

The Chinese Discovery & Occupation of New Zealand (Pre-Maori)

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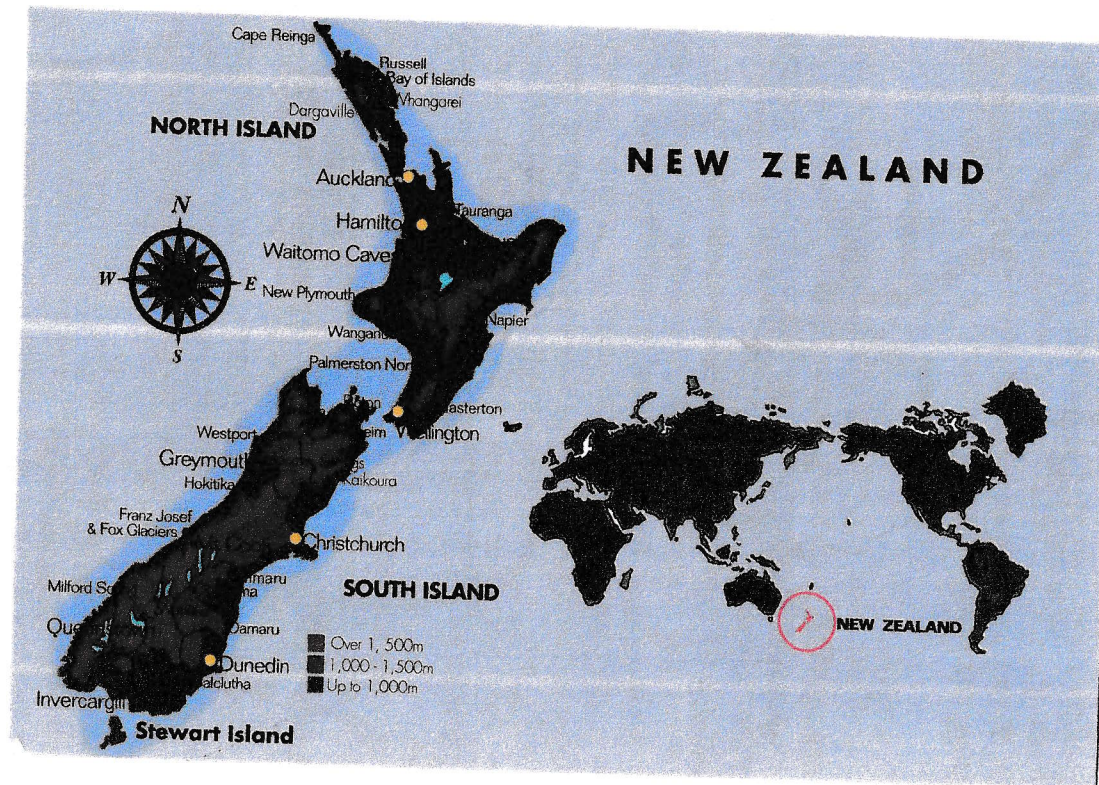
THE CHINESE DISCOVERY
&
OCCUPATION OF NEW ZEALAND
(PRE MAORI)
&
THE DISASTROUS FIRES AND
TSUNAMI WHICH DESTROYED
ADMIRAL ZHENG HE'S 7TH FLEET,
AND THEIR c 36,000 CREWS
AND PROBABLY, MOST OF THE
POPULATION AND BUILDINGS IN
NEW ZEALAND. c1435 AD.

T.C.Bell

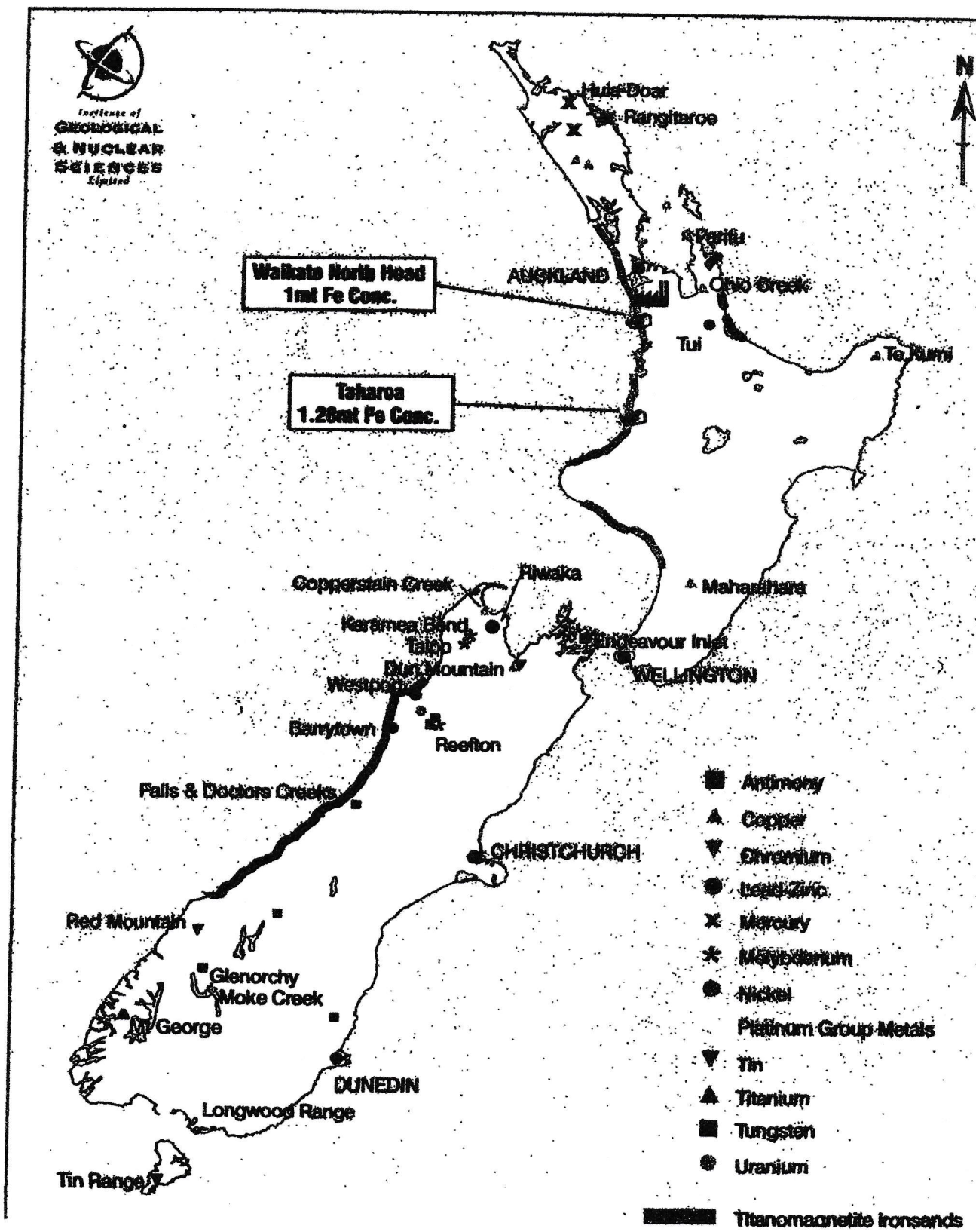
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New Zealand metallic minerals



ACCESSING THE PACIFIC AND NEW ZEALAND.

Virtually every island in the world capable of supporting life, has a history of human occupation going back thousands of years. In the South Pacific, the occupation of the islands range from Papua's c2,500 years to the Marquesas and Polynesia's 2,000 years. Australia, really a continent, is reputed to have been occupied for some 40,000 years. Dating of occupation always assumes that the oldest site located was the first occupation of that land, however, one never knows if one has located the oldest site. New Zealand, is only c2,000 km east of Australia and despite being judged by Europeans and many others, used to temperate climates, to be one of the most desirable fertile islands in the South Pacific, with an abundance of well watered pasture, superb trees and a rich mineral wealth of gold, iron, coal and jade, yet it is claimed to have only been occupied since 1340AD.

The oldest European evidence found in New Zealand, near Picton and Christchurch, to date, are Roman coins, possibly dropped by an early Chinese seaman, the Chinese traded with the Romans from 157BC. There is also evidence of Indian Tamil traders visiting New Zealand, one of their ship's bells was located by William Colenso, being used by some Maori as a cooking pot. The estimated date of the Tamil ships construction was 1450. It is known that the Indians were operating ships around 60m long, capable of carrying 600 people. Many Indian and Arabic traders were operating from the Chinese port of Quanzhou.

The first recorded European knowledge of the Pacific appears to have been by the Spaniards in the 16th century. In 1606 Luis Baez de Torres gave his name to the Strait. In 1977, Robert F.Marx explored four 17th and 18th cent Spanish ships off the west coast of Australia for the Government. It is unknown when the Spaniards located New Zealand. Certainly a Spanish engraved plaque was found on the island at the entrance to Doubtful Sound, Fiordland, possibly this was placed in 1576 by Juan Fernandez, a navigator employed by the Spanish Government, (R.Wiseman Pre Tasman explorers). A Spanish helmet was located in North Island. The Portuguese always operated their trading routes in great secrecy, but their expeditions paralleled the Spaniards. In 1990, Robert F.Marx excavated the Portuguese carrack Flor de la Mar which sank in 1511 on the NE coast of Sumatra Island. Papinot's History of Japan tells us the first Portuguese visitor to Japan was Fernand Mendez Pinto in 1542. By 1585 the Portuguese were trading with Japan, all proof of their navigational abilities and knowledge of the Pacific.

The next well recorded visitor to New Zealand appears to be Dutchman Abel Tasman in 1642, who gave it the name New Zealand. Tasman's own name was given to the bay by Montueka and the nearby town at the north end of South Island and also the adjacent sea.

A boat crew from Tasman's ship were attacked by Maori when close to shore in New Zealand and several members killed. Abel Tasman also mapped Australia from Dirk Hartogs's Island on the western coast to the Gulf of Carpentaria. Obviously he was not the first visitor to the Gulf, Chinese pottery from the Han Dynasty (206BC -220AD) and Ming 1368-1430 has been located by Port Bradshawe on the eastern shores of the Gulf Of Carpentaria (by Ronalf Bernat and Catherine Bernd, Australian anthropologists) (Tai Peng Wang's research). It is noteworthy that at the entrance to one Australian harbour Tasman logged that he had noted a huge head carved into the rock face at the entrance. (See also the Chinese section of New Zealand). Tasman was the first mate of Mathew Quest's vessel, when he surveyed the coast of Formosa, so was a very experienced Pacific navigator. In 1768 Captain Cook made his first visit to the Pacific, following in the wakes of fellow British navigators and explorers, Admiral George Anson, 1744, Commodore John Byron, 1764,

Samuel Wallis, 1766 and Phillip Carteret, 1766. Captain Cook was the first to chart New Zealand and appreciate that it comprised two separate islands of New Zealand. Hence the strait being named after him by his officers. Cook then went on to chart the east coast of Australia. Interestingly prior to Cook's first voyage, Joseph Banks who financed the scientific part of the voyage, had purchased a map which showed Australia and New Zealand. The earliest known map of the world was published in 1418 by the Chinese, this shows Australia and New Zealand. Bank's map was thought to be based on a Chinese map of the Pacific. French navigators also played a great part in the exploration of the Pacific, one of these Captain (Later Admiral) Jules d'Urville in 1828, charted part of New Zealand and gave his name to the island at the northernmost tip of South island. French also settled in Akaroa, on Banks Peninsula in 1840

The currents and winds in the Pacific totally defeated European sailors, none could sail eastwards from Indonesia, or Micronesia to South America due to the prevailing westward currents and winds. These westwards currents were used by Thor Hayerdahl and other sailing rafters to access the Polynesian Islands from South America. Thor Hayerdahl describes Abel Tasman's struggles with the Pacific's currents and winds in his "Early Man and the Oceans". Abel Tasman was the first European to outflank these currents by sailing south, not east, from Indonesia, then rounded Australia from the south, so dodging the roaring forties and then discovered New Zealand. He then tacked north to Tonga, then was trapped by the tropical conveyor, which sent him back to Indonesia. The only method of accessing South America from the west, by a sailing vessel, was to sail north up the western side of the Pacific, then follow the right handed (clockwise) Japanese current to the North American coast, then follow the currents and prevailing winds down to South America. Explorer Tim Severin took this route whilst re-enacting a historic Chinese raft emigration to America, he was only a few hundred miles from America when his raft finally broke up. European ships had the choice of two routes to Indonesia and Australia. One was via the Atlantic to Cape Town then, across the Indian Ocean, sailing just west of Australia, then north to Indonesia, or south about Australia to New Zealand. The return route was either via a slightly further northerly route taking advantage of the south equatorial current sailing westwards across the Indian Ocean to Cape Town and back to Europe via the Atlantic. The other return route eastwards from Australia and New Zealand was by taking a route at a latitude lower than New Zealand to avoid the westward currents, then swinging around Cape Horn and back to Europe via the Atlantic.

