleavages (S1) striking E-W and dipping at 70N and tensional gashes filled with secondary quartz (strike=175, dip=65N). Pebbles within the conglomeratic layer are fractured.

Stop 2

On the cliff is exposed a low-angle fault (strike=90; dip=36N) showing evidence for thrust motions. Drag folds can be seen both on the upper and lower walls of the fault, and C-S fabrics within the fault zone also indicate a motion with the top to the south. The fault appears to have been reactivated as a normal fault based, since several riedel shears apparently developed along fabrics formed during an earlier motion. A number of strike-slip faults, with strike ranging from E-W to about 120, can be observed in the vicinity, with some of them showing right-lateral and some left-lateral sense of motions.

Stop 3

Contact between JTM and DBH is represented by a ductile shear zone about 1 m wide and striking at 70. The horizontal section of shear zone displays a strong set of cleavages. However, no unambiguous C-S structures can be seen in the shear zone, pointing to the possibility that the ductile shear mainly followed a vertical motion. The DBH at this stop is mainly a series of competent quartz sandstones interlayering with finer-grained reddish siltstones and shales. The rock by the water line contains a tightly folded antiform-synform structure with the fold axis plunging at 55 to N60E. Cross-bedding in the lower limb of the synform shows a younging direction to the SE, implying that the synform is an overturned anticline. Several closely spaced plunging folds can be seen near the shear zone. The finer-grained

rocks have been overturned and formed several plunging antiforms and synforms, while the more competent sandstones have been dismembered and transposed within the shaly layers.

Stop 4

This small rocky ridge developed about the hinge zone of a plunging fold (fold axis trend= 65, plunge=40). Younging direction revealed in the cross-bedding indicates that this is an inverted syncline.

