

TIME LINES AND FAULT LINES

BACKGROUND AND EARLY YEARS 1930-1957

F C Facey coined the term “A fortunate life” – that too has been my experience. I owe my autobiography to my son-in-law, Rod Bennett, who, at a long red wine lunch at the Fontaine de Vaucluse several years ago in Provence, insisted I should carve my geological career into stone. I want to set the scene for this talk on the big political backdrop and personally where I have come from.

The backdrop for my life has been an assault on the English speaking peoples, namely:

- 1900-1918 – Prussian Fascism
- 1930-1945 – Axis Fascism
- 1918-1980 – Soviet Communism
- 1970-2015 – Islamist Terrorism

The above is an immense global canvas with tentacles that have touched many of us.

I was born in 1932 to a world rife with anarchy, exploitation, genocide, war depression and the decline of the British Empire.

I am a WASP (White Anglo-Saxon Protestant) and all the baggage that entails: culture was via Rudyard Kipling, Cecil Rhodes, a red map of Africa from Cape to Cairo and all verses of the National Anthem. My education was at grammar schools in Britain and South Africa where the rattan cane was a way of life. An example of my WASP heritage was exposed when I purchased my first condoms in the very early 1960s: I came out of the first barbershop with a packet of cigarettes; from the second barber a haircut; at the third one I stiffened my backbone and asked for a packet. I was blindsided by being offered a kaleidoscope of thrills, sensations, designs and colours. I grabbed the nearest packet and fled.

EARLY YEARS

The first time I became aware of rocks, other than rolling them down steep slopes, was in the limestone cliffs of the Avon Gorge in Somerset, UK, around the ten years old. Some years later at Durban High School, South Africa, I still had a bent for geology and in the school library I read that oil geologists in the Red Sea and the Persian Gulf lived on steam yachts and lived a very comfortable life. That sealed my career direction but, alas, the closest I ever got to that nirvana was wedged on the heaving decks of Government launches round the Solomon Islands.

My first paid geological assignment while still at school was to map a farm in the Natal Midlands, South Africa. It was not too onerous – the formations were tillite, shale and sandstone cut by dolerite dykes. The consideration was £5 and a few beers. My main preoccupation was avoiding lurking cobras and black mambas.

I entered Natal University, Durban, in 1951. A small group of us had chosen geology, chemistry, physics and maths. For me it was an exercise in self-flagellation, for us it was lectures and pracs six days a week. Compared to us most other students appeared to be on permanent vacation.

Our early field excursions were to the Archean of Zululand where I grappled with chlorite and hornblende schists, greenstones and banded iron formations cut by younger granites.

On one field trip, two of us were working in the “Valley of the 1000 Hills”, west of Durban; we were caught in a rainstorm. An old “induna” (headman) gave us tea in cracked Queen Victoria cups and kicked his several wives out of their hut for the night. In the wee small hours I became aware of heavy breathing next to my face. Extending a quavering hand I recoiled on touching tightly coiled hair: I lay awake and rigid for the rest of the night. In first light it turned out to be a flea-ridden dog, not a young wife seeking solace!

To harden ourselves up for a life of field geology, a friend and I walked a hundred miles along the Wild Coast of East Griqualand. There was no habitation, just thick vegetation, cliffs and wet sand. The wisdom of the day in case of snakebite was to cut the bite with a razor blade, suck out the venom and rub in potassium permanganate and then pray.

By good fortune I obtained a series of vacation jobs with Union Corporation on the East Geduld gold mine in the East Rand and on St Helena at Welkom, in the Orange Free State.

East Geduld mine was well developed, down to 12,000 feet. Following orientation, my job was to walk along hundreds of yards of musty dripping drives to development ends often up misty raises; it was an ambiance of muffled jackhammers and the rumble of distance electric locos pulling wagons. Safety glasses were essential as, due to pressure, the rock was constantly spitting quartz splinters. Old stopes had been crushed flat; the backs were on the floor, the old jacks flattened. With either good or bad grace, the Afrikaans shift boss would bellow at the sweating Zulu, Xhosa or Matabeli miners to turn off their machines – it was for them an opportunity to light up the sodden “stompies” hanging from their lips, while I made a swift sketch of the face and marked out where the channel samples were to be cut. In the afternoon the morning’s data was plotted up and then to the core yards, where miles of core were stored and hundreds of feet of fresh core had to be logged. The gold

mining industry depended on thousands of tribal Africans housed in vast compounds and were taught a common vocabulary so they could understand each other and work terms. They worked hard, played hard and on occasions, fought hard. Feast days saw hundreds of 44-gallon drums containing boiling water in which bobbed and jostled innumerable cattle heads – it was indeed a rich nourishing broth. “Shabeen queens” ran many pleasure parlours: venereal disease was rife, but AIDS had not yet reached Southern Africa.

At the end of 1955, two friends and I signed on for a four-month trip to the Antarctic on a whaling factory ship, the “Abraham Larsen”. As junior whalers we were consigned to deck work ensuring the flensed whales reached the appropriate steam pots for blubber, bone and meat.

There were some 450 crew. The Norwegian flensers were a law unto themselves and would become quite violent if their knives were blunted by shrapnel in the whale.

Controlling male urges was a problem solved by copious amounts of copper sulphate in the bread. Such was the mood on the vessel that when a captain’s wife had appendicitis, after the operation in the ship’s hospital, she was put in the padded cell, the peephole was welded shut and padlocks put on the door; the captain had one key, the ship’s doctor the other.

Refuelling tankers insisted they could smell the factory ship while still over the horizon! It was 12-hour shifts. When coming on deck from a warm bunk, the first job was to push oneself up to the armpits in the carcass of a whale, and in this way one did not ‘dicker’ around. The homecoming party was a failure. Despite numerous showers, we still smelt, and our girl friends kept us at arms’ length.

AUSTRALIA

In December 1956, I flew from Johannesburg to Brisbane to join my parents and spent three months at St Lucia finishing off my MSc. It was the days of Professor Bryan and the famous palaeontologist, Dr Dorothy Hill. In April 1957, I obtained a temporary job with the Queensland Geological Survey under A K Denmead. I was assigned to the Redbank Coal Division and experienced the Queensland Public Service. I was obliged to join the Union. From memory, it was necessary to sign on before 9.01am and sign off not before 4.59pm: it was an exhausting job. After morning coffee – 9.00 to 9.15 – the Redbank boys would drift off to the vehicle pool and cruise up to Redbank in time for morning coffee there. It was then industrious effort from 11.00 to 12.30 when there was a mandatory one-hour lunch. After lunch we laboured in the field until 3.30 when it was time to drive back to Brisbane. We duly clocked off at 4.59pm, exhausted!

SOLOMON ISLANDS PROTECTORATE

Before leaving South Africa, I had obtained a position as Field Geologist with the OGS, London, and was instructed to present myself at Honiara in July 1957. It was a lazy QANTAS trip from Brisbane, overnighing at Port Moresby and Rabaul. My impression of Moresby was of noisy Australians drinking vast amounts of cold beer and of Rabaul of a steaming seawater crater where ships boiled off their barnacles. My first impression of Honiara was shattering – the plane landed with an ear-splitting hammer. Old hands were slowly putting away The Times or Playboy while I wildly looked around – it was Marsden Matting (interlocking metal plates) – a wartime relic of American landing fields.

The capital of the Protectorate on Guadalcanal was Honiara; above flew the flag of the Western Pacific High Commissioner, below was a rabbit warren of American military huts housing stratified and hierarchical secretariat and assorted commissioners.

The Geological Survey was on a coral ridge above and comprised a new asbestos-walled building and a buried dugout housing a great collection of wartime air photos and drafting tables. The roost was ruled by John Grover, OBE, who maintained discipline and co-operation with a stentorian voice.