The second route to the Pacific from Europe was via the Atlantic, down the coast of South America, using the Benguela current, then round Cape Horn, taking advantage of the Pacific conveyor belt, west across the Pacific to Polynesia, or Indonesia. There are many records of sailing ships attempting to access the Pacific via Cape Horn, many took weeks to round Cape Horn, many lost their ships and crews. Captain Bligh, best remembered for a mutiny on his ship, the *Bounty*, was a brilliant navigator, and navigator to Captain Cook. Despite his vast experience could not round Cape Horn on his way to collect the Bread Fruit from Tahiti. So Bligh was forced to turn around and access the Pacific via Cape Town and the Indian Ocean. Following the mutiny on the *Bounty*, Bligh, with a small crew in an open boat, took advantage of the Pacific westward conveyor current and sailed to a Dutch Port in Timor. They covered roughly 5,750km in six weeks averaging 130km per day. The hallmark of a good navigator is the ability to return to where he started from.

THE FIRST CLAIMED OCCUPATION OF NEW ZEALAND.

Around 1340AD is claimed that many Polynesian potential migrants landed from canoes on the shores of New Zealand, the only island on the Pacific rim supposedly uninhabited. Nobody has as yet satisfactorily explained why these Polynesians deserted their natural habitat of warm islands situated 20 degrees south of the Equator, with their readily obtained supply of food and water teeming with fish, to travel by flimsy canoes to islands which they had never heard of. New Zealand's cold and wet islands are situated 40 degrees south of the Equator. Nor have any of the Culture Historians tried to fully explain how these intrepid canoists managed to locate New Zealand, which is south of the westward Pacific currents, which they had never heard of, let alone had a method of fixing its position. To compound the unrealities of this navigation, it is claimed that two way voyaging between New Zealand and Polynesia by canoe was the norm. A voyage that later European sailors with larger vessels and a knowledge of navigation and the Pacific could not manage. To navigate to a fixed position requires a knowledge of precise navigation, ie Longitude and Latitude. The Islands of Polynesia are some 3,600km North East of New Zealand, across an open ocean, one described by Louis Antoine de Bougainville, a French explorer as having the worst weather in the world. To cover this distance in a canoe in good weather would require at least 30 days of travel, but the westerly current settings would carry a canoe to the eastern coast of Australia as proven by Maori artefacts being located (As quoted by Athol Anderson). There are no known Maori settlements in Australia, so one can but assume that the Australian Aborigine ate any lost and shipwrecked Maori. To change direction to access New Zealand and leave the westerly current one would have to know where it was.

There are over 2,000 known wrecks of European sailing and steam ships around New Zealand's coast, including Chinese ones, visible at Moeraki and until lately at Wakanui, proof of its inclement weather conditions and dangerous shores. Surprisingly, as yet, nobody has managed to locate one of these mystic Maori canoes, which sailed paddled and sailed with impunity to and fro across the Pacific. Yet around Europe, many 1,000 year old wooden canoes have been located. Two within 50 kilometres of my own home. In Europe, many 2,000 year old Roman wooden craft have been located, I have even located the sites of three Chinese craft whose barracks have been dated c2,850BC in Scotland. Part of the known Chinese expeditionary fleet exploring the world. Robert F. Marx located a Roman ship in Rio Janeiro, Brazil in 1982. Interestingly many of the alleged Maori canoes had names ending in mu, Chinese for wood, some had Japanese names, all suggestive that the so called founding canoes had actually been Chinese and Japanese large sailing ships, which would explain their sailing ability and knowledge of navigation, plus their ability to carry sufficient food and water for a large number of passengers for around 30 days, a requirement always overlooked by culture historians.

I surveyed two of the claimed Maori canoe landing sites, both held sand covered Chinese wrecks, further proof that the voyaging tale over the years had changed Chinese sailing ships to large canoes. One Maori historian contacted 1421, and stated that his ancestors travelled to New Zealand in a Bird Boat and was housed in a stone house and asked what a Bird Boat was. We told him that that was the name given to Chinese junks, whose lug sails gave the impression of a bird in flight, the stone house was the standard nine roomed Chinese barrack block, built in stone with a thatched roof 36m long by 4m wide, their foundations are still common in New Zealand. The Maori historians never contacted 1421 again, truth does hurt.

The Pacific navigational problems, lack of DNA evidence, lack of wrecked canoes, the Maori inability to "Fix" an island's position over thousand's of kilometres, coupled with the early Polynesians complete lack of knowledge of the sweet potato, coupled with the very limited storage space in a canoe, even a double hulled craft, show that these mystic voyages are just that. An opinion shared by modern Pacific navigators. No matter how the culture historians attempts to account for the ancient plant transfers by multi canoe voyaging, Frequent canoe voyaging to and from New Zealand to Polynesia required a knowledge of Latitude and Longitude, coupled with a knowledge of plant botany. Also planked vessels capable of withstanding an ocean with the worst weather in the world. Pierre Yves Manguin, probably France's most experienced Asian researcher, stated the Pacific was conquered by planked vessels. (South East Shipbuilding in the Indian Ocean). I noted all the fish hooks in Okains lovely museum had been made from Chinese ship bolts used to link timbers.

New Zealand Professor Matsoo Smith's interesting use of the DNA of rats to chart the Maori progress through the Pacific, is based on the assumption they all the rats she tested had voyaged on Maori canoes. This assumption ignores all the other nations operating in the Pacific, eg Chinese, Japanese, Indian, Tamil, etc. The Chinese also used massive catamarans, one I located in Scotland was 130m x 38m capable of carrying a 1,000 passengers. Interestingly Professor Masoo Smith and Thor Hayerdahl, both stated that once in New Zealand the Maori were effectively isolated, (as per Easter Islanders, so no multi trans Pacific voyaging), and lived in a Time Warp, this was proved by their failure to appreciate the change and improvement in canoe design in the rest of the Pacific. One of New Zealand's greatest historians, Sharpe after detailed examination of Maori claim s of multi Pacific voyaging over great distances, stated that they were implausible. Dr Holdsworth finding a 2,000 rat in New Zealand did not fit the Culture Historians time table for the occupation of New Zealand, so described his methods as incorrect and only their methods are correct. The usual claim for culture historians to explain finds which do not fit their theories.

THE ANCIENT LINKS BETWEEN THE PACIFIC, ATLANTIC AND BERING SEA. Besides the Cape Horn and Cape Town routes to the Pacific from Europe, the other well known routes are the North West and North East Passages, and the ancient Suez - Red Sea canal, built in c 600BC. Prior to it's construction it would have required a month for a sailing ship to sail from the mouth of the Mediterranean to Cape Town. When the Suez canal was blocked during the Egyptian attack on Israel, it took my 18knt vessel an extra nine days to access the Indian Ocean.

Gavin Menzies and my thoughts being that as the Chinese had demonstrated their ability to construct massive canals, eg the canal connecting Shanghai to Beijing and the little known 1,000 mile canal (located by NASA) on their western borders, part of the Great Silk route, plus the canal on the eastern side of New Zealand's South Island designed to link all the river and avoid the hazardous seas. Therefore it was feasible that they had built a canal to link the Pacific to the Caribbean, as the modern Panama Canal does. So research commenced, this showed that Baron Humbolt (The current flowing alongside South America is named after his research) had discovered a small canal which linked the headwaters of the Rio Atrá and the Rio San Juan, this canal bypassed the Portabello Trail, used by the Spanish, to connect the Caribbean and the Pacific. (The Golden Isthmus, David Hawarth) highlights Admiral Drake's ambush of a Spanish mule train carrying silver. Gavin Menzies Spanish speaking researchers even located a letter from the Spanish Governor ordering the closure of the River Atrá canal as it was being used to bypass the Spanish customs posts.

Viewing the Rio San Juan, (different river), which flows from Lake Nicaragua on Google Earth, it was obvious that the river had been canalised. The distance from Lake Nicaragua to the Pacific is only 12 miles, which suggested the Chinese had canalised the route. Col John Blashford Snell, Britain's best known explorer offered to survey the route, on behalf of the Scientific Research Society with his colleague from Columbia, Yoli Cipagauta Rodriguez and two Nicaraguan archaeologists. Gavin Menzies, the Scientific Research Society and myself funded the expedition. I also hired Tim Akers, a UK marine historian, who has perfected a penetrative satellite method, to survey the possible canal route. This survey located sunken harbours in Lake Nicaragua and at the mouth of the canal, in the Pacific. The canal was cut out of solid rock in places, and capable of transition by c 4m x 10m vessels, suggesting that the deep sea vessels cargoes were down loaded into smaller for the canal route. Interestingly one of the canal locks still had the carved head of a lion, suggestive of the marking of the locks by recognisable animals for their operation by illiterate folks. One lock remains was identified by the original ancient method of linking stonework together with butterfly joints, a method used by the Chinese and Romans.

It is noteworthy that Columbus returned to the Caribbean on several occasions, he was actually looking for the short cut route to China, apparently he had a map, but had not realised that it entailed a length of canal not large enough for his vessel.

One of the tasks given to Captain Cook by the Admiralty on his third voyage (1776-1779) was to search for the fabled North West Passage, a short cut to China. Over the years Captain Cook and many other explorers from Commodore John Franklin, Russian Lieutenant Kotzebue and Sir John Franklin were unsuccessful, due to the frozen seas. Roald Amundsen was the first known European to make the North West passage from East to West over a three year period, 1903 -1906. The year spent with the Inuit when his craft was ice locked was superb training for his later dash to the South Pole. The Russians made several attempts to locate the North East Passage. Danish navigator Jonassen Bering was employed by the Empress Catherine of Russia to head a survey group to establish if Asia and America were joined. The Bering Sea and the Straits are named after him. A Cossack named Deshneff is credited with the most northerly North East Passage in 1648. The Dutch navigator Willem Barents also made three voyages around 1597 to locate the North East Passage, he gave his name to the Barents Sea. One of his Pilots was the Englishman Thomas Adams who having piloted a Dutch Fleet under the command of Admiral James Mahay which was wrecked upon the of Japan in 1600, ended up in the employ the emperor of Japan. A few years ago the Russian Navy contacted Gavin Menzies (Author of 1421 The China Discovered the World) to inform him they had discovered evidence of the Chinese navigation of the North East Passage. In the 1270's Venetian Marco Polo voyaged with Kublai Khan's fleet through the North West and North Eastern Passages. Marco Polo's charts of the Aleutians and Hudson Bay are still in existence. Copies were exhibited at the Singapore Tourist Board's exhibition to commemorate the 600th anniversary of Chinese Admiral Zheng He's voyages. I exhibited our surveys of New Zealand and Cape Breton Island at the exhibition.

The Dutch Meteorological Institute has confirmed that in the 15th Cent the North West Passage would have been ice free and navigable as the summers of 1420, 1422 and 1428 were extremely dry and hot. In 2,000 a Royal Canadian Mounted Police (RCMP), La Roche 2nd, crossed through an ice free North West Passage in three weeks. A RCMP vessel in 1939 was also the first vessel to navigate the North West Passage after Amundsen's passage in 1903-1906.