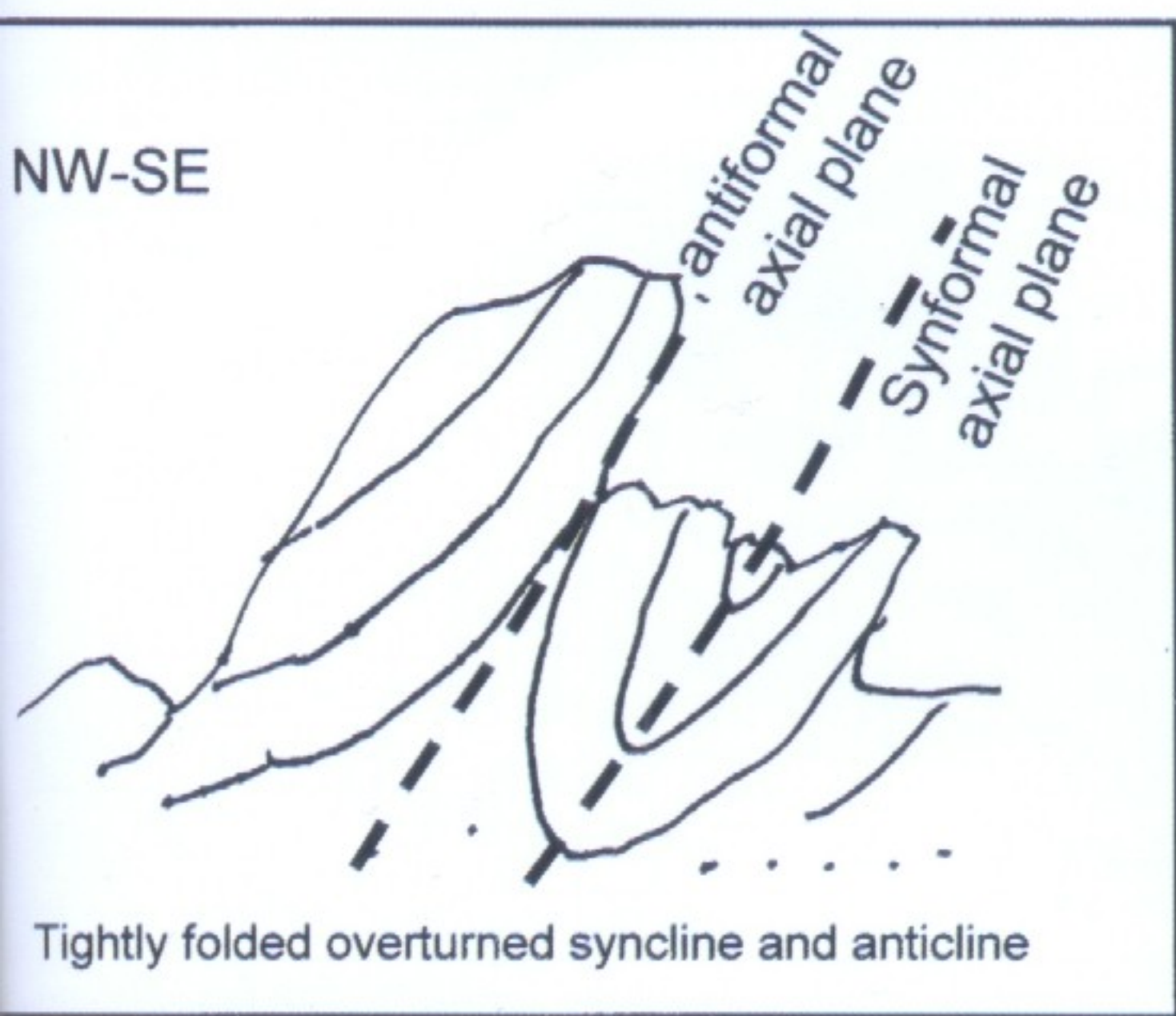
Stop 5

Along this part of the coastal section there are a series of overturned anticlines and synclines. The interlimb angle of the fold is mainly governed by the strength of the layers. The more resistant quartz sandstones formed the broad, open folds while the finer-grained siltstones formed tight folds, often accompanied with ductile flows. As indicated by cross-beddings within the layers at many localities along this section, this entire section has been overturned. This section represents the part of the flower structure in which all the layers are overturned and tilted backwards.

Stop 6

I have crowned this structure 'The Fold of Hong Kong' since this is absolutely the most beautiful folded structure observed within the territory. The entire structure, as in other parts of the section, is overturned. Fold axis is plunging gently at 15 towards to 50. On the back side of the structure, slickensides can be found to pitch at 20N on a surface striking 140 and dipping 60N. The slickensides show a motion with the top to the north, thus making it a reverse fault. Riedel shears associated with another fault striking 40 and dipping 76N also indicates a reversed motion. It is not possible to proceed further on foot (without getting wet) onwards of this point.

STOP 3(A)



STOP 3(B)