With an opportunity to acclimatise, I was sent on a week's trip to the eastern end of Guadalcanal with Dick Thompson (who years later joined the NT Geological Survey) to examine recently discovered ultrabasic rocks; the job was to sample them for chromium, nickel and platinum. There were two events that riveted my attention. The ultrabasics were in a sacred area which contained hundreds of skulls, each in its own individual shelter. One morning, standing on the beach, the water started receding. Fifty yards out, our Government launch, Noula, roared into life and headed out to sea. As I raced into the coconut plantation, a small tidal wave slapped up the beach and into the first line of trees, the cause a tremor in the strait separating the Solomon chain of islands. The Marau Sound area where we were working was a region of political tension – there were the supporters of the Massina Rule that were mixed up with the Cargo Cult and an independence movement which originated with American landings in 1942. The Negroes in uniform had privileges and there were goods that could not even be imagined by the Melanesians lying on the beaches and in the military camps.

Bellona

In view of deteriorating phosphate supplies on Nauru and Ocean Island, the Australian Government requested the Solomons' Geological Survey to investigate the Bellona atoll 120 miles south of Guadalcanal. I

was fingered for the job: in October '57 a Melanesian crew and I boarded the ocean sea launch, Betua, for the trip to Bellona, a Polynesian outlier. Mid-afternoon on the second day, the smudge of Bellona appeared, a raised coral atoll six miles long by two miles wide. Some 500 Polynesians lived on the island. They ate their last missionary in 1932. After that, the Seventh Day Adventists saved many souls and put the women in "Mother Hubbard" dresses causing most of them to develop skin diseases.

Instructions were to cut several lines across the island and dig pits every hundred yards. It was hot G-string work: pits were the diameter of a 44-gallon drum and 20-25 feet deep into needle-sharp limestone pinnacles. The guano-fish debris phosphate layers – white to grey and crumbly – were beneath several feet of aluminous red clay. For sampling, I was suspended on a frayed rope on a creaking bush windlass. At the bottom my telescoping vision turned Melanesian heads into celestial black holes. Behavioural mores reflected on an agreeable culture. Most men on the island worked in Honiara for weeks at a time; the lucky few remaining unmarried men waited each night for an ardent Polynesian woman carrying a bedroll on her back, whose husband was in Honiara, whatever pleasure was required, was freely given.

Each full moon, the entire population gathered on a small beach where we were camped, all disrobed, all spent hours splashing and shouting in the water. After midnight they sat on the beach feasting on chicken, taro and coconut juice until dawn.

During the six weeks on the island, I was several times offered a young maiden for my personal needs. Due to my WASP origin and the iron Colonial rule that "philandering with a native women meant instant dismissal", I reluctantly declined the offers by incredulous Polynesian males and I would like to think to the disappointment of several comely maidens.

Because of a flu epidemic in Honiara, we were on Bellona for three extra weeks; my Melanesians thus were able to cavort for two full moons. They also had the temerity to ask me to remove amorous Polynesian girls from their tents at night. This I refused to do on the principle they were old enough to take matters into their own hands.

I left Bellona, never to visit again, but I was on waving terms with the Bellona men.

Hanesavo

Following a report-writing period in the dugout, listening to the thunderous deluges of tropical storms, I was given instructions to investigate manganese mineralisation in pillow lavas on Hanesavo in the

Nggela Islands. Our geological launch, Noula, was so overloaded the Plimsoll line disappeared so freeboard was notional rather than real. We dropped anchor on a coral beach, an idyllic setting. With a dozen Melanesians the camp was set up and at eventide millions of mosquitos descended on us. Fortunately we had found a US army DDT gun that resembled a machine gun. Soon we covered the entire camp and surrounds in DDT fog; all life for 50m round the campsite expired surprisingly we did not!

My job was to excavate trenches and map the island to identify the volcanic-sedimentary stratigraphy. Trenching was encouraging as malachite, pyrite and boxworks chalcopyrite were intersected. A passing vessel relayed our news back to Honiara. Traeger transceivers would not work and a few days later my routine was destroyed by the arrival of a Winke Drill, a diabolical transportable implement that we set up at a favourable drill site. In quick succession we found that the spark plugs had rusted in and the carburettor had to be stripped. Vegetable oil sufficed as gear oil and thankfully we only sheared two drill rods, but not before one hole revealed a few feet of pyrite-chalcopyrite in brecciated volcanics. Following this we carried out a laborious magnetometer survey using the antediluvian model that required setting up on a tripod.

I spent some six weeks on this project. Fresh vegetables were provided by Sambani Alice and her two daughters. She was a short-skirted complete extravert who had Spanish blood from rollicking good fun by Spanish explorers in the 1600s.

One day I noticed a “raspberry” sore on my cook boy’s leg. By good fortune a travelling medical orderly called in at the campsite who diagnosed “yaws” – tropical syphilis. He lined up the whole Melanesian work force and gave each one a jab in the backside with a needle that resembled a six-inch nail. Half way through my thanks he cut me short and said “Now you.” With the same needle he slammed it into my quivering backside: the applause drifted far over the water – I was one of them!

While on Hanesavo, I had an imperial visit by the Western Pacific High Commissioner. It was a flotilla of three large launches filled with His Excellency, Aide de Camp and assorted commissioners and wives. We sat on deck chairs on the poop deck, toasted Her Majesty and drank pink gins. The gloved hands of the ADC were assiduous in proffering stenghas and Pall Malls to HE and the ladies.

Final days on Hanesavo there was a banshee invasion: suddenly some 25 short, dirty skirted women from 60 to 16 swarmed into the camp and into the Melanesian tents and then on to the canoes. At this stage the Guadalcanal labour burst out of the bush hurling bamboo spears toward

the women who sped off in their canoes shrieking invective – perhaps they were sorry to see them go!

San Jorge

I spent a few months with Dr John Latter, (ex BMR with Tony Taylor in New Guinea and ex DSIR New Zealand). John had been hired by Inco to define nickel laterites on San Jorge, an island off Santa Ysabel. It was a mapping job over this hump of an island and John spent his time plunging through spikey bush while I was undertaking a proton precession magnetometer survey. The matted vegetation was the home of poisonous black snakes and immense centipedes.

The magnetometer was the brainchild of Dr Fred Grey from Cambridge. The instrument was all about precessing protons in pure water. The survey was delayed for a few days as a Melanesian helper had unthoughtfully put seawater into the machine: precessing protons going berserk are a fearsome sight; much cleansing with pure water was necessary.

It was 1957; only 13 years after the Japanese were pushed out of the Solomons. The local people would not go to San Jorge: there were sightings of strange people – pockets of Japanese soldiers on this island and others that had never surrendered. One morning there were footprints round our camp that were not Melanesian.

Once again – no radio. My big toe became gangrenous and I mistakenly treated it with near boiling water each evening. On returning to Honiara, I was put in hospital for a few days where my nail and a slice of flesh were removed.

Betilonga

Nearly my nemesis. About 20 miles south of Honiara was the jungle-enclosed village of Betilonga. This was a really hard yomp into the region from which I was to prospect for porphyry copper systems. Back in the early 20s this area had been the site of a gold prospect. For months, while the Melanesian labour dug pits and trenches, I toiled up and down steep creek beds and jungle-covered ridges. It was a disjointed maze of andesites, porphyries and brecciated iron-stained quartz.

Half way through the program I developed cerebral malaria. For several days I sweated and dehydrated on my camp bed. As the ‘boys’ did not want a dead white man on their hands, they carried me out on a stretcher. I was in hospital for maybe 10 days. I was summarily discharged when a gorgeous Polynesian sister came to give me my daily

injection. This time I made a feeble grope; she turned me over, stuck the needle in my backside and slowly stirred with the comment, “This will quieten you down!”

Back in Betilonga I was again examining exposed rock outcrops. A hot quiet afternoon, a rustle above me on the bank. Suddenly six large dogs were snarling round my feet. Perhaps for a minute I was swinging my near-useless hammer like a Viking battle-axe. There was no opportunity to think of meeting my Maker. Again, suddenly there appeared a group of Melanesian hunters only wearing athletic g-strings – spears flashed, one dog died and the others yelped. The leading native gave me a fearsome grin. One dog was tied onto a spear and off they trooped back into the jungle – dog stew for the evening meal. I went back to camp for afternoon tea of bonox, ships’ biscuits and cheese.

And so I farewelled Betilonga.