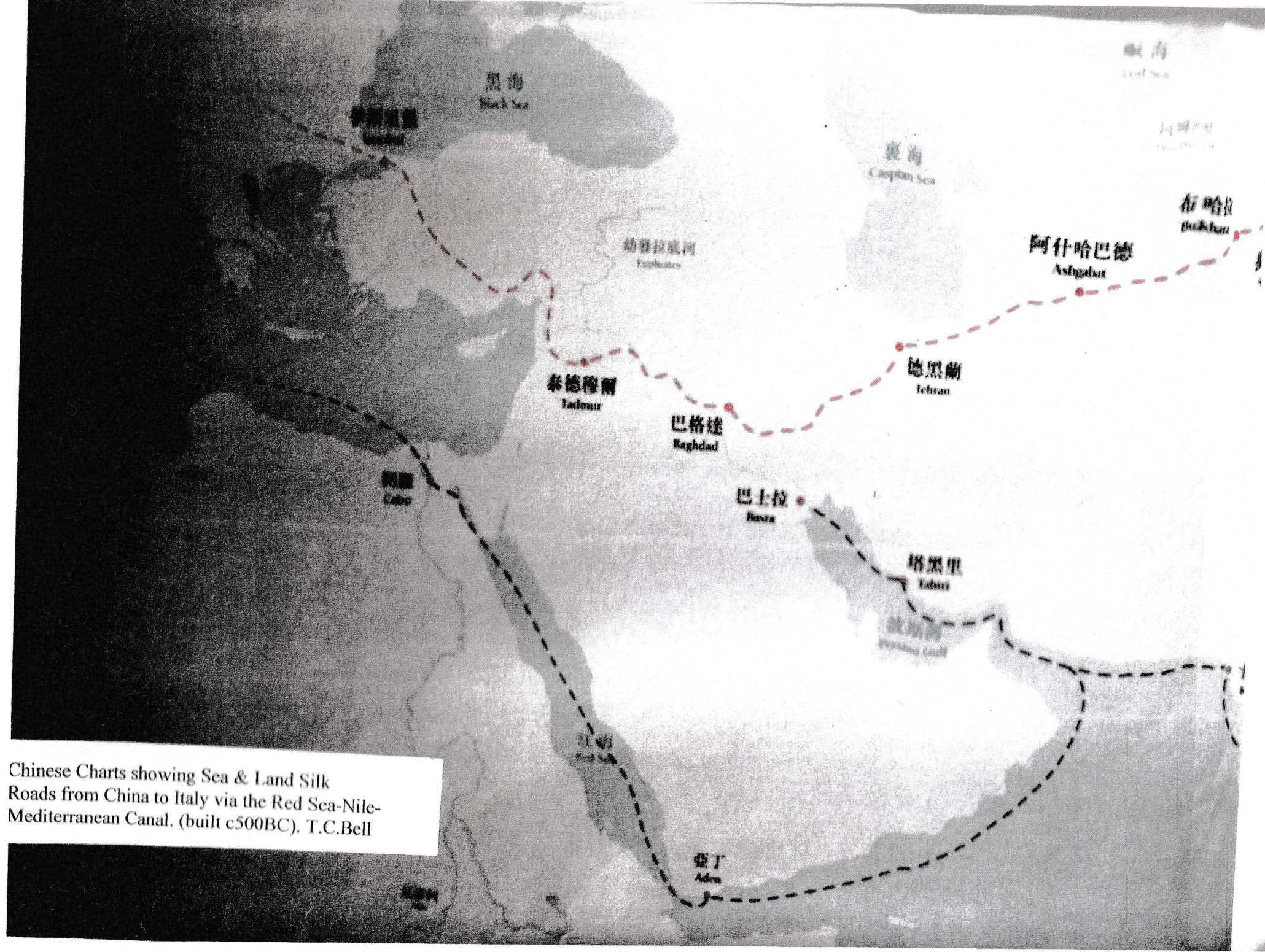
The Hudson Bay magazine, *The Beaver*, reported that a North West Passage suitable for navigating small ships had been discovered adjacent to the Melville Peninsula, some 200 mile south of the accepted North West Passage. A number of stone Dolmens had been located on the Peninsula, indicative of the passage having been used by early Europeans. Further surveys along the routes of the North West upper and lower passages have located 45 stone long houses, it has been thought that these boat shaped stone structures were constructed to hold overturned ships during frozen periods. They range in size from 13m via 23 m to the largest on Ellesmere Island of 30m long. This indicates that at some period the North West Passage routes were in common use. (The Far Farers, Author Farley Mowat). One wonders if the Boat shaped structures were Viking sailor's cemeteries, as are found in Denmark. I was asked to provide the hull dimensions of standard Chinese junks to see if they had been overturned on the stones. But I considered these vessels too heavy for their crews to overturn them.

CHINESE OVERSEAS BASES IN THE ATLANTIC.

In 2003 Paul Chiasson, a Canadian Architect, (Author of *Seven Chinese Cities on an Island*) invited Gavin Menzies, my wife and I to survey a Chinese site on Cape Breton Island, Nova Scotia, Canada, which we accepted with alacrity. We noted that a vast bay called St Annes had been partially closed off with a bar to form a massive harbour. The small opening now crossed with a chain ferry. Both the English and Chinese had built forts adjacent to the opening to control it. Our surveys located a c 80 sq kilometre area enclosed by an external ditch with an internal rammed earth wall with an internal stone core. A standard Chinese design. Inside the wall was a small town, a small gold quarry and smelters and a nearby walled unit which appeared to have been a terraced temple area, we even located the terraced house of presumably the senior official overlooking the walled site. This walled area contained two cemeteries, one with normal North South burials and one with a small number of vertical burials. (as we had located on Arran Island in Scotland). We also located a beautifully carved gate post, the carved base being faced to prevent twisting, adjacent was a beautifully carved flat capping, a standard design for a the base for a curved arch.

No excavations took place, the details being ascertained by magnetic anomaly surveys. One fascinating find was the dump of carved animal faces, (Presumably dumped when the site was demolished when the Chinese left it, due to the increasing number of Europeans in the area, presumably fishermen and animal pelt hunters). The carved faces of animals are identical to those on the roof of the temple in the Chinese Forbidden City. A canal ran though the walled area connecting the major St Annes harbour to the western partially enclosed inland sea called the Bras d'Ore. (The Arm of Gold). By sheer chance at the time of the survey an area was being cleared for holiday homes alongside the inland sea. This exposed the stone work of a Chinese harbour with a quays designed for four 48m x 11m junks, the standard Chinese work horse. We can but suppose that this massive site was the Chinese North Atlantic base when the North West Passage was ice free, providing a speedy route to China. From Europe to China via the Panama canal is roughly 19,000 km, via the North West Passage, roughly 13,000 km, a saving of 6,000km or roughly 50 days for the ancients.

The Chinese ability to use the Red Sea canal, the NW and NE Passages and their Caribbean to Pacific canal gave them a greater flexibility than enjoyed by modern shipping. The recent melting of the mainly NE Passage assisted by nuclear powered ice breakers is slowly creating the freedom of navigation as originally enjoyed by the Chinese fleets, albeit at a slower pace.



Chinese Charts showing Sea & Land Silk Roads from China to Italy via the Red Sea-Nile-Mediterranean Canal. (built c500BC). T.C.Bell

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MARITIME TRACKS TO CHINA
AND SOME OF THE LESSOR KNOWN ROUTES.
CHAPTER TWO

INTER OCEAN ACCESS ROUTES. (Note Miles are Sea Miles (6080ft. 1.853km))

Trading routes for sailing vessels of any kind and rafts were dictated to by winds, ocean currents, land masses, climate change, including the existence of ice and a knowledge of the relevant geography, the political situation, pirates and of course goods to be traded. Reaching the market place and returning safely to the home port with a valuable cargo were the hall marks of a competent navigator and successful trader.

For Europeans to access the Pacific via America, they first had to cross the Atlantic.

The earliest record of European ocean travel is the recent finding of a 9,000 year old mummy in Nevada, USA. The mummy, named the Spirit Caveman, was of Caucasian origin and found wrapt in a woven matting of sophisticated and intricate design, far in advance of that previously associated with that period. Gavin Menzies in his "The Lost Empire of Atlantis", has also shown that the Minoans sailed from the Mediterranean to America to exploit the copper from Lake Superior between 2,700BC to 1,550BC. To prove an ancient legend that in the sixth cent AD, St Brendan an Irish monk's voyaged across the Atlantic, Tim Severin, probably the world's expert in re creation of ancient voyaging, built a curragh, a leather covered wooden framed boat, 11m x 2.4m (36ft x 8ft). Tim and his three man crew successfully sailed the curragh to Newfoundland, so proving both the feasibility of Atlantic crossing in such craft and the legend of St Brendan. Tim Severin's book "The Brendan Voyage", makes a fascinating read.

We know from both the Vinland Sagas and excavations that the Vikings crossed the Atlantic via Iceland and Greenland around 980AD, and settled in L'Anse aux Meadows, Newfoundland. Coin finds suggest that they also settled in other parts of the west coast of America ie Vinland. When reading the Vinland Sagas, translated by Magnus Magnusson, I was fascinated by Viking Karlsefni's description of after sailing westwards they came up on a land and found large slabs of stone on the shore, they named the land Helluland. As Norsemen were very used to rocks, the fact that the huge slabs they saw were so unusual that they recorded their existence, is very interesting. I wondered if the slabs they had found were the same ones we had noted whilst surveying on the shores of the bay at St Peters, Cape Breton Island, Nova Scotia. This survey is detailed later. Some of these huge slabs had been cut, some using blastless gun powder, a Chinese speciality. This method of splitting stone, was accomplished by drilling multi holes inward expanding, down the face of rock required to be split. A compound made from quick lime, alumina and sulphates, the aluminium is probably derived from bauxite clay, was inserted in the holes, water poured in and the hole closed tightly with a wooden bung. The chemical action resulted in ettringite crystals with a 30% expansion and the rock being severed. The remains of the tapered holes at the cut face provide witness to the method used. Intrigued by the presence of these slabs alongside a natural harbour wall, with a water depth of 6m (19'-6"), I surveyed nearby and located the foundations of barracks, and a fort platform, by their design, Chinese. We can only assume that this superb natural

harbour, fought over by French and British and still overlooked by the British gun batteries sites, was also used by the Chinese. The first canal, a short section of which still exists, provided a southern access to the Bras d'Or, an inland sea with northern access. As the Chinese fort drained via aqueducts of Chinese design into the ancient canal, it is reasonable to assume they were built at the same time. A replacement canal was constructed in the 19th cent and later rebuilt, the slabs which had been used to form the canal walls were then returned to the canal bank and others to the shore. Just for interest I passed details of my surveys to Oslo University, Norway, complete with a set of the local charts. One day I hope that the harbour area alongside the quayside will be closely examined by scuba divers, maybe they will find artefacts ranging from Chinese to Viking and French to English.

Our surveys on Cape Dauphin, the northern end of Cape Breton Island, located two Viking Hog Back grave markers on the road to the hilltop Chinese settlement. This find proved that the Chinese road existed pre the Vikings who arrived c 900AD and that the Vikings had certainly sailed further south than previously reported, confirming our thoughts re their visiting St Peters at the south end of Cape Breton Island, as mentioned previously. The Nova Scotian Government have been informed of both our Cape Breton Surveys and the Viking finds, as have Oslo University, Norway..

Some of the most telling evidence of the ancients frequent voyaging, coupled with an expert knowledge of cultivars, has been provided by Profs John L. Sorenson and Carl L. Johannessen in their "World Trade and Biological Exchanges before 1492", research has shown that cultivars (plants intentionally cultivated for use by a population of people) have been transferred between the New World of America and the Old Worlds of Egypt, India and Asia between the seventh millenium BC and the European age of discovery. Research by Sorenson and Johannessen and others, also located in America many human health damaging organisms, such as hookworm which originated in Asia. This line of research has also located in America seventeen infectious organisms which had originated in the Old Worlds, these include parasites, bacteria, viruses and fungi. All evidence of the existence of ocean trading pre Christopher Columbus.

Christopher Columbus who claimed discovery of America in 1492, was actually seeking a route to China. Magellan, a Portuguese, but sailing for Spain, claimed to be first in 1521 to access the Pacific from the Atlantic, via the 600km long straights now named after him. The Magellan Straights. These straights provided a safer passage than rounding Cape Horn. In the same period Francisca Pizarro claimed to have been the first European in 1521 to have viewed the Pacific, having crossed from the Caribbean to the Pacific coast by foot. But, a decade earlier the coast of Peru was already shown on a map by Florentine cartographer Roselli, presumably using information ex a Chinese survey, but many years previously Claudius Ptomely's second cent AD map showed Cattigara, a Pacific port in Peru, so proving that the Pacific has been known to Romans some 1,400 years before the 16th cent claimants of New World discoveries. Using the available maps and the route

highlighted by Magellan in their search for wealth, the Portuguese and Spanish sailors and merchants commenced their voyage of exploration into the Pacific. Roger Herve, formerly Map Keeper of the Bibliotheque de Paris, book "Chance Discovery of Australia and New Zealand describes their voyaging between 1521 and 1528". Considerably later, Abel Tasman (1603-1659) probably the best known of the Dutch cartographers accurately surveyed and charted major parts of Australia, New Zealand and the Pacific Islands. It was not until near the end of the 18th century that Captain Cook, with other Europeans, completed the charting of Australia, New Zealand and on his third voyage, located and charted the last of the Pacific Island groups, the Sandwich Islands, (now Hawaiian Islands). (G. Williams Voyages of Delusion). Yet Ptolemy's 2nd century AD and Macrobius's 5th cent AD maps and later ones by Waldseemüller 1507AD, Schöner 1515AD, Oronteus Finaeus 1532AD all show the Pacific in basic detail, whilst the Chinese highly detailed world maps of 1418AD and Matteo Ricci's 1602AD copy of an earlier Chinese map, also show Australia and New Zealand in detail. All these maps indicate to some degree that ancient seafarers had mapped most of the world prior to their claimed discovery by medieval Europeans. Many of the early discoverers actually had, or had been shown, maps of the areas they claimed to have discovered, eg Columbus, Magellan and Cook. Charles H. Hapgood in his spell binding book "Maps of the Ancient Sea Kings" considered that the world was first accurately mapped by an ancient advanced civilization, probably the Chinese, at a time when Antarctica was mainly ice free..