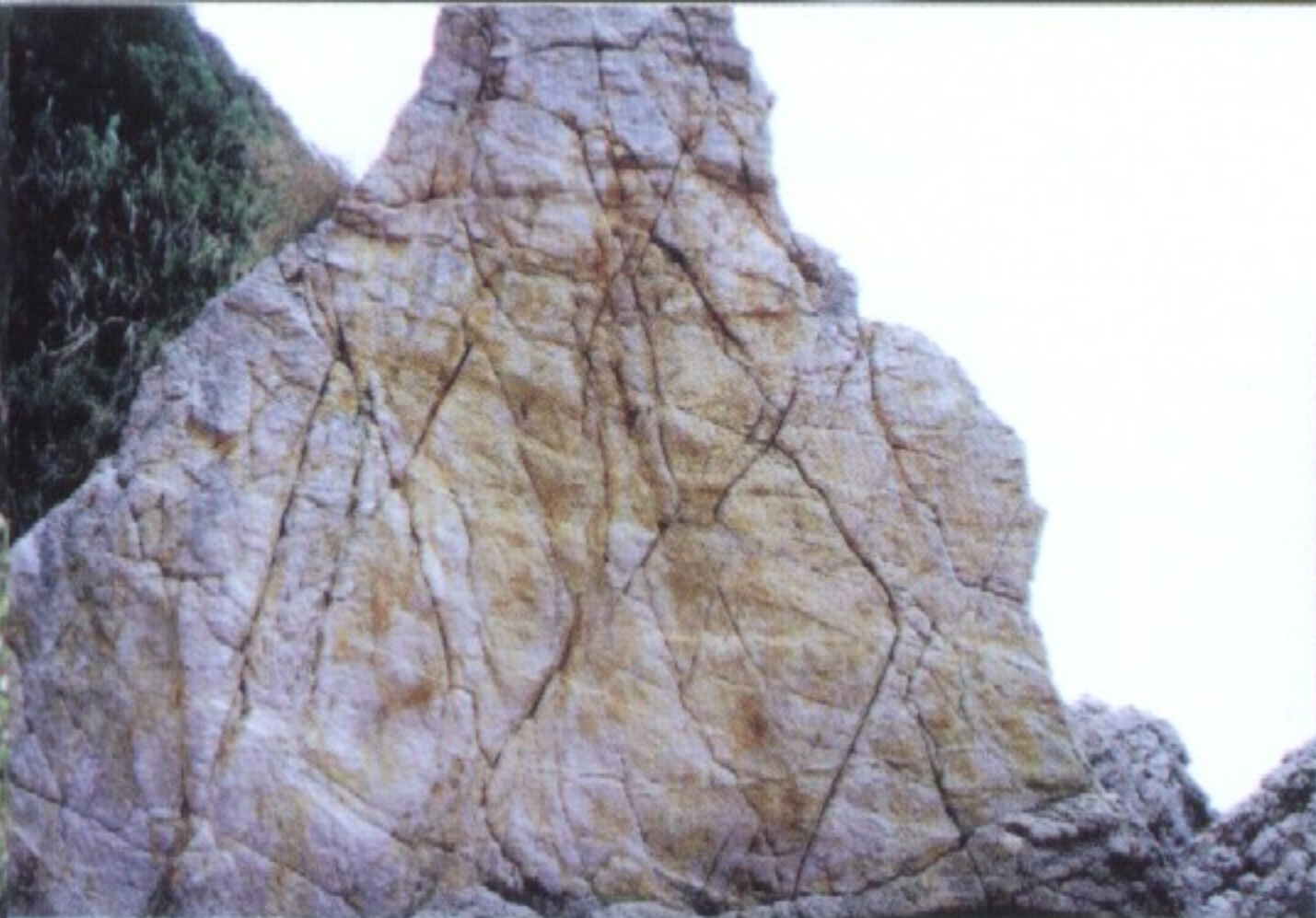


STOP 6



STOP 5





STOP 7

Stop 7

The rock layers become more steeply dipping towards the core zone of the flower structure. At this stop, a thick slab of indurated quartz sandstone standing vertically displays an excellent conjugate joint pattern. The joint pattern implies a maximum principal compression in the vertical direction and an extension in a NE-SW direction, essentially parallel to the coast of South China. It should be pointed out that a number of extensional basins in this part of Guangdong, including Mirs Bay, Daya Bay and the Pearl River Mouth, probably formed in same manner in a tectonic rifting event with the maximum extension in a NE-SW direction.

Stop 8

A rock pedestal formed by erosion of the resistant quartzite. This particular one looks like a fist and has been named 'Fist Rock'.