Social Life

Honiara was a stratified hot bed of Pacific passion. There were only three planes a month and for their arrival a small group of Europeans would be at the tin shack airport to see who was arriving; for a single man – who were the new secretaries arriving from Australia or the UK?

Weekends there were walks, beach parties (no swimming – sharks were still around from their wartime feasting), parties in the Honiara Club and the Mendana Hotel, meals in Chinatown. Each New Year Day, Europeans would sign the book at Government House. This ensured that you would be invited to the occasional cocktail party. These were high protocol: ladies in stiletto court shoes which they ground into husband’s feet if their eyes lingered too long on vital Polynesian girls serving nibbles and come-on smiles.

At the end of two years I was offered another contract, but declined as I had been accepted for a course at the RSM, London.

LONDON 1959-1961

In the Solomons I received advice that I had been granted an MSc (cum laudae) so on the strength of this I registered for the 1959 Mining Geology Diploma Course at the Royal School of Mines – a brilliant innovative course. One of the tutors was Dr Alf Mather who once ran Geomin. One field excursion was based round the tin mines near Camborne. It was freezing fieldwork in December and January. On New Year’s Eve we found ourselves at a bordello in St Ives. This was my first experience of drugs. On arrival we had whiskey pushed into our hands.

Through a smoky atmosphere there were softly moaning bodies slowly writhing. We finished our drinks and left.

The course finished in June 1960. I then took a temporary job with Hunting Geophysics in Boreham Wood. My job was to reduce a vast amount of gravity data. During this period I applied to the OGS for a posting in Malaya. My interviews were a little frosty; a Malay government waller asked very pointed questions on my life in South Africa and my attitude to 'separate development'. In the fullness of time I was told to present myself at Kuala Lumpur in mid-March, 1961. Tickets and travel documents were in the mail.

MALAYA 1961-1964

Malaya was in a pervasive ferment when I arrived; the Emergency was winding down but nationalism, political discord and "merdeka" (independence) was on the horizon.'

An effortless BOAC Comet flight to Kuala Lumpur and a train journey to Ipoh, Perak, capital of the Malayan tin industry. Our welcome at the station was straight out of Somerset Maugham's Malayan 1920s short story – The Outstation – men in whites and ladies with parasols. Some of you may remember Sandy Renwick. When Sandy subsequently joined the BMR after Malayan independence, many in the old Childers' army huts cursed that they had not thought of a monocle, kerchief, cavalry twill trousers and a shooting stick. He also introduced stengahs (pink gins) rather than cold beer to the BMR geologists.

I joined the Survey under the title Economic Geologist with my prime responsibility to prove up alluvial tin deposits on dedicated Malay lands in Eastern Malaya: Kedah, Perak, Selangor, Negri Sembilan and Johore.

Outstation – But first I had to be blooded; a quick jungle trip to introduce me to working with the Malay labour force. Very soon after arrival in Ipoh I found myself with Simon MacDonald (some may remember him in Tennant Creek) and twenty Malay porters on the East Coast Express – Singapore to Kota Bharu on the Thai border. The train stopped somewhere in the middle of Malaya and our group jumped out with 20 ration boxes and paraphernalia. The train whistled off and, moving away from the tracks, we set up camp in a natural clearing.

The afternoon was spent sorting out a route on air photos that seemed to be all cloud-cover. Come evening, the tents had been set up and the whole crew had their bedrolls laid out; only mine was still in the clearing. The only space left was in a tent furthest away from the fire and looking out on the clearing. Soon all were asleep but me. Into the clearing stalked

a huge Sumatran tiger – it looked at the tents and me then walked to a tree – stretched it all extended 12 feet against it – and ripped its claws down the bark. It again looked at me (I endeavoured to avoid eye contact) and disappeared into the jungle. A few moments there was a crash, a piercing scream and the sound of crunching bones.

Our task was to collect geochemical samples and pan for tin and gold in a contact region between granites and thermal metamorphic aureoles. Each afternoon we took off our sodden clothes and carefully mutually examined for well-filled leeches which were sprinkled with salt or stubbed with cigarettes. We reached Kota Bharu on a Friday. Except for chanting from the minaret and a milling crowd about the mosque, the settlement was deserted. After two days in the Kota Bharu office we returned to Ipoh.

Mineral Industry Drilling Unit

This was my fallback occupation when not on other assignments. Large areas in Perak and Selangor had been set aside for Malay alluvial mining development. These were flat swampy areas often surrounding Malay kampongs. The objective of the Unit was to use manual Banka drills along cut lines through the swamps – a land of mosquitos, snakes, centipedes and huge horned beetles.

The politics of tin, like most natural resources, is one of death, corruption and intrigue. The Chinese arrived in the Kinta Valley in their thousands in the early 1800s to mine alluvial tin; gangs and secret societies controlled the region. In the mid-century, Britain appointed a Resident to bring order to the Kinta Valley. After the First World War, Britain encouraged large dredging companies to operate in Perak and Selangor to break the Chinese monopoly. When I worked on the MIDU projects, the backdrop was of moaning screeching monsters moving very slowly through the heat haze.

The target was to drill two 50 feet banka holes a day; foetid muds and gravels came up, yard by yard. This was logged and washed in a dulang. Samples were measured in a volume box then panned for heavy minerals. All calculations were as catties per cubic yard where 100 catties equalled one picul (133 pounds). There was a relationship to the hundredweight measure. The mineral concentrate went to the Geological Survey labs for identification and per cent recovery.

Our *bête noir* was bones in sediments. If we could not hide them from watchful Malay eyes, an imam was called who collected all the bones for reburial. This process infuriated the Chinese drilling contractor; Cantonese blasphemy is not a pretty sound!

Towards the end of my three-year contract, Malay geologists were assigned to me. They were emotionally and spiritually unprepared for MIDU work; once graduated, they envisioned life as sitting in air-conditioned offices doing clever things with maps.

An example of East is East and West is West and never the twain shall meet occurred on the Thai Malay border. It was a joint survey: our Malay geologist (Clive Jones) waited at the start point at the appointed time; the Thai geologist arrived on an elephant and during the entire survey Jones talked to the elephant's trunk while the Thai geologist had rocks passed up to him by an assistant!

Operation Sat

There was "movement at the station" – the word went out that the newly independent Malaysian Government wanted a large area of Central Malaya examined for gold and base metals. On an appointed day Ernie Bradford, the Deputy Director, glared at eight geologists seated round the library table and gave us our operational areas and marching orders. Our combined geological map was to be seamless. Eight groups were dropped along the central railway line and ordered to head east to the South China Sea and not to arrive before three and a half weeks.

My crew derailed at Gua Musang, a town held by the communists during the Emergency. For days we cut our way along precipitous V-shaped valleys, mostly the granite batholiths of Central Malaya, not much in the way of heavy minerals. At one place we were pulled up by a huge pig that had been torn in half – a tiger kill. We quickly moved on. At one place the expanding river ran beneath miles of huge rounded granite boulders, we had to cut our way along near vertical banks.

Past the boulders on a sandy stretch near the water my leading field assistant stopped, held up his hand, and pointed to footprints near the water's edge. Orang asli? – no. Malay? – no. They were Chinese feet. After we had left Gua Musang too late, a message arrived from the Black Watch HQ in Ipoh warning of Chinese guerrillas in the region. We looked straight ahead and kept walking, conscious that several pairs of eyes may have been watching us.

My principal objective was to map and sample previously discovered baryte veins in altered brecciated andesites. I managed to make tonnage estimates, however, there was no indication of the silver content. I mapped the prospect in some detail endeavouring to create a favourable VMS setting, a case of a silk purse from a sow's ear.

The last few days provided terror, revulsion and great sympathy.

On a sunny afternoon we were moving through bamboo thickets, suddenly a leading porter raised his hand and hissed silence; he was looking at steaming elephant dung. We had walked into a herd of elephants. Looking under lowered lids I started to make out a grey flank, a beady eye, a waving trunk. Our terror was that a baby elephant would walk towards us arousing the herd. We very slowly moved ahead, eyes downcast.

Approaching the coast we entered an abandoned Malay village. We stood in the silence and became aware of a faint rustling. It was a horrible sight – millions of leeches were coming like a carpet over the ground ravenous for blood; it is amazing how fast and far one can run with a loaded pack with the right impetus.