To access the Indian Ocean from the Atlantic, early European sailors had to round the Cape of Good Hope, the southerly tip of Africa, Cape Town evolved as a supply base for this route. To access the Pacific from the Atlantic, sailors had to round Cape Horn at the southerly tip of South America, or use the nearby Straights of Magellan, the nearest supply base was Puerto San Julian in Argentina, this was used by Magellan in 1521. Many sailors found the Magellan Straights, or rounding Cape Horn to be impossible in bad weather. Francis Drake in 1577 started out with five ships to enter the Pacific via the Straits, only his Golden Hind made it. In 1740 Commodore Anson tried to round Cape Horn with seven ships, eventually only three succeeded with the loss of two thirds of his crews. In 1788 Captain Bligh of the Bounty, one of the Royal Navy's most experienced navigators, who had sailed with Captain Cook, was on the first voyage to collect bread fruit trees, designed to feed the slaves in the West Indies plantations. The weather was so bad that he was totally unable to round Cape Horn to access the Pacific, and was forced to access the Pacific via the Cape of Good Hope, the Indian Ocean and by Australia.

ROUTES LINKING THE PACIFIC to the ATLANTIC AVAILABLE FOR ANCIENT NAVIGATORS, BUT NOT FOR NAVIGATORS after c 1400AD.

We consider that ancient sailors had at least four additional global short cuts and safer sea routes available between the Pacific and the Atlantic which were not available to 15th to 19th cent sailors due to ice build up. The only inter ocean routes available to navigators later than the 14th cent, prior to the construction of the Suez and Panama canals were via Cape Horn, the Magellan Straights, or Cape Horn.

ROUTES ONE & Two. These ancient global routes were the famed North West Passage, north of Canada and Alaska and the North East Passage, north of Russia, these were ice free for some periods over 600 years ago. As a sailing ship would probably cover around 80 -100mile (150-180km) a day, the use of these passages would save months of voyaging time from Europe to Asia. The distance from Europe to Shanghai, via Cape Horn is c17,136mile (31,753km), Via Colon and the Panama Canal, it is 13,325mile (24,691km), a saving of roughly 3,800mile (6840km) just over a month for a sailing ship. From New York to San Francisco via Cape Horn is 13,000mile (24089km), via the Panama Canal 5,000mile (9,265km), a saving of 8,000mile (14,824km). Interestingly during the Californian Gold Rush, American Miners from the East Coast, took ferries up the Nicaraguan Rio San Juan to Lake Nicaragua, then a 12mile long railway to the Pacific, then a further ferry to California.

The availability of a North West Passage to access China would have made roughly the same voyage time savings as the Panama Canal finally did. We will never know when the Chinese constructed their equivalent of the modern Panama canal in Nicaragua, discussed later..

The availability of an ice free North East Passage between the North Sea and the Bering Sea, north of Russia, would provide roughly a similar saving for shipping between North European and North Pacific ports as that provided by the Panama Canal ie 4,000mile (7,400km). To use all, or part of the NW and NE Passages modern ships require stiffened hulls made of special steel to withstand the low temperatures and thick ice fields..

The Suez Canal saves North European ships roughly 4,000mile (7,400km) instead of having to circumventing Africa via Cape Town and the Cape of Good Hope. I can well remember my 18knot ship, capable of sailing into both winds and currents, and probably three times faster than the average sailing ship, taking an extra nine days from London to the Indian Ocean via Cape Town when the Suez canal was out of action due to warfare.

History from the 16th cent is littered with the records of European explorers who tried and failed, many losing their lives, to find an easy route via the North West passage to Asia from the Atlantic, these include Magellan's Pilot Gomez, Champlain, Cartier, Hudson to Franklin. Bering a Russian and Captain Cook also tried from the Pacific. Norwegian Amundsen was the first recorded modern explorer to finally sail the NW Passage in 1903-5. John Barrow's book "A Chronological History of Voyages into the Arctic Regions" 1818, has to be one of the finest records of many of these voyages. John Barrow (1764-1843) was the second secretary of the British Admiralty, so was actually responsible for many of these voyages of exploration, so not just an interested historian. His name is commemorated by the Barrow Strait, the entrance to the North West Passage. John Barrow also describes attempts to navigate the North Eastern Passage including. Willoughby's expedition to find the North East Passage in 1553. This was the first record of British vessels hulls being, somewhat optimistically, fitted with lead sheathing to prevent borers in Indian waters. Records indicate that the Romans used lead sheathing for

the same purpose. A Russian Semyon Deshneff in 1648 appears to have been the first European to have made the final successful navigation of the North East Passage.. Our knowledge of the ice which constrained modern navigation of the NW and NE Passages and the periods when they were ice free, is due to the pioneering research work by Willi Dansgaard (1923-2011). Dansgaard was a Danish Palaeoclimatologist who specialised in mass spectroscopy and by core drilling and ice analysis, he regarded the Greenland ice cap as a frozen archive of the world's climate history. (Frozen Annals of Greenland Ice sheet Research 2005). This research into the presence of oxygen 16 and the rarer oxygen 18 which is precipitated in colder climates, enabled the earth's surface temperature to be estimated. This research showed that the 19th century marked the end of a great chill lasting c 600 years. Prior to this period the North West and North East Passages were ice free and available for navigation. Further proof of the use of the NW Passage as a navigational route is an article in the Hudson Bay company's magazine Beaver. This states that an ancient navigational channel by the Melville Peninsula and Bellot Strait at Fort Ross has been located, this is some 200 mile south of the present North West passage and would have had a milder climate. Man made monuments (Dolmens) have been located along the route, presumably as navigational markers.

The restricted use of the North West Passage due to ice build up, appears to have commenced early in the 14th cent. Recent research by the University of Colorado at Boulder, USA suggests that The Little Ice Age is believed to have been caused by the cooling effect of massive volcanic eruptions in the tropics. These eruptions sent clouds of contaminating particles into the atmosphere which reflected the solar energy back into space, resulting in lower earth temperatures. (BBC News 30th Jan 2012) This study over sites in NE Canada and Iceland utilised the study of entrapped plants by ice flow and their age determined by carbon dating. The onset of ice formation in the North West passage is also indicated by the number of boat shaped stone bases on various sites along the routes. There are two possible suggestions for these stone bases, one that they are standard Viking ship or boat burial monuments. Two of the best examples of such ship burial site are highlighted in Julian Cope's amazing book "The Megalithic European" In Jutland -, Denmark (pg 165) the Klaebek Hojje ship burial is 46m long (c150ft) and the outline is formed by a number of megaliths. In Sweden The Ale Stenar ship burial sited on the coast by Kasberga, (Pg 470) is 67m long (c217ft), again with the outline of the ship marked by megaliths. The dating of these ship burials is probably around the iron age, possibly around the 10th cent BC. This suggests a much earlier use by the Vikings of the NW Passage than originally thought.

The other theory is that these stones supported overturned boats which provided shelter during the winter, when the route was iced. Whilst some may question how could boats crews overturn their boats, it is very possible that these boats were constructed of light wooden framing covered in animal hide, or light Viking craft. Some 45 of these bases have been located varying from the largest 45m x 4.8m(148ft x 16ft) twenty five of the bases were between 12m -15m (40ft to 50ft) with a length to beam ratio of 3.1:1 and 3.5:1. The author responded to a web site query as to the dimensions of the wrecked Chinese junks he had located in an endeavour to match these sizes with the boat shaped

stone bases, but none matched. It is possible that the wider bases held two craft, possibly two side by side occupying the wider stone bases. A full description of these boat bases can be obtained in Farley Mowat's "The FarFarers". The presence of Dolmens on Melville Peninsula (Fred Rydholm-Ancient American, Issue 1 pg 39, 1993, and also in Farley Mowat's book), is also indicative that this route was in use by ancient European traders, or refugees. The maps left by Marco Polo of the Aleutians and Hudson Bay also indicate that a fleet of Mongol junks used the North West Passage in the 13th cent. (Gunnar Thompson's Marco Polo's Daughters, 2011).

A CHINESE BASE ON THE CANADIAN SHORES OF THE ATLANTIC.

Cape Breton Island has always been the key to the St Lawrence and the Great Lakes, the French built a massive fortress called Louisburg on the east coast of the island to control the area. No surveys have been carried out up the St Lawrence for evidence of Chinese operations and the modern massive canalisation of the St Lawrence will have destroyed any evidence. Captain John Knox of the 43rd Regiment involved with the campaign (1757-1760) which resulted in the defeat of the French and the capture of Montreal and Quebec wrote a book entitled "The Siege of Quebec". On page 267 he describes how the British army boats ascending the St Lawrence at Three Rivers, between Montreal and Quebec, found contrary to their expectations, a channel along the south shore. This description suggests that they located an ancient canal flanking the river.

In 2005 Paul Chiasson, a French Canadian architect invited Gavin Menzies, the author and his wife to survey a religious site on Kelly's Mountain, Cape Dauphin, Cape Breton Island, which he considered to be Chinese. (The Island with Seven Cities. Paul Chiasson, 2006). Cape Dauphin is situated on the north side of the island and overlooks the route to the St Lawrence River. The author and his wife Paddy have surveyed together for many years, Paddy is a farmer's daughter with a knowledge of agriculture, has an artist's eye for change in colour and topography, a superb cook and as a physical training instructor, is a keen walker. A great combination on survey expeditions. Thinking that we might camp on the mountain to save time climbing up and down, Paul Chiasson was asked if there were any bears in the area, he assured no, but the water was not fit to drink. So we rented a lovely log cabin at nearby Big Hill, complete with all modern comforts, including electrics. Gavin Menzies was given the master bedroom in the roof. As every late afternoon mists rolled in over Cape Dauphin which is heavily tree covered, we were glad we had not camped. We did see one small bear and one very large, thankfully, dead coyote, with massive teeth. Two years later, sadly a local lady, a noted folk singer, out hiking on a nearby mountain was killed by coyotes. We had seen coyotes in the distance when cross country skiing in the Canadian Rockies, but had been told they ran from humans, obviously not all do.

The survey of this remote, densely treed site was one of the most fascinating we have ever done, we only saw one person in 10 days. We located and identified the external rammed earth walls on stone bases and gate houses of this c80sq km site, including one beautifully worked stone socketed gate post and base pad for an arch, a walled quarry,

probably a worked out gold mine, with adjacent smelters, a walled village, with the occupants housed in barracks of Chinese design and canalised creeks. Overlooking the, walled and terraced religious core site previously located by Paul Chiasson, we found the lovely stone terraces of what had to be the house of the senior official. Paul had located one of the cut stone gateways to the inner site, we located three more gateways. By sheer chance during our visit, at the base of the mountain on the shores of Bras d'Or an excavation for a new dwelling had just uncovered the stone quays of a harbour, accessed by a short length of canal from the adjacent Bras d'Or, an inland sea. The harbour was designed to accommodate four 47m x 11m (152ft x 35ft) junks. Another local housing project had destroyed a small cliff top fort and in doing so had exposed an adjacent midden which contained a large number of sea shells, proof of ancient occupation. Adjacent was a reeded area, the site of a puddled clay lined fort with interconnecting canals to the upper ore exploitation operations and the nearby recently exposed harbour. The author has excavated identical puddled clay lined Roman harbours in Britain. We found, sadly, that carbon dating is not feasible on the Cape Dauphin site as there have been massive forest fires in the last 100 years.

The highlight of the survey was locating a dump of carved stone animal heads, which had decorated the eaves of the Chinese temple, (As the Forbidden Temple at Beijing) prior to being demolished when the Chinese left the site. Further indication of the import of this site to the Chinese was that they had formed a massive harbour in the adjacent St Anne Bay by constructing a stone spit across 90% of the mouth of the bay, leaving a narrow entrance, controlled by a fort. This entrance is now crossed by a chain operated ferry. The presence of the spit was located by a magnetic anomaly scan, this method detects any imported rock, anomalous to the country rock. Both the French and English built forts at Englishtown to cover the access to St Anne Bay. Surveys of Cape Breton Island, originally a French stronghold with an interesting rebuilt French fort at Louisbourg, located both the foundations of a large Chinese walled barrack block and adjacent finger type harbours for junks. We also located the foundations of Chinese sites at Big Hill, with visible ore exploitation operations alongside Kelly's mountain, named after an Irishman who ran the local still, producing high quality moonshine. His memory lingers on with a local folk song re his still on Kelly's mountain, and even a local road sign points to Kelly's mountain. The local Indian tribe, the Miqmaq, considered the local mountain sacred and are reputed to have had good relations with the Chinese. On a very wet visit to mainland Canso, an Atlantic port, by magnetic anomaly we also located foundations of Chinese sites, identified by their unique construction.