Stop 9

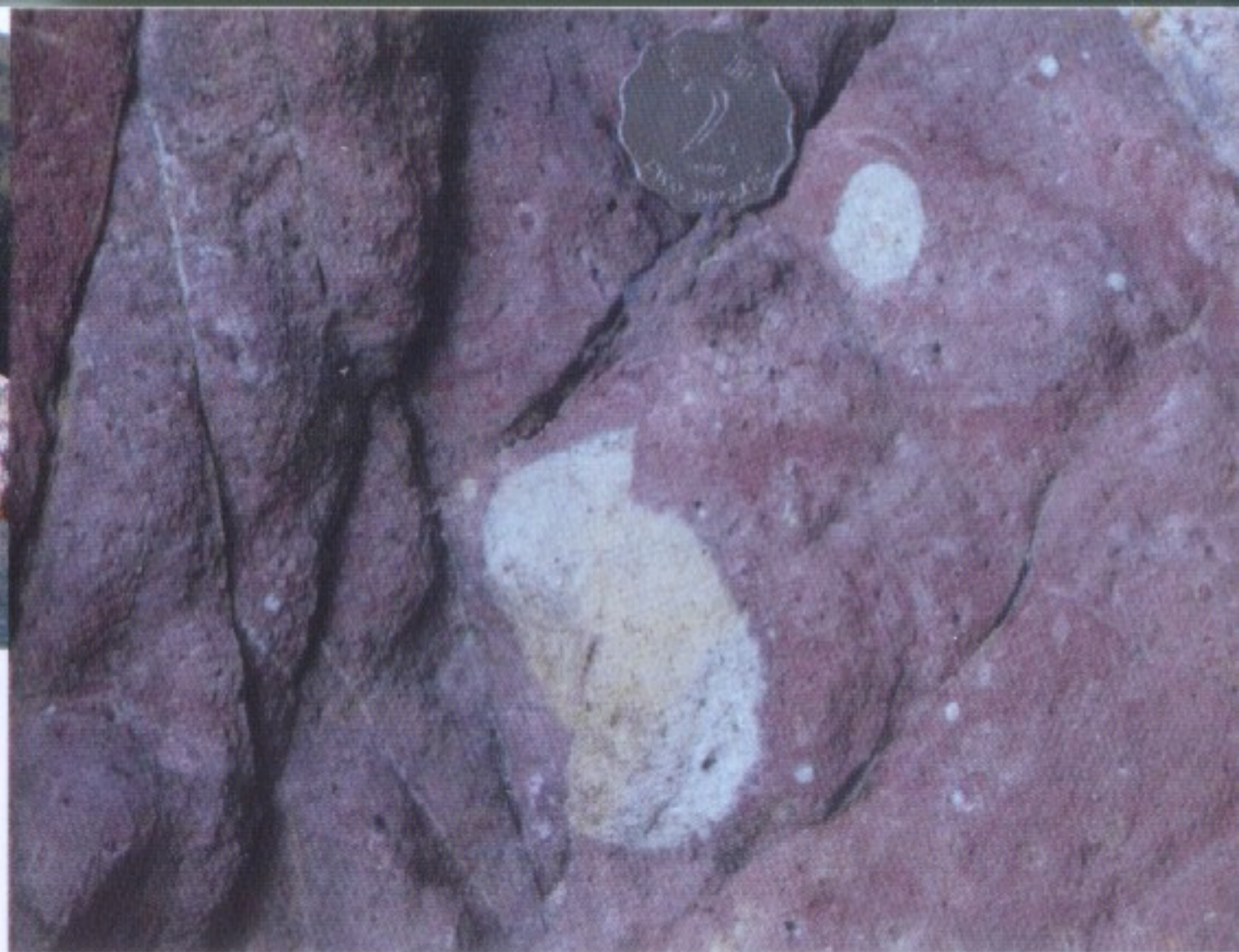
This section exposes the core portion of the flower structure with numerous subvertical faults and shear zones. The rocks are mainly a series of reddish sandstones and siltstones. Reduction spots in the red beds are occasionally offset by faults, indicating the occurrence of faulting postdating the reducing event. Several zones of fault breccia each about 1 m wide were formed in the quartzitic sandstones, while the shear zones formed in the finer-grained layers. The sense of motion on these faults is mainly in the vertical direction, as indicated by the C-S fabrics in the shear zones and offsets of the reduction spots.

Stop 10

The folds in this part of the section (Stops 10-12) are quite different in than those at stops 4-6. Reclining and recumbent folds with fold axes plunging gently to the west are found in this section. At this stop, a large z-fold is present on top of a brecciated sandstone. Younging directions in the layer suggest that the section is locally overturned.



STOP 9(A)



STOP 9(B)

Stop 11

Sandstone and siltstone layers are complexly folded, with fold axes plunging at about 20 towards the west. A large S-fold can be outlined in the quartzitic layers on the hill. On the wave-cut platform, a thick pale-greenish siltstone layer outlines the hinge of a vertical fold with a vertical fold axis.

Stop 12

Several open vertical folds with the fold axis plunging in a vertical direction can be observed in this part of the section. The coastal section to the south of this point runs parallel to the strike of the Tolo Channel fold and fault zone and is dissected by faults striking in an approximately WNW direction.

Ref: Allen PM and Stephen EA, 1971. Report on the Geological Survey of Hong Kong. Hong Kong Government Press, 107pp.