On reaching the coast we heard of a disaster. One geologist had slipped down a waterfall and broken his back. It took three days for Malay porters to reach the coast and another day and a half for a medical team in a helicopter to reach him. Being unable to urinate he was in agony for four days and had to be restrained from cutting himself open. The British Government offered to fly him to London but Malay doctors wished to treat him in Kuala Lumpur; when they failed to stabilise him he was flown to London, a paraplegic. At the Survey, we geologists were furious and such was the ill feeling that the Deputy Directors called us together and told us in no uncertain terms we were now employees of the Malaysian Government, since independence, and we were to shut up or be fired.

So ended operation Sat.

Bukit Besi

On a steamy day while in the office calculating catties per cubic yard of cassiterite, I was told to pack my bags and head for the Bukit Besi iron mine in Trengganu on the East coast. The Geological Survey had sold several weeks of my time to the Eastern Mining and Metals Company. Those of more advanced years may remember Brian Somers who was Chief Geologist before moving with Amax in Perth in the 1960s.

When Japan invaded Malaya in the early 1940s the iron deposit was opened up and, myth has it, the iron ore was made into railway lines that promptly started to crack up due to the high tin content.

The Bukit Besi deposit was a complex contact metamorphic melange of granite, limestone, amphibolite, magnetite replacements with pyrite and cassiterite disseminations and veins. My remit was to produce the first geological map and a magnetic survey in an open cut pit over 2,000 feet long and several 100 feet wide. Except for muddy haul roads, the pit walls

were sloughing into a large evil-looking sump into which boulders regularly plunged with a distant dull splash.

Faced with masses of cassiterite-bearing magnetite masses, the mine had virtually run out of uncontaminated ore. Working with the engineers, I was supposed to provide information to define future mining blocks. The final picture appeared to be an early magnetite skarn deposit with a later introduction of fine cassiterite veinlets seamlessly from granite into the fractured magnetite masses.

Part of work early each morning, was to check on the night shift drill rigs. Arriving at one site, the drill rods were turning but there was no sight of the Chinese crew. Standing next to the rig a spanner clattered to the ground; looking up, there were two terrified drillers pointing. A tiger had wandered in from the enclosing jungle, snarled at the drillers and then wandered off. Fortunately I did not have to seek safety in my doorless jeep.

Calling in at the Kuala Lumpur EMMCo office after my second trip, I was offered a position at a hard-to-resist salary. I refused and six months later Bukit Besi closed down.

Salamat Tinggal Malaya, 1964

In the three years of my contract, Malaya had elevated from Colonial transition to fraught Independence. There was bitter division between Malay and Chinese; the latter controlled commerce and the former controlled Government. Government policy was pushing Malays into positions that clearly illustrated the Peter Principle.

In my final year I put out feelers for a position in Australia. By departure date, arrangements had been made that I would meet Vic Cottle, Chief Geologist of Electrolytic Zinc Company in Sydney.

We left as a family in March 1964 as were many other expatriate families. We left behind weeping amahs and their families who feared the future working in the homes of Chinese and Malay employers.

There is a wonderful stanza by Rudyard Kipling –

Now it is not good for the Christian's health to hustle the Asian
brown,
For the Christian riles, and the Asian smiles and he weareth the
Christian down;
And the end of the fight is a tombstone white with the name of
the late deceased,
And the epitaph drear: "A Fool lies here who tried to hustle the
East."

AUSTRALIA

Electrolytic Zinc Company 1964-67

An effortless BOAC flight Kuala Lumpur – Sydney. My first contact with Australian culture was the six o'clock swill at a pub in Kings Cross. My first sampling of Australian hospitality was the Temperance Hotel nearby; the evening meal was thin soup, lamb chops, two tinned pineapple rings and undrinkable coffee.

For the next two days I was in close conversation with Vic Cottle, Chief Geologist of EZ. During a flying visit to Rosebery I was offered the job of Exploration Geologist by Ray Pratten; I would be based at Captains Flat. EZ had acquired EL No 1 of 1000 square miles and it was my task to find another Captains Flat.

It was a culture shock almost too far: from a three-bedroomed, three-bathroomed house, complete with amah and gardener, we were in an asbestos paneled cottage with a rank internal thunderbox, a bathroom in a corridor, a kitchen plumbing system that froze in winter and a 44-gallon drum fitted with an electrified iron bar for an element. I was eventually acculturated and became an Australian citizen!

The target was VMS in Silurian volcanics; the EL condition was 50% of the title to be released in two years. First it was a mapping programme with five geologists to define the Silurian-Ordovician boundaries, then stream sediment surveys to locate anomalies, then gridding and mapping. Grid work was sometimes a nightmare with inexperienced field hands and lines which developed a life of their own. Finally, after completion of prospect maps, McPhar Geophysics complete with IP and, on occasion, a highly excitable Phil Hallof, entered the scene. Vic Cottle had convinced EZ that this geophysical technique was the way to the buried bonanza.

The massive geophysical assault was a technical success: graphitic shales, disseminated pyrite, buried pipes, power lines, buried geological contacts, rabbit proof fencing and occasionally chalcopyrite-galena (sphalerite) mineralisation were located. Two drill rigs were transported from Rosebery and certainly some geochemical anomalies, coinciding with boxwork outcrops, proved disseminated mineralisation at depth. This was still the days of primitive acid tube surveys. I drove round with a rubber bottle of hydrofluoric acid stowed inside two containers.

Vic Cottle was a geologist of the “old school” – avuncular, irascible and steeped in outback experience. Myth had it that somewhere in Central Australia, he and Bruce Walpole argued over the origin of an outcrop. Intellectually they were unable to accommodate each other's theory so the argument was settled with fisticuffs in the bulldust.

On an early inspection tour of EZ properties with Cottle in the Bathurst area, we unexpectedly called in on an EZ project geologist. He was out but his caravan was a pigsty of clothes, food, papers, maps and dirty dishes. Cottle was livid: he threw every moveable article outside, waited for his return and fired him on the spot. When, on his occasional visits to Captains Flat, Cottle would arrive mid-morning Friday, spend the rest of the day reviewing data and then disappear. He would appear again early on the Monday morning, spend the day examining prospects and would then drive back to Sydney. He always, before departure, presented me with a trout from his icebox.

I do not believe the incident with Walpole to be a myth. Some of you may remember John MacManus, ex NSW Geological Survey. One day, John, Vic Cottle and I were on a gold-bearing quartz outcrop near the Murrumbidgee. Suddenly a blistering argument developed between the two of them that turned into a profane roaring match over the genesis of the gold. Verbal exhaustion did not settle the matter and I think we eventually ended up in a pub near Michelago for respite.

Midway through the Captains Flat program, EZ picked up another 1000 square mile EL extending just north of Cobar to near Louth on the Darling. The exploration targets were Cobar-style deposits associated with aeromagnetic and gravity anomalies beneath deep superficial sediments. Gemco drilling techniques were becoming accepted so EZ decided an extensive program was warranted once we had painstakingly located the geophysical anomalies on the ground. It was weeks of hot dusty work logging the thousands of feet of cover and always endeavouring to ensure chips of bedrock were obtained from depths up to 50 feet.

We camped in shearers' quarters near Louth; the camp was "dry so the Tasmanian field crew would spend Saturday nights partially wiping themselves out at the Louth pub. One night there was an altercation with a bunch of kangaroo shooters: fists flew. Although a fire extinguisher was activated over a shooter they remained incandescent. Another was hit over the head by the now empty container. The unconscious man was thrown onto a heap of bloody kangaroos and they drove into the night promising vengeance on the morrow. Two of our Tasmanian crew promptly got into their car and by Sunday morning had reached Melbourne in time to catch the early morning ferry to Devonport.

After three years in Captains Flat, I transferred to the Melbourne office in Lonsdale Street. It was directors in plush leathered silence on the top floor; a quiet, perhaps wilted, admin section on the floor below and a noisy, slightly irreverent mining/exploration group below that. The morning tea service was modulated by a uniformed tea lady who served

beverage in china cups and offered only one sweet or dry biscuit. A uniformed doorman on the ground floor saluted those with influence.