In 2010, a TV Documentary was made of the amazing Cape Dauphin site, using both Paul Chiasson's material and ours. Sadly, some Canadian archaeologists, devoid of adequate experience to understand the site, were given excessive exposure in the documentary. A case of all prosecution and no defence. It was obvious the archaeologists had little understanding of Chinese canalisation, fortification engineering, rammed earth walls, harbour design. They did not even question the origin of the man made spit which created the site's main harbour St Anne, later used by the French, English and the Scottish settlers. Although extracts from the author's 80 page survey report to the Nova

Scotian Government were used, but sadly not acknowledged in the documentary. Nor was the author given the opportunity to attend the site and question the Canadian archaeologist's quaint interpretation of the site as, "All Natural". Studiously ignored were the roads, the terraces of the senior official's house, the stonework of the gateways to the terraced site, the canals, the piled stonework, all in a forest, which had formed the gateways of the rammed earth external defences, the stone foundation of the wall still visible, also the photographs of the excavated harbour quays, even the carved faces of the animals ex the temple. Previous to the visit of these archaeologists, others had visited the site, one of their comments was that nobody could have lived on the site as there was inadequate soil depth for agriculture. Yet our report clearly stated that near the major site there was one extensive flat depression probably used for growing rice. Rice is grown in northern China and so called wild or black rice, (*Zizania palustris*) grown in water, is still a much prized North American crop. In fact a friend living in Minnessota, told me that only the native Indians could now harvest this crop, originally one of their staple foods. The fact that the flat extensive area was devoid of trees, which will not grow on wet areas, yet surrounded by forest, proving that water still flowed, had escaped the attention of the archaeologists. The author lives near Ullswater, a very hilly sparsely populated part of Britain. In most of this area there is too little soil depth for modern deep ploughing, but my farming friend I actually gave me a world war two photograph of a single furrow plough drawn by two horses alongside Ullswater. Needs must when the devil drives. BUT Ullswater in Cumbria is one of the major sheep producing centre of the UK, what is not produced, is imported. The Chinese site on Cape Dauphin had canals to the upper levels, by these they imported what they did not produce. Alongside the adjacent Bras d'Or, an inland sea, are some of the most prized apple orchards in Canada. When the first Europeans, the French, arrived in the mid 15th cent they found evidence of massive cultivation by St Peters. St Peters is the port where we located a large harbour complex and a Chinese fort platform.

We consider that the Chinese used Cape Breton Island, Nova Scotia as their major base for their Atlantic operations. There was a combination of events which resulted in the Chinese abandoning the Cape Breton Base, these included the working out of the gold mines, the coming of the ice age and with it closing of the NW and NE Passages. These events were coupled with the immense financial loss to China in the mid 15th cent of the destruction of their complete Pacific fleet when in their harbours on New Zealand's shores, and their coastal settlements. The destruction was caused firstly by the immense heat from a falling meteorite, then a Tsunami when it hit the ocean. These events which are discussed in a later chapter, forced the Chinese to withdraw from all their overseas operations including Cape Breton Island, New Zealand and Polynesia, probably some pockets of settlement remained in various areas, later being wiped out, as in New Zealand by invaders, or inter married with the indigenous population.

ROUTE THREE. A canal connecting the Red Sea and River Nile. This ancient global navigation route was the equivalent of the modern Suez canal. The canal was constructed

in the time of the Pharaoh Necho II 610-595 BC and also included a lock, the first recorded, to compensate for the rise and fall of the River Nile. There are records of measurements of craft which navigated the Nile canal eg 85m x 33m (275ft x 110ft). This canal was updated many times over the years, up to the 15th century AD, including by the Romans. Britain has many examples of Roman locks. Sadly the author has had surveys which included Roman canal locks, rubbished by archaeologists, claiming to be Roman experts, who stated that Romans could not build canals which went up hill. For detailed information regarding the Nile canal and its use, (See Gavin Menzies 1434 pg 49-59).

Whilst the locks in the Red Sea to the Nile canal are regarded as the oldest in the world, the author in 2014 was asked by Gavin Menzies to review the destruction of the famed ancient city of Tartessos, SW Spain, reputed to have been destroyed by a Tsunami, possibly around 500BC. Viewing the mouth of the River Guadalquivir which leads to the city of Seville, the similarity to the mouth of the River Wairoa at Dargaville, North Island, New Zealand was very apparent. Both oddly shaped mouths had been formed by Tsunami action. Tim Akers, a marine historian, who uses enhanced (penetrative) satellite imagery, was employed to survey the projected route of the River Guadalquivir, pre the Tsunami. The survey located the original route of the river mouth as projected and to our total surprise, also the every clear outline of a major canal, including locks, flanking the present shore line. Presumably rising sea levels have now flooded the original canal route. The canal was followed by use of penetrative satellite and found to link the three major rivers and cities in SW Spain, The Tinto, (Huelva), Guadalquivir (Seville) and Rivers Guadalete (San Pedro) (Cadiz). This canal appears to predate both the Nile- Red Sea Canal and the Chinese Grand Canal which linked Beijing to by Shanghai. The ancient city of Tartessos destroyed by a Tsunami is now under a vast wetland due to rising sea levels, was largely located by the penetrant satellite survey. The economy of the city was largely based on the exploitation of the nearby gold and silver deposits. The present day ore exploitation company Rio Tinto Zinc is named after the Rio Tinto.

There is an immense volume of evidence available recording Roman trading via the Nile canal to India and Asia, even of Indian spices being found on Hadrian's Wall. (A. Livarda Spicing up Life in NW Europe). The Chinese maps show they well understood the geography of the Mediterranean and sailed its waters, confirmation includes a picture of a Chinese junk found on a wall in Pompei. The Indian and Arab traders used the same routes. (A History of India by Romila Thapar and Raoul Mc Laughlin's Rome and The Distant East). Arikamedu just south of Pondicherry on the east coast of India was excavated by a British archaeologist R.E.M. Wheeler in 1945 and was found to be a Roman trading station. Evidence of Roman, Chinese, Indian and Greek trading was found following excavations at Oc Eo, Southern Indo China, in the pre Cambodian Kingdom of Funan. (Phu Nam in Vietnamese). Frederick Nolting, J.F. Kennedy's Ambassador to Vietnam, recorded in his Political Memoirs, "From Trust to Tragedy" of having being taken by President Diem to visit a Roman trading post and forum which had

been excavated by the French. Nolting later wondered if the site that President Diem had been so proud of, had survived the Vietnam war.

Dr F. Hirth's book "China and the Roman Orient" summarises the researches into their ancient and medieval relations as represented in old Chinese records. These records confirm that trading between China and Rome commenced in c 170 BC. The records even tell us that in 170AD Roman Emperor Vespasian cancelled the export of iron from Rome. This indicated that Rome was having a problem producing enough iron for even their own requirements let alone for overseas bartering. Interestingly that is the year that Rome made a full invasion of Scotland. Presumably not for the honour and glory that historians tell us of, but just to exploit the metallic ores in Scotland. My own extensive surveys of Roman Scotland located a very early fortified enclave on the Moray Coast, between Inverness and Aberdeen. Coins from the first century (AD) covering the whole occupation of Britain, minted in Rome, have been located in the area suggesting that the Roman were operating on the Moray Coast far longer than that claimed by historians. The author estimated that c 1.5million tones of spoil had been extracted from the iron ore rich cliffs at Cullen, (Moray). The site is so large that a 18 hole golf course now fits within the immense excavation. Nearby is the site of a Roman town, complete with a superb amphitheatre, the most northerly ever located and probably in the best condition of any provincial amphitheatre in Britain, due to it being located in a narrow wooded valley. It is very likely that the exploitation of all of Scotland's easy to access metallic ores combined with their long supply routes, difficult to guard and the availability of alternative cheaper markets and importing from China was a major factor in the Romans leaving most of Scotland and using Hadrian's Wall as a frontier.

ROUTE FOUR. A canal linking the Caribbean and the Pacific. Which our survey team finally located in 2010, this short cut, bypassed the much feared Cape Horn, for graphic details of sailing around Cape Horn the author suggests reading Alan Villiers "The War With Cape Horn". The author actually sailed with Alan Villiers who was skipper of the ketch Warspite, whilst training at The Outward Bound Sea School in Aberdovy, North Wales. Cape Horn The canal bypassing Cape Horn was the most sought after of all the ancient global navigational routes. This gap was very likely shown on the map Columbus had been given and no doubt provided the stimulus for his and many other explorers voyages to the Caribbean area. They were all misled by the ancient maps which showed a distinct break between the section of land between Nicaragua and the Pacific at the head of the River San Juan. Even Thomas Jefferys in his "The West India Atlas" published in 1775 by Sayer and Bennet, made a comment re a previous hydrographer who had incorrectly included a straight about a league wide between the Pacific and Lake Nicaragua at the head of the River San Juan. This effectually drew Lake Nicaragua as a bay of the Pacific. Under heavy rain conditions possibly a large amount of this area does flood and conveys the idea of a complete gap. Thanks to Tom Harper of the British Library's Map Library, a copy of the incorrect map entitled "A Chart of the Environs of Jamaica" by Thomas Kitchen published in three volumes by T. Lowndes in 1774, was shown to Colonel John Blashford Snell (JBS). This Kitchen map clearly (but incorrectly) shows an opening from Lake Nicaragua direct to the Pacific. The navigable San Juan

River flows from Lake Nicaragua to the Caribbean. The Clive Cussler fans will recognise this route taken by his hero Dirk Pitt in "Trojan Odyssey" in which Cussler had the Chinese cutting a canal to the Pacific from Lake Nicaragua at Pena Blanca and constructing a harbour for deep water cargo ships. In 2015, the Chinese actually commenced to construct a canal to link the Pacific to the Caribbean on the same line. China's Great Canal is one of the best known and the longest canals in the world. This canal was constructed to form a safe transportation highway between Shanghai and Beijing, linking to all the rivers between. Prior to the construction of this canal, severe losses to grain ships occurred due to the turbulent seas and pirate activity. Our surveys in New Zealand have located evidence of an identical, but considerably shorter canal, also constructed by the Chinese, on the east coast of South Island. This canal roughly 200km ((125mile) long linked Lake Forsyth at the western end of Banks Peninsula to the River Waitaki, by Glenavy. The canal was capable of handling 47m x 11m junks (c152ft x 35ft). The canal enabled 24 hour a day ship movement, regardless of the sea state, between all the rivers which accessed the inland metallic ore exploitation areas. Sections of this canal are still visible, eg Rakaia, although most has been either overlaid by the Tsunami, or by modern development it can still be accessed eg Wakanui and Timaru where it runs through the park. The unique design of the Chinese canal (As Roman canals have a slightly different identifiable feature) comprising 18m long side feeder aqueducts (Field drains) spaced at 18m to provide makeup water, enables the canals to be identified using magnetic anomaly. The slight difference between the design of Chinese and Roman canals also enables them both to be identified.

In view of the known amazing abilities of the Chinese marine engineers to construct long canals Gavin Menzies and the author then discussed the possibility of the Chinese having also gone for the ultimate in canal construction, "The linking of the Pacific to the Caribbean". Thanks to Dr Greg Little, "Alternative Perception Magazine" issue 100 April 2006 and other surveyors, we were also aware that there was considerable evidence of evidence of ancient shipping in the Caribbean area. The proof was obtained by scuba divers who found large sunken harbours, complete with fluted columns and stone anchors dated from BC 30 to the 15th cent AD at Bimini, Paradise Point and Cal Sal Bank, near Cuba. Further confirmation of ancient shipping operations in this area were supplied by Robert Marx who reported locating and surveying a city sunk in 1687 off Oranjestad, St Eustadius Island in the Caribbean, yet further proof of sea bed movement in this area. Robert Marx's surveys at Rio de Janeiro, Brazil also located a 2nd cent BC Roman vessel and it's cargo of amphora. (The International Shipwreck Conference). Roman cartographer Ptolemy's map of the world included a Pacific harbour called Cattigara, in Peru, another indication of nearby ancient voyaging (Gunnar Thompson's "Marco Polo's Daughters"), provides information on this site.