STOP 9(C)



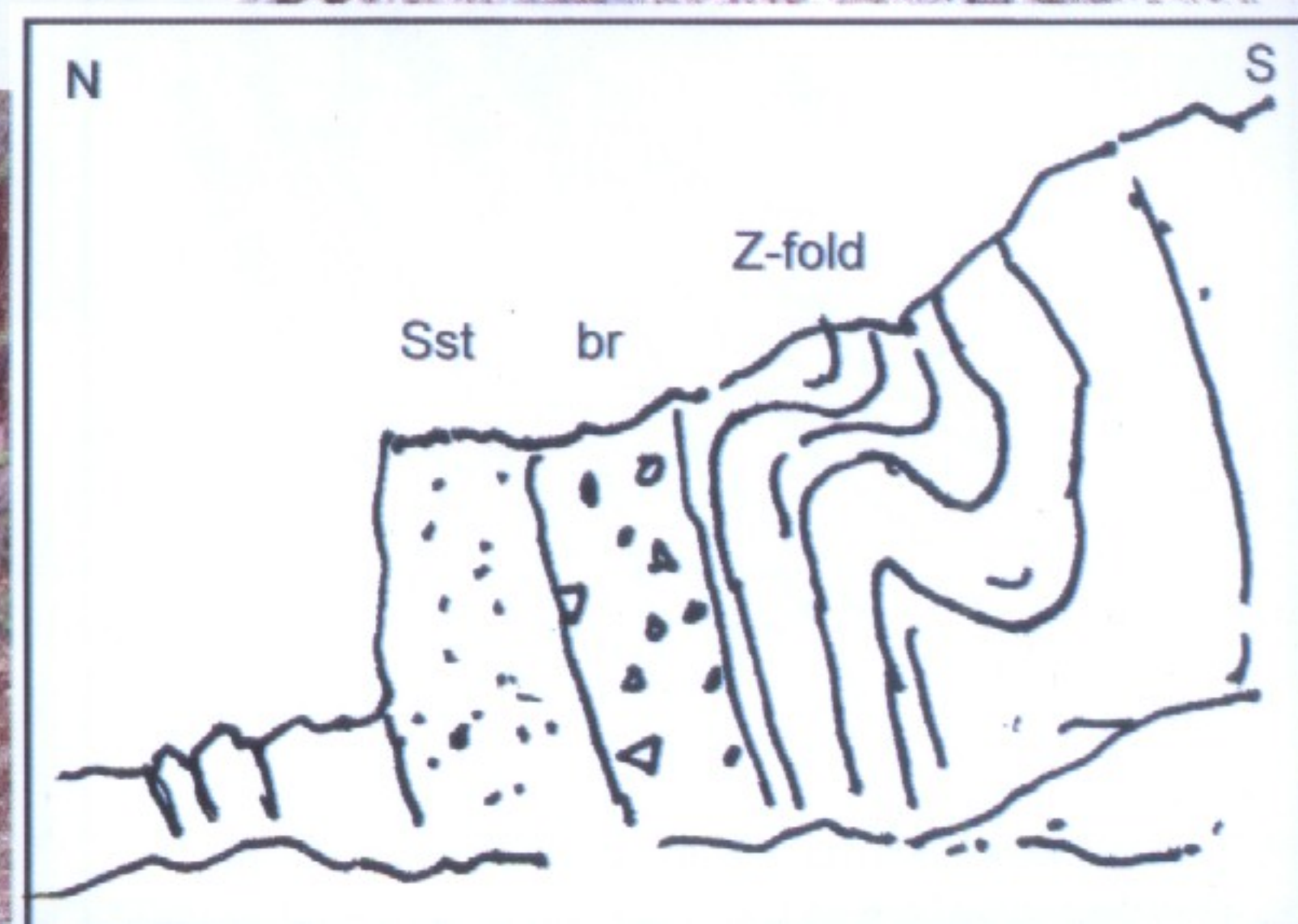
STOP 11



STOP 8



STOP 10



Nature Explorer

二零零五 荔枝莊地質地理考察營

Professional Branch

由 Nature Explorer 及香港大學地球科學系合辦的荔枝莊地質地理考察營已於本年二月十九至二十日順利舉行。是次活動的目的為提高中學生對地質地理的認識和興趣，特別對荔枝莊特別的沉積岩地質構造有更加深入的了解，從而學習如何更仔細觀察大自然。參加者來自不同的中學，報名反應熱烈。