I was extremely fortunate to spend time working on the Beltana zinc deposit in the Flinders Range – pre-Cambrian carbonates containing complex zinc and silicates and lead-manganese oxides, willemite and corandite. On my last night at the Copely Hotel, I unwisely combined awful Southwark beer with dessicated Spencer Gulf oysters: it was a life-threatening experience.

Suburban living and the staid company ethos were becoming tedious. John Ivanac from the BMR threw me a lifeline – Would I join him as Senior Geologist in Sydney to kick-start Central Pacific Minerals? – Yes!

So it was in early 1968 an overloaded Holden Special station wagon, containing our family of five and our dog, set course for Sydney

CENTRAL PACIFIC MINERALS 1967-1972

This was a period of rising bull markets and an avalanche of new “Blue Sky” and “Mother Lode” floats. Central Pacific Minerals floated with a collective of prospective properties and joint ventures with an established company. John Ivanac was appointed General Manager. My contact with John extended back to the Childers era when, before Woodlawn deposit was discovered, Captains Flat was the only mine site within easy distance.

The lighter side of Sydney life during the period of rising mineral industry optimism was dominated by Germaine Greer, Beatles, chardonnay, patio parties and patio pants.

With an Alice Springs office established and reliable field assistants recruited, investigations commenced in several tenements east of Alice Springs. The Arunta Block contains many gold and oxidized copper workings in chlorite – biotite schists within a regional setting of felspathic gneiss, mafic granulites and calc-silicates. Numerous workings and rusting mining machinery were scattered across the country. We camped out of the back of a Toyota for days at a time; nightfall was a blessed relief. The first light of day produced an angry buzz and as the rays of the sun illuminated high ground a black line would form just above grass level which then erupted into millions of flies looking for the first sweat of the day.

On one expedition we were caught in a sandstorm for four days, fortunately next to Boxhole Bore. We lived on salty water, dry biscuits and bully beef, all the while wind howled about us and the air was a

miasma of red dust, grit, helpless birds and unpalatable vegetation. Our target in this region was lead mineralization in limestone reef facies.

In the early seventies, the uranium potential of Australia was recognized. Central Pacific obtained several tenements in the Ngalia Basin, north-west of Alice Springs. Potential host rock was the Palaeozoic Mt Eclipse sandstone and the target roll front uraninite deposits; surface expression was the yellow oxidised mineral carnotite. Our prospecting technique was to walk across the stratigraphy with a hand-held scintillometer. Ultimately, after my time, the Bigrlyi deposit was discovered.

One of the most poignant experiences of my career was on the shores of Lake Bennett, a blinding white expanse of salt. I had followed a faint track that ended at a decaying slab hut. Inside the dusty heat-warped interior were a table, chairs, an iron bedstead and a splitting piano. It would have taken months in an oxcart to move these chattels from the railhead at Maree. I sat in a wobbly chair, listened to the sough of wind, the faint howl of a dingo and tried to recreate a moment in the life of this couple.

I spent some time in the **Top End**. My most memorable work was flying over swampy country west of the Stuart Highway locating radioactive anomalies for ground follow-up. The helicopter pilot was fresh from missions in Vietnam: he was often bored witless with survey work. One afternoon, returning to Darwin, he spotted two cars drag racing on an emergency airstrip. With a fiendish grin and cigar waving like a conductor's baton, he put the helicopter nose down six feet above the runway. The cars veered off and ploughed into the runway drains, immobilised. "That will teach those bastards!" With a grin his day was made.

CPM joined the nickel rush to the Eastern Goldfields; I was sent over to Kalgoorlie to open an office. By good fortune, Lily Phooey, a retired prostitute no longer required her premises in Hay Street, renamed from Maritana Street due to the presence of the Catholic Cathedral. The premises were ideal – each one of us had a cosy office and plenty of off-street parking! It was a frantic couple of years pegging claims, examining claims salted with secondary nickel minerals. On the 20 July 1964, after a hot day mapping on a block of claims north of Leonara, I was lying on my camp bed looking up at the moon when, over the tranni came the voice "The Eagle has landed!"

By early 1972, the shine had come off the exploration industry; along with other juniors, CPM was shedding staff. It was time to consider jumping ship. By great good fortune, I applied for a position of Regional

Exploration Manager for a large overseas company; it was with enormous relief I was required for interviews in Sydney.

INTERNATIONAL NICKEL COMPANY 1972-75

I commenced with INAL (International Nickel Australia Limited) in mid-1972. As befits the ‘shop window’ of a major international, the Sydney office reflected “Up the Organisation” by Robert Townsend – the immaculate PAs’ and top secretaries’ working conditions were a dream. Dr Robin Curtis had just been appointed Exploration Manager – it was a pleasure to work with him.

My first assignment was to fly to Rockhampton, sack the staff and close down the nickel laterite operation. Coercion to a smooth demise was attained by the promise of an ex-gratia payment if the 25-odd employees went quietly.

My second assignment was to ginger up a barite-silver-zinc show at Trunkey Creek, south of Bathurst. Drilling only established disseminated sulphides in altered andesite; our final two holes were beneath a mineral lease that only extended down to 20 metres. The local farmer was basing his retirement on an option payment. By drilling beneath the lower limit of his tenement, the decision was made not to proceed. I knocked on his front door and delivered the news. He was a huge man, barrel chested, ham fisted and weight-lifters arms. His eyes bulged, his face suffused with rupturing blood vessels, his knuckles bunched white. Very quietly he advanced toward me saying, “I am going to kill you.” I genuflected down his front path; thankfully the vehicle started immediately.

INCO’s desire for a world-class copper deposit concentrated on the Dukes-Darwin Range near Queenstown; the southern end of the tenement terminated on the shores of Macquarie Harbour. In the late 1800s, the South Lyell Mining Company established a mining operation and smelting works. Alas, the prospect failed due to smelter problems. INAL completed detailed mapping, sampling and drilling, but no significant copper intersections were obtained.

On my final day on the project site I climbed the southern peak overlooking Macquarie Harbour, the penal settlement on Sarah Island just visible in the mist. Irritably I kicked the ground. Below me was a strange ironstone sticking out of the ground – it was a 15 kg convict ball, complete with corroded shackle ring: very few people escaped from Sarah Island!

In August 1974, Robin Curtis called me to his office, “You are in luck – marching orders for Brazil.” My orders were to examine river terrace alluvials and a recently-discovered cassiterite deposit west of Brazilia. Arriving at Rio de Janeiro, I was put in an art deco hotel

overlooking Copacobana Beach. Next morning, fully-dressed, I strolled along the beach: such was the delicacy of young ladies' beachwear that cleavage at both ends of the torso was ripplingly evident. I quickly left before being accused of loitering with intent.

A technical session with the Rio INCO representative and an introduction to my guide for the next four weeks, Boris Gerschkavitch, a mining engineer, who had spent his life in the gold, silver and copper mines of the Andes. Next stop the Geological Survey HQ in Brazilia to pick up data. The Assistant Director complained it was the very devil to get young Brazilian geologists out of the office – all they wanted to do was to read reports and sit and think.

Some 300 kilometres north-west of Brazilia in a tributary of the Tocantins River, I started to sample for rutile, zircon and ilmenite in flood plain gullies and wash-a-ways. On elevated hillsides were palatial haciendas; tucked away were squalid peasant villages. Very hot, dry, dusty work. One day I was chased by a herd of horned cattle. By good fortune I reached a vertical riverbank and hurled myself onto a sandbank some three metres below. It was a nine-life moment – fortunately there were no rocks or debris. The cattle snorted and pawed above me.

My next examination was the Crixas gold deposit. This was opened up by African slaves overseen by Portuguese in the 1700s. Very narrow stopes: the gold occurred in quartz veins in a host of carbonaceous shales. An excellent prospect. I recommended a tenement over this but INCO was tardy and later, Kinross Gold from South Africa opened a mine.