The evidence of sunken harbours and cities in the Caribbean area convinced us that a canal had been constructed in ancient times to provide a safe short cut to Asia. So our research for such a canal linking the Pacific and the Caribbean commenced. David Hawarth's "The Golden Isthmus" was a mine of fascinating information. Baron Humbolt had highlighted the existence of the Raspadura Canal which linked the Rio San Juan and

the Rio Atrato and also provided a link between the Pacific and the Caribbean. Gavin Menzies's researchers actually located the Spanish Governor's instructions to infill this canal to prevent it bypassing their customs post on their mule train route between Panama and the Pacific. British Admiral Drake highlighted the immense value of the traffic on the route when he ambushed one of the mule trains and stole the silver they were carrying. We however discarded the Rospadura canal as being the major canal in use between the Pacific and the Caribbean as the canal was too small and the access rivers too lengthy for major use. Interestingly it is recorded that William Paterson of the ill fated 1698 Scottish Colony in Darien, which also bankrupted Scotland and led to the union between England and Scotland, is recorded as knowing that a route to the Pacific was nearby. Sadly, neither he nor his audience, recorded where he thought the canal was, nor the constructor..

Our research tools also included the use of (expensive) time consuming enhanced commercial satellite photography by Tim Akers, a marine historian and also (free) satellite photography by Google Earth. Heavy forest cover obscured a considerable part of the possible route and negated the full use of satellite photography, but it did enable sunken harbours to be located at either end of the probable canal route, in the Pacific and Lake Nicaragua. It was decided that the only way to prove the presence of a canal was to mount an expedition to survey the most likely route. We considered that the canal route was from the Caribbean, up the Rio San Juan (a different Rio San Juan from Baron Humbolts) to Lake Nicaragua, then by linking and canalising local rivers to cross the 12 mile to the Pacific. This had been the first preferred route of the Panama Canal, the maps are in the Library of Congress, USA. (Nicaraguan Projected canal route 1898 No.619). Tom Pocock in his "Young Nelson in the Americas" had shown that Horatio Nelson had commanded the naval party which accompanied the military expedition in small schooners up the Rio San Juan to attack the Spanish fort near the entrance to Lake Nicaragua. Perusal of maps of the river also confirmed the presence of linear navigational islands, further proof that shallow sections had been canalised by expert engineers. The canal would probably be operated by c10m x 3m craft transferring their cargoes to larger vessels at each end of the canal, utilising the sunken harbours we had located by satellite. Our surveys in Britain had shown us that the Romans constructed harbours around the coast at the mouths of rivers, these were designed to handle their 30m x 6m (97ft x 19.5ft) deep sea craft, trading between the Mediterranean, Britain and across the Atlantic, then transhipped their cargoes into river craft 10m x 3m. (32ft x 9.75ft). A frequently located Chinese ocean going junk was roughly 47m x 11m, (152ft- 35ft) this appeared to be their work horse and could be equated with the thousands of the American Liberty ships in use at the end of the 1939-45 war. The author was the second engineer of a Liberty ship standing by in Southampton for the ill fated invasion of Suez, planned to reclaim the canal from Nasser's nationalisation. The cargo was petrol in jerry cans, as the ship could only manage 11 knots, little faster than a junk in a good wind, so the posting to another ship was greeted with some relief, although the invasion would have been interesting and always a good talking point..

The successful survey for the Nicaraguan canal, which was found to be a combination of canalisation of existing rivers, with linking canal sections cut through rock, was carried

out in January 2010. The expedition was financed by The Scientific Exploration Society, Gavin Menzies and the author. Colonel John Blashford Snell, one of Britain's best known explorers, on behalf of the Scientific Exploration Society led the expedition. Yoli Cipagauta Rodriguez, a Columbian economics lecturer, was the interpreter and transport organiser. Both John Blashford Snell and Yoli Cipagauta R are very experienced surveyors in South America and frequently carry out expeditions on behalf of "Just a Drop" in isolated areas to drill for water to assist small communities. Nicaraguan archaeologists accompanied the expedition. Evidence of ancient canalisation included sections cut out of solid rock, cut outs for locks and butterfly joints cut into rock to receive iron which linked the stonework, all standard Chinese and Roman methods to canalise waterways. Interestingly, at one part of the canal which had been cut through solid rock, a lion's head had been carved into the rock face. At one lock, a face of a bear had been carved into the adjacent rock. Presumably the locks had animal names to simplify lock operations by illiterate operators.

The successful survey was reported at a Royal Geographical Society meeting, London, early in 2010. The existence of this canal link, a short cut from the Pacific to the Caribbean, suggests that it why the Romans used the port of Cattigara in Peru, c5degrees south of the equator, as recorded by the Alexandrian cartographer Ptolomy. The hulls of the Roman ships were lead covered to prevent attack by torredo worm, so well capable of operating in the Pacific. Prior to our locating the canal, I had wondered why the Romans had recorded a harbour on the Peruvian coast and why so far north up the coast of South America and well away from the Cape Horn, the normal access to the Atlantic. Gunnar Thompson in his Marco Polo's Daughters, considers that the Romans voyaged across the Indian Ocean to access the Spice Islands (Molluccas) then returned around Australia via New Zealand, then to South America using the Antarctic Drifts, then utilised the Humbolt current northwards to the Port of Cattigara. It is very probable that this short cut canal linking the Pacific to the Caribbean and Atlantic, with possibly others, yet to be located, were used by many traders from the Mediterranean area including Roman, Indian and Chinese, but not the Europeans, who apparently failed to locate it, even though they had navigated up the 70mile long Rio San Juan to Lake Nicaragua fully expecting to find a large channel through which they could sail freely into the Pacific.

CHAPTER THREE

CHINESE ATLANTIC OPERATIONS BASED ON CAPE BRETON ISLAND.

As the Europeans attempted to access the Pacific, so previously had the Chinese successfully accessed the Atlantic from the Pacific. There are several early European records of Chinese operations in the Atlantic. In Nicolas Wey Gomez's "The Tropics of Empire", Christopher Columbus is recorded as being told of two Chinese, a man and a woman being rescued from a wreck off Galway Bay, Ireland. Giles Milton also tells the same story in *The Riddle and the Knight*, pg 273). Jochim Fayerabend in his "Millenium of Hurricanes and Floods" records an Irish poem commemorating a 17th cent AD hurricane when a Chinese junk was wrecked on the shores of Cape Clear Island, SW of Ireland. Martin Frobisher in 1578AD recorded an encounter with a Chinese junk near Baffin Island, Governor W. Sharpe in his "History of New Jersey" recorded that Chinese vessels of considerable force were found wrecked in the Mare del Nord, North Atlantic, La Paz's "History of Louisiana" records the loading of black slaves onto a Chinese junk in 1700AD. Professor Gudrun Thoradottir informed Gavin Menzies (author of 1421 etc) that the Icelantic Bjalfaanal account of the year 1435 recorded a Chinese fleet put in to water at Adalvik on the NW coast of Iceland. Professor Novick's DNA surveys of Greenland suggest a recent gene flow from Asia. Prof Bryan Sykes DNA surveys of fishermen Northern Norway and the Hebrides frequently located Korean genes. Professor Arnaiz Villena located Chinese and Mongolian DNA in the people of the Azores. Arthur C. Clarke's "Mysterious World" published in 1890, recorded that J. Husband Smith had located and collected a large number of Chinese porcelain seals from several Irish sites, east of a line from Lough Foyle to Cape Clear. Each seal was about 28mm cube and surmounted by an animal head, the base contained text peculiar to each owner. The seals were reported to the Royal Irish Academy in 1839, some are now held by the National Museum in Dublin. This museum also hold a vase presented by Chinese officials to a Hungarian King in the 15th cent, proof of their knowledge of Europe and the ability to access it. Global operations require bases to re supply and provide repair facilities. We consider that the first Chinese major Atlantic base and safe harbour for the North West passage and also for Great Lakes fur and copper ore exploitation operations was based on Cape Breton Island, Nova Scotia, described previously. As a relevant side issue, our own surveys in Ireland, the Scottish Islands and mainland Britain have located evidence of Chinese miners, probably the most experienced in the world, subcontracting to the Romans. T.C.Bell's "Arran's Roman Heritage and their Chinese Miners" and also "Northern Scotland's Roman Heritage". One visit to view the amazing stone forts on the lovely Aran Island of Innis Mor, Galway Bay, Ireland, had an unexpected sequel as we located by magnetic anomaly, the outline of two sand covered wrecked Chinese junks, our first indication of Chinese operations in Ireland. The junk's identity confirmed by their unique anchors. Our surveys of the Scottish Islands of Mull, Skye, Arran and Lewis located considerable evidence of Roman metallic ore exploitations.

One of our favourite Scottish Islands is Arran, the ferry from the mainland only takes c50mins, we even spent one Christmas there when the island was totally blanketed by snow, even the sea edges had frozen. Over several surveys we located several Chinese

harbours, walled barracks and even the foundations on a man made mound of a small double walled town with external towers, a standard Chinese design. Adjacent was a Roman settlement and a metallic ore smelting plant.. In both developments the design of the existing foundations of the internal buildings confirm their origin ie Chinese towns contained the foundations of 30m x 10m buildings with three rooms, two unpaved and one paved. Roman settlements contained 70m x 10m insula, each contained ten unpaved rooms and one paved, for the official. On the shores of Arran's Brodick Bay, overlooking the sites of three harbours specifically constructed for their 120m x 50m junks, is the golf course, the remains of a large earth dyke still surround the site. By magnetic anomaly the foundations of nine roomed barracks were located under the greens. This suggests that the site was a reception area for Chinese workers before being sent to their work place. At nearby Kingscross, scene of heavy ore exploitation with the foundations of Chinese buildings adjacent, we also noted an interesting fish enclosure c 50mm diameter. Nearby was a 1m wide canal cut through solid rock to access a set of ladder locks which accessed the ore exploitation area. All overlooked by the ramparts of a very rare, Agricola gated Roman fort. The Roman appeared to have provided defence for the Chinese sites. Yet the historical establishment claim that the Romans and certainly not the Chinese, never settled on Arran.

One fascinating break through on Arran came after locating a multi walled platform of Chinese design, the adjacent recently felled commercial forest, grown over an ancient cemetery site, showed some disturbed ground. One small piece of quartz was noted, on inspection it contained a tiny fragment of gold. One likes to think that the Chinese miner had been interred with a fragment of gold by his colleagues, what he had sought for after voyaging from far away China. From a previous geology survey on the island with Dr Andrew Bell, my friend and geology advisor, the author was aware of the only quartz deposits not far away, a check with the geology map of the area soon located the site.

Locating a Roman road heading up hill from the multi walled platform, we followed it and after an hours climb (I am getting both older and slower) we arrived at the site overlooking Lamlash Bay and Holy Isle. From this elevated position the mammoth ore exploitation on Holy Isle, now a Buddhist retreat, was clearly visible. (Needless to say this site has also been ignored). Having reached the site of the quartz deposit we were met with a scene of utter devastation of the mountain side. A huge area had been subjected to Hush mining. This method entailed forming a small reservoir above the area to be quarried, then releasing the water to remove the earth etc above the rock face to be quarried, then repeating then process. The mountain side was left with a series of hollows, many filled with water. In my home county Cumbria, we have the same mining legacies. A still visible small canal ran down the hillside to connect to the major (creek) which in turn connected to the shore side harbours.

Several Chinese mainland UK bases have also been located. One is at Ullapool, this small fishing town and ferry port for Lewis, is sited on Loch Broom, on the NW of Scotland. Here the Romans shaped what is called a wide terrace of superficial deposit, some call it a raised terrace to form three prominent straight faces and constructed a walled town on it.

The inhabitants were housed in insulae (strip houses) each 70m x 10m with ten unpaved rooms and one paved. Strangely, nobody has been recorded as questioning the angularity of the platform on which the town is built, straight edges are not one of nature's known features. Alongside the platform the Chinese constructed two harbours, each capable of handling c100m x 30m Chinese junks, the harbour outline is still visible on Google Earth, as also are the Roman town's rectangular shape. Alongside the harbour site are the shoreside platforms formed from earth from the harbour excavations. These platforms still contain the foundations of the crews of the Chinese barracks. The barracks could hold 1152 men, providing a crew of 575 men plus officers per junk, these matched the known crew levels and the number of harbour junk slots, always a useful check. The foundations of the shore side of the 120m long Roman harbour were sited nearer the present ferry pier. The total length to the sea could not be ascertained due to high tides and rising sea levels. Under the local campsite sited alongside the walls of the Roman town, are the foundations of a double walled external turreted fort of Chinese design with a central wall, one side held standard Roman eleven roomed barracks, the other standard Chinese three roomed buildings. Clear evidence of Chinese cooperation with the Romans. In the surrounding hills there was evidence of ancient quarrying and ladder lock channels to access the quarrying sites.