當天由香港大學地球科學系副教授陳龍生博士帶領，於沙田馬屎水碼頭乘船往荔枝莊；首天同學分成五組在荔枝莊海灣一帶進行野外定向比賽，他們需要在最短時間內完成所有指定工作，包括地圖閱讀、指南針運用、地形刻劃、辨認岩石以及其他有趣的遊戲，例如片石仔比賽、大電視、二人三足等等。在片石仔比賽中，同學要先挑選一塊三角薄石，然後擲出海面；方法似乎很簡單，但其實很有技巧，他們玩得非常高興，賽後仍然意猶未盡呢！參加者在整個活動裡都顯得非常投入而且發揮出團隊精神。晚上更在營地舉行燒烤大會，來自不同學校的同學藉此機會彼此交流認識。

翌日早上，陳博士率領同學於荔枝莊海灣進行地質考察；講解香港的地質歷史，位於吐露港至荔枝角的大斷裂，荔枝莊的沉積岩特徵及岩層摺曲結構等。他的講解生動有趣，增加了同學對地質的認識和興趣，他們的發問也顯示出相當程度的了解。考察過後行程亦告一段落。

這次考察營同學反應理想，期望將來再有機會舉辦類似活動，藉以推廣地球科學。



To All GSHK Members and Geologists

To promote and protect the character, status and interests of geologists in Hong Kong and the standard of professional geological services, there is a need to establish a local Certified Professional Geologists (CPG) system in Hong Kong. The Geological Society of Hong Kong (GSHK) had discussed this issue with other geological institutions in Hong Kong and the Geological Society of China (GSC). GSC supported our proposal and said that they would set up CPG in China as well.

GSHK had also discussed with some Legislative Council Members and had positive responses.

GSHK and GSC had several meetings to discuss on the requirements of CPG and the management of CPG system. GSHK had set up organizing committee (OC) to work out the Hong Kong CPG system.

OC had contacted potential candidates through issuing questionnaires. Many practicing geologists had returned the questionnaires and wished to serve the professional committee (PC).

OC had prepared draft Regulations of the CPG for the PC to consider and would set up the committee in late 2005.

Before the setting up of the PC, amendment to the Constitution of GSHK is required to incorporate the function of committee and others. The proposed amendment was endorsed by the GSHK General Committee and the proposed amendment will be put forward to all GSHK members to comment/endorse later.

編者的話

第一期的〈地質學會會訊〉，在多方面鼎力幫助下成功出版，實在需要感謝許多朋友。當中包括 Nature Explorer 的委員和同學，編委會的成員，以及幫忙校對的朋友。

今期的〈地質學會會訊〉，繼續介紹地質學會近期的動向。內容包括有：三月份貴州考察日誌，Nature Explorer 荔枝莊考察營的小記，以及有關黃竹角咀地質結構的介紹。

今年，地質學會有幾項重要發展，包括修改會章及加入家庭會員，和即將成立專業小組。希望大家能就學會的發展，踴躍地提出意見。

From the Editor

Words from Editorial Board

With the supports of committee members and friends, the first issue of the Geological Society of Hong Kong Newsletter was "born" in March. We are in debt to the sub-committee members from the Nature Explorer, the editorial board and other helpers.

This issue covers a wide range of articles, which highlight the recent activities held by the Society. These include the field trip diary regarding the excursion to Guizhou and Nature Explorer's briefing on the Lai Chi Chong field camp. We also have an article detailing the structural geology of Bluff Head.

This year, the Society will have a number of important developments, which include the proposal of amendments to the Constitution, the addition of a new family membership category and the establishment of a professional group. Members of the Society are welcomed to express their views on the future development of the Society.



香港地質學會會訊	二零零五年七月
印刷數量	一千二百份
執行編輯	陳琴芳、鄧麗君
排版及設計	姜文彥
承印	佳能印刷製品
出版	香港地質學會
地址	香港九龍尖沙咀 郵政信箱92341號
電郵	geol_soc@hotmail.com
網頁	http://www.geolsoc.org.hk

活動推介

香港與泛珠三角地區地質研討會

Conference on Recent Advances in Geological Research of Hong Kong and The Pearl River Mouth Region

研討會日期：2005年12月8-9日

地點：香港大學

地質考察日期：2005年12月10日

地點：吐露港及印洲塘

主辦機構：香港大學地球科學系

如欲知詳情，請聯絡：

陳龍生博士 Dr. L. S. Chan

Email: chanis@hku.hk

電話：(852) 2859-8002

傳真：(852) 2517-6912