One of the extraordinary global finds of the 1970s was the Sierra Branca cassiterite deposit located 350 km north of Brazilia next to the Rio des Mortes that shimmered with near surface piranhas. The only way to the deposit was on a punt – we left our vehicle at a shack and zig-zagged across the river. On the other side we offered payment – he laughed – the return journey charge was a kilogram of cassiterite. There was no other way out – the boatman was on his way to becoming a millionaire!

The white kaolinised granite mountainside rose up before us. On it, ant-like, moved hundreds of garimpeiros (illegal miners). As we walked towards the workings, the first group of huts were the business premises of the girls from Rio: a line of erotic attire flutters on a clothesline; the girls, reclining in banana chairs, waved to us as they waited for rush hour at sunset.

On the lower slopes were a line of shacks and stalls selling everything required by an able-bodied prospector: panning dishes, rum, picks, hunting knives, shovels, guns, bleeding sides of meat, sun hats, ammunition.

The black boulder scree on the Sierra Branca was originally thought to be magnetite and it was only in 1972 that the identification was made. An American company was granted a mining lease, but within a few months millions of dollars of eluvial and alluvial cassiterite had been shoveled up. The illegal miners were now working on two-metre square claims protected by brute force, knives and guns. The process was to use picks to dig out the kaolin-cassiterite ore, carry it to the river some 300m distant, or carry water to the working – dangerous if water leaked into an adjacent claim. The miners were destroying the deposit economics, the Government was powerless and the American company was assessing its options.

There was a debrief in the Rio office then an overnight flight to Toronto. It was a one-day debrief in the Toronto office, smiles and handshakes all round, then an Air Canada flight to Sydney. All appeared set fair.

Twenty-four hours later I entered Sydney office to find it seething. While basking in Toronto smiles, instructions had been given to immediately close down the Sydney office. Everyone was to be fired except Robin Curtis and me, who were to be transferred to the Perth office. Robin refused the transfer and resigned.

As a family we moved to Perth. At that time there was discussion among the mining fraternity on marriage break-up and the effects of relocation on families. Over the period in Perth my work was slowly decreasing. My final project was in the Carnarvon region searching for copper deposits in ancient dolomitic stratigraphy. On the day I left the campsite, kangaroo shooters gave me some frozen kangaroo tails. Back in the arrivals hall in Perth I picked up my case and left a pool of blood on the carousel. I moved out quickly to see a gathering bunch of airline staff walking beside the carousel looking at the blood. The kangaroo tail soup was delicious!

I felt the threat of office closure. I applied for a position of Exploration Manager for Preussag AG, Hanover, based in Melbourne. I was offered the job.

When I handed in my resignation to Ewan Laing, the Perth manager, he chuckled and said “Sorry to see you go but I was going to have to sack you as the office is to be down-sized and I will resign very soon.”

Our final few days in Perth were spent at the Sheraton Hotel. Americans on R&R from Vietnam were powering into Perth or Sydney, apparently exhausted. A maid, fixing our room, complained – it was terrible, all the beds were continually warm!

PREUSSAG AG 1975-1988

Preussag was one of several European companies that moved into Australia to secure raw materials for domestic industry. Others were Le Nickel, Aquitaine, Somiren, Hougovens, Urangesellschaft, Metallgesellschaft, Seltrust, Uranerz and Boliden. At the time there was a concern that natural resources might become in short supply. A few years before, the Club of Rome had published the report on “Limits to Growth”. Working for a German company was a culture shock: it had an autocratic and authoritarian attitude; instructions were given as crisp orders rather than requests; outside office hours they could be convivial and relaxed. My character also changed, became peremptory and the family called me “Grumps”.

My instructions were to set up an office, recruit geologists and establish joint ventures with majors looking for world-class deposits. On joining I inherited three joint ventures:

- with **Aquitaine**, south of Darwin,
- with **Le Nickel and Aquitaine** in Tennant Creek, drilling planned on magnetic anomalies,
- with **Le Nickel** in the Lachlan Geosyncline exploring for VMS deposits.

Over a period of several years major joint ventures were established with:

- **Anglo-American** in Cambrian volcanics north of Rosbery – (Comstaff Venture).
- **Amax** for a porphyry copper deposit in Fiji (Namosi Joint Venture).
- **Western Mining Corporation** for VMS deposits in Eastern Victoria.
- **Ashton Mining** in carbonate rocks north of Mt Isa (Bauhinia Joint Venture).
- **Benguet Exploration** – skarn base metal deposit, Baguio, Central Luzon.
- **Pancaran Cahaya Bahagra** – the Moro gold-copper porphyry in Central Kalimantan.
- **BHP** – Preussig purchased the Kalapa Kampit tin mine on Belitung Island, 300km north of Jakarta. Preussag had purchased the Amalgamated Metals Corporation and the Penang tin smelter would be useful.

The **Comstaff Joint Venture** with Anglo-American as manager, held prospective Cambrian calc-alkaline lavas, host rock to Que River,

Rosebery at Mt Lyell deposits. There was a major exploration effort. Many drill holes intersected disseminated sulphides in altered volcanics, but none approached economic interest.

The **Namosi Joint Venture** turned out to be a major effort between Amax, Anglo-American and Preussag. This porphyry copper deposit was located in precipitous country 25km north of Suva. Through drilling, it proved to be a low-grade high-tonnage deposit. A drilling effort to locate a high-grade gold capping, as sufficient start-up tonnage could not be identified. Ken Phillips was the site manager. He had his hands full running a field camp for eighty employees and preparing data for the quarterly joint venture meetings.

This was the time AIDS became rife along the American West Coast. President Rambuka told the Fijian population to keep away from dissolute Caucasians in Suva.

In 1987, the Namosi Joint Venture requested the Fiji Government to suspend expenditure on the Namosi deposit – millions had been spent and the copper price was falling. The Government refused and the title was relinquished.

Bauhinia Joint Venture. McArthur River Region. In concert with Ashton Mining (credited with the discovery of the Argyle diamond deposit), Preussag joint ventured tenements prospective for stratigraphic lead zinc deposits in Proterozoic sediments. Extensive geochemical surveys and mapping failed to discover follow-up targets.

Thanksgiving Venture – Luzon. An investigation was completed on a pyrometamorphic skarn deposit at some 250km north of Manila. The Thanksgiving Mine contained massive base metal sulphide lenses with associated gold and silver tellurides. The mineralisation lay along or adjacent to the contact between Miocene limestone and crosscutting diorite dykes. The underground workings were dirty and wet. As the mine had been opened up beneath a river, there was the ever-present danger of a catastrophic flood. The company did not proceed.

In Manila I met with the Assistant Director for the Department of Mines. His comments mirrored those from Brazil – young geologists did not want to do field work. Welcome to the club of lay-about geologists in Malaya, Brazil and the Philippines.

The poverty gap was well illustrated. Discussing legal issues with a Manila lawyer, we walked round to his club. He knocked on a large steel door and it opened into a quiet deep-piled lounge with very easy chairs. The room was lined with well-filled bookcases. Selecting a book, he brought it to the table. A white-gloved waiter put two crystal glasses

before us; the book was opened and out came a very fine old Highland whiskey.

Moro Porphyry Project – Kalimantan. The German office was contacted by an Indonesian mining engineer who interested the company in the Gunong Moro copper gold porphyry mineralization. In the fullness of time, a complex legal agreement was drawn and a German geologist powered up a Kalimantan river for the first appraisal. He arrived to find illegal miners sluicing and panning the high-grade alluvial and eluvial gold. Unless this could be controlled, the company would not proceed with further work – it did not.

Before pulling out of Indonesia, I had a most informative meeting with Redwan Subandora, Secretary, Department of Mines. Discussions turned to Indonesia's place in South East Asia and to the bitterness that the Indonesian ruling elite felt at having foreign mining companies seeking to extract Indonesian mineral wealth. There was a longing for the day when the country could afford to be very selective on the choice of foreign mining companies.

Living with the German ethos

Providing one paid scrupulous attention to detail, one's efforts would pass muster. At any time, a German Government inspector might appear at the front desk and request to see geological reports and the accounts. The German Government supplied the exploration budgets – hence the interest.