Another and to date the largest located of the Chinese sites we have located in Britain is at Laverton, just north of Cumbria's Carlisle airport and not far from the border with Scotland, Hadrian's Wall is adjacent.. This area with the help of the Gulf Stream is only a two week voyage from Cape Breton Island, Nova Scotia. Whilst surveying, my wife Paddy, noticed a rammed earth dyke with a section of the face rubbed away by cattle to expose a stone wall. Most unusually the dyke's internal wall was constructed from cut sandstone brick sized blocks laid in Herringbone, ie each course laid at 60 degree, then repeated in reverse. The description of the walls of Angkor Borei, the capital of Funan Cambodia stated 18 courses of stacked bricks, (not course laid) with a packed earth cover. An identical description of this Cumbrian site. My Chinese advisor, also a civil engineer, confirmed the widespread use of laying bricks in Herringbone courses in China.

Later in the book we describe running ground radar surveys to locate similar stone cores on rammed earth dykes on Chinese sites in New Zealand. There where extensive trading between China and Funan and also Roman coins where located at Oc Eo, a Funan port. Further surveys at Laverton (by Carlisle, Cumbria), revealed that the wall was one of a parallel pair, complete with turrets at intervals, these defended a town which covered c 28ha (67acres), Roman fort occupation design was 480 men per acre, this suggests a maximum population of c32,600. The internal buildings at the Laverton site were the standard Chinese 30m x 10m with three rooms, two unpaved one paved. Adjacent was a raised platform which contained the foundations of a double walled fort with external turrets, a standard Chinese design. The adjacent granaries were to the standard Roman design. Presumably the Chinese residents of the town were imported via the Nova Scotian site of Cape Dauphin to act as skilled workers, not slaves.

Constructing Hadrian's Wall would have been a mammoth task and required thousands of workers, skilled and otherwise, in a very remote part of Britain, when the total population of Britain would be less than three million. Historians always quote the Roman Legions as building Hadrian's Wall and the vallum, a flanking pair of rammed earth dykes set on stone foundations, with an adjacent canal, in their spare time (!!). Evaluating the wall plaques located along Hadrian's Wall which commemorate which cohorts (480men) of the Legions constructed each length, showed that only c 8,000 legionaires had actually taken part in the Wall construction. Needless to say there is NO record of the tens of the thousands of slaves who perished whilst building the Wall.

There were three crack legions in Britain, totalling around 15,000 men and about 40,000 auxiliaries, the legions prime responsibility was keeping Law and Order, throughout Britain. It is very difficult to envisage there were thousands of spare troops, all with the necessary skills, suddenly available to be seconded for building Hadrian's Wall and the other massive works in progress. In my own area of Cumbria I have located several of the stones on Roman sites inscribed with Ogam, an ancient Irish script, suggesting the use of Irish slaves captured when the Romans occupied Ireland at some period. Obviously the plaques recording the units responsible for the sections of Hadrian's Wall, only refer to the cohorts of the Roman army, never the main body of workers, the slaves who they controlled. In Penrith we also have a plaque recording the construction of the local motorway, the M6. Most of the plaque is taken up with the names of the councillors on the various committees. In tiny letters on the bottom of the plaque are the names of the two Engineering firms responsible, none mentions the workers. One of the major firms was Mc Alpines, their navies, often Irish, were originally, pre machine age, called Mc Alpine's Fusiliers and renowned for their expertise with a pick and shovel.

Hadrian's Wall is flanked by the vallum, (or as the Chinese called it, "An Open Wall". The vallum consists of two rammed earth dykes on an overlapping cobblestone base, flanked to the north by a ditch and between, the dykes is a canal. The unique design of Roman canals with flanking aqueducts, forming a biological oxygen demand control system make them extremely easy to follow using a magnetic anomaly survey, even if they have been backfilled and also to identify the constructor.. Without the canal the material to construct the wall could not have been transported, nor could the garrisons of the forts have been supplied over their years of occupation. Hadrian's Wall was the last of probably two previous walls, the first south of the South Tyne, running through Hexham..

The design of Hadrian's Wall was a complete departure from normal Roman frontiers which previously only consisted of parallel rammed earth dykes, with gateways built in stone. It is very likely that the design of Hadrian's Wall and the predecessor, south of the River South Tyne, were inspired by the Zhao State Wall, built c 300BC extant in the Inner Mongolia Autonomous Region, this was built in stone. Many Chinese linear defences, pre the Ming 15th cent Great Wall were constructed in rammed earth on cobble stone strips, with stone, or brick mile towers and gateways, depending on the local availability of suitable material. Jiayuguan Fort was a major fort in the Chinese defences

the adjacent wall is flanked by a section called "The Open Wall", consisting of a pair of double rammed earth dykes with an internal canal, identical to the vallum flanking Hadrian's Wall. The walls that the tourists in China are now taken to be Ming and constructed in the 15th century, the bricks being bonded with rice based mortar. Older folk will also remember that flour and water was used to adhere wall paper, ancient adhesives worked. A study of Chinese wall construction and labour requirements when applied to Hadrian's Wall (ignoring the two previous East-West walls, one of identical construction which ran south of the River South Tyne), showed that at least 60,000 workers would have been required to construct the Wall and the flanking vallum (canal). Without the canal it would not have been possible to construct, let alone supply Hadrian's Wall and the associated infrastructure. The tiny local population was incapable of supplying a labour force of this size, so the Romans had no alternative to import a large slave force, DNA surveys of the Wall area suggest that this labour force was imported from the Roman's North African provinces flanking the Mediterranean. The 60,000 slaves would also require a continual flow of replacements to make up the numbers of those worked to death. The author has already located three large slave burial sites. Roman and Viking sites are walled and orderly, slaves burial sites show that they ended dumped together as sardines in a tin.

CHAPTER FOUR.

RHINS OF GALLOWAY AND LOCH RYAN, SW SCOTLAND.

Amateurs talk of Tactics, Professionals of Logistics.

General R.H.Borrow, Commandant US Marine Corp.

To transport the slave labour, without which the Romans could not have constructed the infrastructure required to exploit the metallic ore resources of Northern Britain, presented the Romans with a serious Logistical problem. Their favoured source of slaves was from their North African provinces. Transportation of large numbers of slaves from North Africa to North Britain required large ocean going transports. The standard Roman vessel was around c30m x 6m (several of such vessels have been located by the author in their harbours in north Britain), these could only carry 60 or 70 passengers in addition to their crews and certainly not that number in secure conditions. That left the Romans in no alternative to obtain the services of the Chinese, trading colleagues from at least 170BC, who even at the commencement of the first millennia were capable of building deep sea vessels, including catamarans which could carry 800 passengers. (Gang Deng "Chinese Maritime Activities and Socioeconomic Development 2100BC-1900AD"). The sand covered wrecked Chinese Junks and their harbours located on the Rhins of Galloway, and in Loch Ryan and Luce Bay SW Scotland, would have the same passenger carrying capability.

One surprising junk find was made by Tim Akers using penetrant satellite photography in Lake Pol, Lop Nur, inner Mongolia, China, an area now used by the Chinese for nuclear tests.. This massive lake, now bone dry, possibly originally around 140 mile long and 50mile wide, once formed part of the Silk Road. One can only assume that this section of the Silk Road was so important that a massive junk was constructed to speed the transfer of goods. Presumably lake conditions being less onerous than ocean operations, the ship could have been constructed to a lesser specification and far larger dimensions than would normally be acceptable. One wonders if the removal of the immense number of trees from the area to construct the massive vessel assisted in the lake vanishing.

Explorer John Hare (Mysteries of the Gobi", Searching for Wild Camels and Lost cities in the Heart of Asia") who has traversed this region by camel and jeep, when notified of the existence of the immense junk, was totally unaware of it. Nor was the presence of the junk referred to by Sven Hedin, Aral Stein, or Francis Younghusband who all surveyed this area thoroughly between 1893 and 1934. At one of the lost cities by the lake, Lou Lan, John Hare reported that a Chinese architectural team located a canal c5m (c15ft) deep and c15m (55ft) wide running through the city, proof of the city's importance long ago and their use of large vessels.. See pg 168 etc of John Hare's book for a graphic description of this area of the desert and it's fascinating history, including the 2000 year old tall, blond and red haired Causcasian mummies located at Urumchi. For further detail

of these mummies see Elizabeth Barber's book "The Mummies of Urumchi. Did Europeans Migrate to China 4,000 Years Ago". One wonders if some of these very tall, red haired folk, ex Celtic Europe, finally arrived, via China, in New Zealand, where similar inhumations have been located. Loch Ryan, SW Scotland is a tidal sea loch, still used as a ferry port for Ireland. Stranraer situated at the head of the loch is now bypassed by the ferry traffic as the ferry port (Cairryan) has now been moved halfway down the loch. This saves time as the ferries had to reduce speed to save wash damage to the banks, also there is no longer any need to dredge the section from the new ferry birth to Stranraer. The pier with a complete access railway system was originally built in the second world war to form a standby port for Liverpool and Glasgow in case either was knocked out of action by German bombing. Ptolemy's map of Britain shows Loch Ryan and a major fort. The author has located this fort and the foundations of the adjacent harbour, and also considers that the Loch was the major Roman western harbour and probably also their assembly port for the invasion of Ireland.

At the mouth of Loch Ryan, on the eastern shore, a large Roman town was located. Wig Bay on the western shore of the loch, had at one time been secured by a wall converting it to a safe bay. Adjacent the author located a second Roman town, nearby are the sand covered stone foundations, from north to south, are several Chinese tidal harbours c 70m long and 28m wide, accessed from half to full tide, identified by their unique keel slots and hull support pads. Similar harbours have been located on both sides of the Rhins of Galloway and from Gairloch to Grunaird Bay in Wester Ross NW Scotland. In Loch Ryan adjacent to the Chinese harbours and both fed via aqueducts from the same water source was a large Roman harbour, accessed by locks, their size determined that the craft was c 30m x 6m, a standard Roman vessel. Adjacent to the Roman harbour and immediately to the south, a magnetic anomaly survey showed that the Romans or Chinese had constructed a massive harbour wall c 240m long with the 40m long sub walls returning southwards. The quarry from which the stone was extracted is still visible, on the nearby hillside. The outline of this wall shows clearly on Google Earth and is now called "The Scar". The reason for the Scar, or its constructors, has apparently never been questioned. The combination of the Roman and Chinese stone harbour foundations has caused the massive build up of a sand bank, exactly as the Roman harbour has created at Berwick upon Tweed.

Perusal of an aerial survey of "The Scar" revealed the wreck of an enormous Chinese catamaran immediately south of it. A survey over the site at low water using magnetic anomaly revealed the actual size of the junks c 100m x 38m, with a much smaller junk c 70m x 26m alongside, and the presence of their anchors of a unique design, only used by the Chinese. The 600m long ferry pier on the eastern shore of Loch Ryan, also enabled approximate dimensions of the two junks to be made.

CHAPTER FIVE

The Ocean Currents and Winds Which Controlled the Routes of the Ancient Mariners And Some Replica Voyages Over the Same Routes..

These ocean currents are also used by modern day powered ships to reduce their operating costs, Atlantic and even Pacific rowers to save their muscles and around the world yachtsmen and women to speed and ease their passages. The ocean currents, often referred to as ocean conveyor belts, are continuous movements of water, these are generated by a number of factors, from the earth's rotation, gravitational pull of the sun and moon, temperature and salinity differences and the prevailing winds.

NORTH ATLANTIC. The major rotational current (gyre) in the North Atlantic is the clockwise Gulf Stream, this enabled sailing vessels including Columbus's, to make the easiest passage from North Africa to the Caribbean, then up the coast of America and return to Britain and Europe. A northern current from Norway via Iceland and Greenland to Nova Scotia was used by the Vikings, hence it being called the Leif Erikson route. This enabled the Vikings to both populate Newfoundland and probably mainland America, until forced out by the Indians. They also settled in Greenland, and as recent Danish studies have shown, also grew grain, until the climate change forced them out. Tim Severin also used the Northern Atlantic current (Leif Erikson route) to prove the truth of the 6th cent legend of St Brendan reaching America in a 11m x 2.4m (36' x 8') leather covered, wooden framed curragh. Tim built an identical curragh in Ireland and over a two year period successfully reached Nova Scotia. (The Voyage of St Brendan).

Twenty two years after his Kon Tiki Pacific voyage, Thor Heyerdahl decided to test the feasibility of reed boats to cross the Atlantic, as claimed for the Egyptians. The craft named Ra One was constructed from papyrus reeds. Thor and his crew utilised the rotational drift to sail the 3,000 miles (5,559km) from Morocco to near Barbados, but had to abandon Ra One when it commenced breaking up. RA 2 was then built to an improved design and again sailed from Morocco, reaching Barbados fifty seven days later. Thus proving that reed boats were capable of Atlantic crossings. Our (1421) surveys in January 2010 which located the ancient canal linking the Pacific to the Caribbean via Lake Nicaragua, confirmed why so many ancient voyages, including those of Columbus headed to the Caribbean on their way to try to locate, or for the knowledgeable, to use the short cut canal to the Pacific and Asia.