Telephone communication was almost always at 5.00 pm: there would be a long distance click, then the Exploration Director, Dr Klaus Rellensmann, would say –

“Mr Hill, you must reduce your Pinnacles budget by 30%” – Click;

or “Mr Hill, you are expected at Hannover Airport next Monday morning at 8.10 am” – Click;

or “Mr Hill, I arrive in Melbourne in one week – arrange the following” – Click.

The one thing the company did not want was “loyalty” – it muddied the waters. All it required was efficiency. The original base of Preussag wealth was the Rammelsberg Mine, operational since the 11th Century. In the 1930s, under Nazi supervision, the mine and smelter were modernised.

On my first visit to Goslar I arrived at my pre-booked hotel and was handed a note at the desk – the message was terse – Mr Hill, you will be

collected at two o'clock sharp --- have a rest." The last phrase was not for my comfort; it was a dark warning to be "on the ball".

My habit was to go for an early morning run. It only happened once in Goslar for several reasons, however, when I entered the office at 8.00 am, my boss, Dr Rellensmann greeted me with a sardonic smile – "Mr Hill, I am told you exercised this morning!"

At a meeting of regional exploration managers from round the world, it became clear our German colleagues were under an invisible constraint – there was no challenge to proposed policy or practice. By contrast, managers from Toronto, Denver, Lima, Melbourne and Ireland were much more outspoken – one could sense the tension in the room rise if German authority was challenged.

One of my visits to Goslar coincided with the release of an excellent company annual report. All male company staff gathered in a large hall set with trestle tables. When each speaker finished, approbation was shown by slamming clenched fists onto tabletops – it was very Prussian and culturally light years away from refined Anglo-Saxon clapping. Formalities over, the hall was invaded by buxom Gerdas and Helgas who crashed down steins beside frankfurters, sauerkraut and black bread. Next came great jugs of frothing beer. For a long time there was oompah music and raucous conversation. Suddenly everyone got up and streamed into their Audis, Mercedes, Passats and Porsches and roared away.

Termination

"Mr. Hill, we are to sack you!" It was April 1988, 10,000 metres above the Simpson Desert bound for Sydney. After thirteen years of service it was all very surgical.

Preussag, like the other European and American companies in Australia, realised the world was awash with minerals; it was much cheaper to buy them rather than explore for them. Unemployment in the mining/exploration industry was rising fast.

I was very fortunate; I immediately slipped into another position.

FOOLS GOLD 1988-1990

Due to the strengthening German mark and the falling Australian dollar, Preussag had sold TC8, by this time an underground mine, to Norseman Gold Mines NL. NGM required a geologist to manufacture increasing ore reserves from this operation and a gold mine coming on

stream near Ravensthorpe, WA. I was offered the position of Exploration Manager – I accepted with alacrity as the resource industry was in contraction.

The TC8 ore body was 300 metres below surface. It was hot, wet and the blocky magnetite tended to drop out of the backs with unerring frequency.

One morning, the day shift had just gone down and the first skips were rumbling into the crusher. Looking out of the office window I saw a line of red dust racing towards us, there was a roaring crump and a mighty shaking, then silence. No rumble from the mill, no whine from the winder shed, no phone contact underground: the cage had jammed. An hour later the mining crew appeared from the emergency escape shaft. The quake was 6.6 Richter; it left a 15-kilometre scarp one metre high just south of the mine. The Alice Springs-Darwin gas pipeline looked like a string of spaghetti; it did not rupture! Ross Large called from Tasmania, surprised we were still standing – it was one of the largest earthquakes recorded in Australia. It was classed as a rare intra-cratonic rupture.

Four hundred and fifty kilometres south-east of Perth, Norseman was attempting to develop another gold mine near Ravensthorpe. Drill records in the Sydney office had provided the Directors with a false confidence. The intersections were too far apart and it was folly to extrapolate. I had recently attended a course by Dr Spiro Carass in Perth on gold exploration; my advice to the Directors was more in-fill drilling as “things are not as they have been interpreted.”

The mill was built without ore reserves or metallurgical test work and a decline sunk to the nearest high grade intersection, it was just that. There was some frantic crosscutting and raising but no bonanza. Several more declines to encouraging intersections were completed – it was the same grisly story.

I returned to Sydney office to find the receptionist sitting on a cardboard box talking to an irate creditor. During the conversation, the removalists walked to the lift with the leased Board Room table. And that was the end of Norseman Gold Mines.

Fortunately I morphed into a consulting geologist for Goldquest NL who was developing an underground mine at Inglewood, Victoria: another murky story in the making. The MD had been informed by the Stock Exchange that his press releases would no longer be tolerated unless signed off by a qualified professional.

Arriving at Inglewood it was *déjà vu* – there was a shiny new mill. I asked to see the ore reserve data. Several scrappy plans emerged with

disjointed channel samples and drill hole assays. Large areas of dotted lines enclosed mostly blank space with mythic grades and tonnage.

The underground workings were wet, dirty and dangerous. Fractured gold bearing quartz veins ramified through a host rock of chloritic sheared schistose material and arenaceous wall rock.

One morning the MD arrived with his son-in-law, a bemused-looking 30-something. I understood he was an accountant. The mine manager, a mining engineer, was sacked and the son-in-law installed as mine manager. That afternoon I resigned. It was nearing the end of 1990.

Having no wish to indulge in a retrograde metamorphic activity and become a taxi driver, I registered for a Project Evaluation Course at the Royal School of Mines, Imperial College, London, commencing in March 1991.

I had no idea that the last decade of the 20th century would change my entire life. In retrospect, this decade was to be the most interesting of my career.

RUSSIA – PRAVDA ELI ISTINA 1991-2001

This was a decade like no other in terms of interest, technical growth and experience. This period was a veritable finale to my career. On the social side I saw something on the destruction of one culture and rise of a parody of another – cowboy capitalism.

Concerning professional development and the extraordinary nature of my assignments, I summarise them now.

- 1 Writing and delivering a sequence of Mining Economics Lectures that were subsequently published by Moscow State University. This program was funded by the Department of Foreign Affairs and Trade, Canberra. Courses were run at:

Moscow State University
Moscow Mining University
Central Research Institute for Geological Prospecting
Kazakh State Technical University
Irkutsk State Technical University

- 2 Establishment of a Datamine facility in the Geological Department, Moscow State University. I obtained funding support from foreign companies based in Moscow, namely:

De Beers,
BHP
Noprandia,
RTZ and
Outokumpu.

- 3 Preparation of a situation report and recommendation for the Zun Khalba gold mine, south of Lake Baikal on the Mongolian border, for the Mineral Wealth Committee of the Irkutsk Regional Administration.

- 4 Delivery of lectures and papers in Perth, London, Moscow, St Petersburg, Irkutsk and Singapore on the following topics:

- Australian Mining Industry
- Factors relevant to negotiations in Russia
- Russian Mining Law
- Russian Gold Industry
- Russian Diamond Industry
- Evaluation of Gold Prospects

5 Evaluation Assignments

- Georgia – Porphyry Gold prospects for Kartvelo Mining
- Côte d'Ivoire – Gold mineralization in Archean ultrabasics for Hargrave Resources
- Kolyma, Russian Far East, old gold working – Canadian Group
- Dominican Republic – Financial evaluation of Pueblo Viejo gold mine for European Commission
- Wales – Parys Mountain copper project proposal preparation

6 Reconstruction of Russian Gold Mines

A concept I bought to RTZ in Bristol which involved contact with many Russian institutes and committees and also with funding agencies, namely: -

- International Finance Corporation,
- Foreign and Commonwealth Office,
- European Bank for Reconstruction and Development
- Technical Assistance for Commonwealth of Independent States.

These activities were carried out amid the ashes of the Soviet Union that brought Yeltsin to power in August 1991 and the appalling birth pangs of the Russian Federation. I arrived in Leningrad (subsequently St Petersburg) in November 1991. The exchange rate was US\$1 = 30R. By 1998 it was around 5700R. In that year the “New Ruble” was issued at US\$1=5R and by 2002 this had devalued to 30R. At the same time, Russian state factories had closed down or had been acquired by oligarchs who became obscenely wealthy. Amid starvation, Porsches and Lamborghinis became obvious and special airline flights out of Moscow to the fleshpots of Manila and Bangkok were full at weekends.

In the early years of the decade the Moscow pavements suddenly became clogged with endless lines of impoverished people selling personal possessions, jars of pickles, clothing, anything to raise a few rubles to buy food. Under Communism this was a labour camp crime. Suddenly, art collectors moved in to pick up priceless icons that had been hidden for 70 years. Russian customs quickly stopped this but unfortunately Russian borders had many creaking postern gates.

The people lived in vast high-rise blocks: the lifts mostly did not work; there was no mail delivery because letter boxes had been trashed; the stairwells stank of urine and anybody that had a few spare rubles, installed heavy steel front doors that could not be kicked in. After the winter snows dead dogs and humans would emerge out of the snow drifts.

I lived at Moscow State University, so I only saw this from a distance. The University authorities became puzzled when there was never enough food in the cafeterias. It was discovered that students were selling their rooms to illegal Moscow residents and students were bunking up in friends' rooms. After that armed police checked everyone's passes at most entrances. In 1994 the Government proposed to publish telephone directories: there was nearly a revolution. No one wanted this – it was dangerous – people would not be safe.

A few words on each one of my activities during this momentous decade:

1 Mining Economics – Course and Lectures

Through Richard Forster (University of Southampton) I was incredibly lucky to meet Galina Kuydrjajtseva from Moscow State University. She obtained a room for me in the tutors' quarters. My course was designed with the help of University staff to provide an explanation of “how foreigners think”. The Soviet command system decreed so many tonnes of product from a mine and the mine selected for funds was that with the lowest inputs. The entire mine management each put in a bit for himself; consequently the system leaked like a running tap. There were huge discussions on the concept of “return on capital” and for students and staff it was incomprehensible.

The Soviet system died hard. Once I wanted a copy of about 50 pages. There was a shuffling silence – not possible. Why not? Because! I insisted special permission from the deputy rector was required. The copy room was reinforced; pages counted in through a grill; a book was signed by the Geology Professor; every page counted out. Russians are terrified of subversive material. After that I had my copies made at the De Beers' office.

2 Kolyma – Russian Far East. Gulag Country

This was a four hundred-kilometre flight in an overcrowded Yak from the gulag port of Magadan. From the aircraft, as far as the eye could see, was a never-ending expanse of old alluvial workings, rusting dredges and rotting buildings. Except for the occasional high ridge, no stone was left unturned. The mining centre of Sussuman was in a slushy dirty snow depression filled with blocks of drab flats surrounded by working in which a couple of dredges screeched and moaned. The pilot kept the engines going while the ‘hostie’ shouted at us to get off the plane and the captain, from the cockpit, bellowed at passengers to get on board.

My brief was to look at several prospects – all old workings. There were some amazing mineralized anastomosing quartz veins in shattered

andesites. At one site we came across a young woman geologist. She ran a tight caravan – sweet bitter black coffee. There were two fearful-looking assistants who slept under a tarp and cooked for themselves. There was no mateship here.

In the drawing office I commented on the meticulously drafted maps and the Russians round me laughed: it was so simple – if the geologists who made these maps in the gulag days dropped their standards, they would be out panning for gold and would be dead in a couple of weeks.

The Soviet system was secrecy. If a rich deposit was found, details were sent to Moscow. Back came a new map and a new set of coordinates to ensure that nobody could locate this prospect again. The only person that knew was an apparatchik with his hands on a pigeonhole.

3 Zun Khalba Gold Mine

While lecturing at Irkutsk University, I was given the brief to report on the Zun Khalbe mine near the Mongolian border. The mine was a total technical and administrative shambles. The mineralization was gold-bearing quartz arseno-pyrite veins in altered volcanics. Entering the adit, for the first 500 feet the walls were lined with ice. The air was bitterly cold made worse by a leaking ventilation system. At 1000 feet in, and up a rise, brought us to a mining crew – scarves for helmets, no glasses, old gumboots. Old-style jack hammers – a huge noise, no earplugs. Ore trucks were pushed by hand. The mill was feet deep in gold concentrates and was held together with wire and failing welds. Miners were on contract for the summer months. If they got sick they dared not report it otherwise they were terminated without pay. These seasonal workers would put up with any conditions to retain their jobs.

We went to the miners' mess for the evening meal – banged onto my plate was a chicken thigh minus meat, boiled potatoes and a green slime of cabbage. Sour bread and spotty apples were available – this after a hard day's labour.

The local administration required my suggestions on how to improve recoveries and productivity!!

For about ten kilometres either side of the road to Zun Khalba, as far as the eye could see, were thousands of military trucks, tanks and guns. Moving among these armaments were soldiers running engines and checking equipment. This was a military depot close to the Chinese border.

4 Pueblo Viejo Dominican Republic.

Early in 1994, I received a surprise call from the European Commission, Brussels, to investigate the mismatch between milling grades, recoveries and gold sales. The Commission wanted this information before committing to funding a mine reconstruction.

Pueblo Viejo is a large Mesozoic epithermal pyrite/sphalerite gold deposit, now controlled by Barrick Resources. Since the Spaniards arrived in 1492, the history has been one of genocide, colonial oppression, war with Haiti and dictatorship.

The local Commission office arranged introductions to the Mine Directors, the Central Bank and Government Departments and left me to it. From the bank I managed to obtain ounces, sales price and exchange rate. Then a 100km trip to the mine. It was run down, little activity with concentrates inches-deep on the mill floor. The Australian mining engineer, Kevin Taylor, provided head grades, tonnage milled, recovered ounces. I was at the mine club for the Independence from Spain celebration. The favoured dance was the Marengo to a Samba beat. Pelvic thrusting was so great the parties bounced apart, but quickly returned for more body contact.

Back in Santo Domingo with torrid days at the Central Bank where I discovered a siphon account that went straight to the President. The mismatch in figures closely resembled those between mine receipts and siphon account. I submitted my report and was requested to make my finding slightly more furry – I refused.

Some months later, I was offered an assignment in the Congo – it was something to do with “blood diamonds” – this I turned down!

In 1992, it was the 400-year anniversary of Columbus’ discovery of Hispaniola. To celebrate the “great event”, the Catholic Church, in cahoots with the European Commission, created a structure (costing \$7 million) that would shine a great lighted cross over the Caribbean night sky. The Pope was to switch on the great Christian image. A test run, just before the Pope arrived, blacked out most of Santo Domingo. This monstrosity lies abandoned, never again to illuminate the heavens.

A 10-Year Retrospective

When the Soviet Union collapsed, the New Russian Federation was inundated by carpetbaggers and free loaders wanting to make their fortunes in this new capitalizing market. Most people and companies lost fortunes under the system of “gladit firmacha” i.e. to separate foreign business men from their money. It worked.

Almost every citizen, except the oligarchs, lost their entire life's savings.

With the demise of President Yeltsin and the rise of President Putin, Russian self-esteem has improved. Putin has brutally controlled Islamic Chechnya, retaken Crimea and is moving to partition Ukraine. Russians support their President.

While in Australia during this decade, I worked with David Timms on Golden Cross Resources and with AMC as an associate, preparing IPOs out of the Melbourne office

Feet in Clay 2002 – 2012

The previous decade had been one of unmitigated excitement and challenge. The period to 2012 was a plateau of non-retirement. I acquired a rundown 300-acre cattle property in the Upper Hunter – its transformation into a working spread required much effort.

These past ten years I have not sat and watched grass grow but have been involved in several extra mural activities, namely:

- A member of the Rural Fire Service
- Secretary of the Timor Progress Association
- Member of a Consultative Committee for a local limestone quarry
- Shire Council Flood Plain Committee Member
- Instigated a Poets Corner group
- Bickham Coal Mine Proposal – completed position papers objecting to the proposal
- Completed my auto-biography “Time Lines and Fault Lines”
- Run a monthly blog – “towardsthefinalhour.com”

The farm is now on the market and Jill and I intend to live at Pearl Beach. Great grandchildren have arrived and are arriving – this is no time to hang up my boots.

As F C Facey said – “A fortunate life”.

John Hugh Hill
October 2015