SOUTH ATLANTIC. The South Atlantic gyre is anti clockwise from the coast of Africa to and southwards down the coast of Brasil, then returns to South Africa to meet the northern flowing Benguela Current. Naomi James, the first lady to sail single handed around the world in 1977, used this current to sail down South America to the Falklands, then rounded Cape Horn to cross the Pacific at roughly 45 degrees, passing both New Zealand and Australia to the south, to enter the Indian Ocean and round the Cape of Good Hope back to Britain. Joshua Slocum, the first man to sail single handed around the world between 1895-98, firstly built his own yacht, interestingly like the Chinese "Super Junks" Baochuan, he also lined the

hull with concrete to both provide ballast and stiffen the hull. Joshua also used the South Atlantic current to sail down South America, accessed the Pacific via the Magellan Straits, then used the Humbolt current to sail northwards up the South American coast, then the South Equatorial current to sail westwards through Polynesia to Australia and New Guinea.

SOUTH of the ATLANTIC. The South of the South Atlantic gyre is the current which flows from West to East, around Antarctica, this keeps the ice fields clear of the warmer Pacific and Atlantic currents. The voyage records of the Chinese fleets of Zheng he show that they had explored the Antarctic, to locate the navigational limits imposed by the ice and to map the continent. Previous cartographers had also mapped a partially ice free Antarctic.

INDIAN OCEAN. Early vessels attempting to access the Indian Ocean from the Atlantic had two problems, they faced the northern flowing Benguela current flowing around Cape of Good Hope, then the Aghulas current which flowed southwards between Madagascar and mainland Africa, Mozambique. Possibly this is why the Phoenicians circumvented Africa clockwise, accessing the Red Sea from the Mediterranean via the Nile to Red Sea canal, constructed c BC500. Vessels wishing to access India or Asia from the Atlantic, having battled though the Benguela and Aghulas currents then had to struggle through the anti clockwise Indian Ocean gyre running on the eastern shores of Madagascar. Then ship's captains would have had to time their sailing times to make use of the Indian Monsoons, if their timing was out, then they had to sit in port and wait. The Indian Monsoons, unlike the Atlantic or Pacific major currents changed direction during the year, this is due to differential temperatures between land and sea between winter and summer. During winter in the northern hemisphere, January and March, the maximum winds blowing from the North East, due to the Coriolis effect the currents ran westerly, fine if you wanted to get home from Asia to Europe, but hopeless if you wanted to access India or Asia. During the northern hemisphere summer, April to November the maximum winds blowing from the South West resulting in the currents running easterly, the only opportunity in the year to access India, or the mystic East. Proof of the sheer volume of ancient ocean trading with India is the large man made harbour at Lothal on the River Indus. This port, near Ahmadabad, was founded in BC 2200 and possibly the oldest harbour in the world. The harbour 236m x 37m x 4.6m deep (760ft x 120ft x 15ft), has two entrances and is brick lined. Round stone anchors have also been found on the harbour bottom. "A History of India" by Kulke and Rothermund.

There have been several replica voyages to prove the ability of ancient craft to trade to the ports around the Indian Ocean. One was made by Thor Heyerdahl and his crew in a reed boat named Tigris. Thor and his crew sailed the craft from Basra in the Persian Gulf to Karachi in India, then used the Monsoon winds to cross the Indian Ocean along the northern shores of Somalia to Djibouti at the entrance to the Red Sea, the Horn of Africa, possibly the land of the legendary Punt of the Arabian voyages. The straight line voyage route is 2860mile (5228km). (The Tigris Expedition). Tim Severin, one of the world's most expert replica voyagers, also constructed a replica Oman sailing ship and proved the Oman voyagers could easily have sailed from the Persian Gulf to China. (The Voyages of Sinbad). In reverse, to

prove the Indonesians traded to Africa and colonised Madagascar, in 2003 Phillip Beale with the help from the Indonesian Government, built and sailed a double outrigger canoe from Jakarta in Indonesia, to Cape Town, South Africa via the Seychelles and Madagascar. The 5630mile, (10,290km) voyage took six months at an average 5.3knots. The 18m long double outrigger called Samudra Raksa, (Defender of the Seas) was constructed with sewn planks, no nails were used, based on the design carved in stone in the Temple of Borobudur. The vessel was capable of carrying a crew of 25 and a total cargo of 8.5 tonne. Madagascar was also a Chinese base, large quantities of Chinese pottery has been located on the island..

As greater knowledge of the winds and currents of the Indian Ocean became available, sailing ships wishing to access India, headed East from the Cape of Good Hope, into the middle of the Indian Ocean, then swung in an arc to head Northwards to India, thus avoiding the Agulhas current and the worst of the Monsoons. Sailing ships to Java and Sumatra sailed eastwards from the Cape of Good Hope, those to Malaya headed for the Malacca Straits between Malaya and Sumatra and those to China sailed via the Sunda Straits between Sumatra and Indonesia, or the Lombok Straits, through the Islands of Indonesia. The Chinese secret route from Africa to China was by using the South Equatorial Current to sail eastwards, south of Australia, to their major base in New Zealand. There they could refit in the specially constructed harbours, both in the North and South Islands and resupply with food and water. New Zealand was also major source of gold, iron and jade and the huge hardwood trees made superb masts and ships frames. From the New Zealand base they would have also loaded cargoes collected from their ports within Polynesia. The junks would then return to China using the North Equatorial Current to access the Kuroshio Current, then sailed westwards to home ports. From Madagascar, Diago Suarez, to the Chinese major harbour at Moeraki, New Zealand is 6424mile (11,903km) and another 5910 mile (10,951km) to Shanghai, a total of 12,334 miles. (22,854km). The direct route from Diago Suarez via Singapore to Shanghai is 5959mile (11,042km) roughly half of the route via New Zealand. Whilst the New Zealand route is longer it was an all weather route assisted by currents, use of the direct route across the Indian Ocean is dictated by the timing of the Monsoons. We know that the Chinese also used the narrow Malacca Straits between Malaya and Sumatra for some of their voyages, as one of Admiral Zheng He's warehouses still exists and is now a museum dedicated to the Chinese mariners. However the huge Baichuan (Super Junks) were neither fast nor manoeuvrable, so when using the Malacca Straits timing with the monsoons would be paramount.

PACIFIC. In the Pacific, the Humbolt Current runs northwards along the coast of Peru and Chile, then turns and runs westwards, anticlockwise, as the South Equatorial Current along the line of the equator, mainly to it's north, to Australia then returns eastwards to near Cape Horn and then returns northwards as the Humbolt Current. This current prevented all European attempts to access the Pacific, directly from the west. The north equatorial counter current flows eastwards between 5N and 10N. The Spaniards were probably the first Europeans to appreciate that they had to use the Kuroshio current swinging clockwise around the Pacific, then sail down the coast of America

to reach Mexico. Frenchman Eric de Bisschop, an experienced Pacific explorer and trader, attempted with his Chinese junk to access Micronesia from Indonesia, but was unsuccessful due to the prevailing winds and currents. Then in 1957 Bisschop and his crew built a sailing raft and set sail from Tahiti to Peru. By using the west to east currents at 40degrees south, Bisschop set out to prove that the Polynesians could have voyaged to South America. After six months sailing, with the Roaring Forties having lived up to their name, the worm eaten raft began to break up, having covered around 4,000 mile, but with still 700mile off Valparaiso, and had to be rescued. Not deterred, Bischoop built a second sailing raft and this time sailed from Callao westwards, taking a course on roughly 5degree south latitude. At the end of four months, this raft also began to break up due to wood borers and a second small raft was constructed from the main raft, at sea, then after another month's sailing this ultimately reached Rakahanga, in the Northern Cook Islands. Sadly Eric de Bisschop died when the raft broke up on the island's reef, the rest of the crew survived. If nothing else, Bisschop proved as did Thor Heyerdahl's Kon Tiki voyage, that the east to west voyaging was perfectly feasible. However this could not be said for the west to east voyaging, unless one had unlimited time and supplies, due to the variable west to east currents and winds, also a craft made from borer resistant timber. "From Raft to Raft" by Bengt Danielson.

Kuno Knobel in 1974 constructed a Chinese junk named Tai Ki and also attempted to sail eastwards from the China Sea across the Pacific to Ecuador. The attempt failed, being driven northwards and battered by the prevailing winds and currents. Eventually the junk suffering from severe hull damage due to borers was abandoned in the North Pacific. Thor Hayerdahl in his book "Early Man and the Ocean" listed thirteen manned rafts including his own Kon Tiki (1947), all of which sailed from South America and all reached a Polynesian Island. The book also details how in 1973, three balsa rafts under the leadership of Vitale Alsar, sailed from Ecuador through Polynesia and Melanesia and 179 days later arrived in Bellina, Australia. One always wonders, if a sailing raft can sail through Polynesia and end up in Australia, why has no evidence has been found of the settlements of Polynesian immigrants driven onto the Australian coast, or at least, the remains of their canoes. Thor Heyerdahl reported that whilst Kon Tiki's average daily run westwards was 42mile (77.8km) with a maximum run of 71mile (129km), they also noted a southward drift. This comment re the southern drift inspired Richard Legeckis and his colleagues in 2002 to investigate further. (Satellites reveal the influence of equatorial currents and tropical instability waves. Oceanography Society. Vol 17, No4. 2004). The use of satellites and infra red photography whilst unknown in Thor Hayerdahl's time, but are now readily available, enabled the researchers to locate and understand how and why the sailing raft Kon Tiki made it's voyage and why it was influenced by the southern drift. It is known that every three to seven years the equatorial ocean currents weaken and even sometimes reverse as part of the El Nino effect. It is fortunate that Thor Hayerdall's timing missed an El Nino, or they could well have been driven back to South America, or gone around in circles.

Amusingly in 2009, my colleague on a visit to Tahiti, saw a large sailing raft leave port, on enquiry was informed that one of the raft's crew was Olav Hayerdahl, the grandson of Thor Hayerdahl and his father and mother had just waved him off. My colleague later had the pleasure of both meeting Thor's son and bringing to his knowledge Gavin Menzies's book, "1421 The Year China Discovered the World". The many failed efforts using replica craft to prove the feasibility of direct West to East Pacific voyaging has highlighted the virtual impossibility of the culture historian's claims of frequent return canoe voyages to South America from Polynesia, in which the notorious Pacific weather is never mentioned. Brett Hilder's "Navigator in the South Seas", the account of a ship's captain of a life time of Pacific Island trading and the atrocious weather conditions experienced, should be mandatory reading for all exponents of the ease of canoe travel in the Pacific. My own experiences during one very unpleasant voyage between Australia and Indonesia, included cabin windows 15mm thick (1/2") being smashed by the heavy seas and two missionaries on board having their largest congregation ever, I well remember hearing the hymn "For Those in Peril on the Sea" over the storm. Thank you for listening. It is only when you actually experience the full power of a Typhoon, do you begin to appreciate the total hell of ancient mariners in such an event being driven onto a rocky lee shore, with a total reliance on sail, or anchors and cables. One day in an open harbour in Japan, my ship, capable of 18knots, was tied to a buoy, I well remember the sky going black, the wind rising to a continuous shriek and we had to run the engines at half ahead into the wind, still tied to the buoy, going nowhere, for 24 hours. In such conditions, any sailing ship near the coast would have been driven ashore and canoes under.

Goeffrey Iwin in his "The Prehistoric Exploration and the Colonisation of the Pacific", comments on the University of Aukland's use of a computer programme for simulating the prehistoric exploration of the Pacific. Yet again, the programme assumed that all the Pacific colonisation and exploration was by canoe. Interestingly the comment was made that simulated results did not always conform to archaeological results. Brett Hilder, a very experienced Pacific navigator, also had a great interest in ancient navigation. On one voyage he called in the island of Arorae, one of the Gilbert Islands. There he was shown the "stones for voyaging", Te Atibu-ni-Borau, these consisted of eight flat stones of coral set on edge, each one pointing to an island. The canoeists having been shown the way via the maritime sign posts, were then totally reliant on Sun and Star navigation, wave movement and of course bird movement. That well known ancient rafter Noah, is also reputed to have relied on a dove for his Ark navigation, when it flew back with greenery in it's beak, he knew that land was appearing after the flood. The Spaniards in c 1565 appeared to be the first Europeans to appreciate that the only way to navigate the Pacific west to east, was firstly westwards from Mexico to the Phillipines using the South Equatorial current, then to return using the Japanese Kuroshio Current, swinging northward and via Hawaii, back to the west coasts of America and Mexico. This route was called the Caravelle Route. Prior to this discovery, the only way to return to Mexico from the Phillipines was via the Atlantic, having first

circumvented the entire world, an extremely time consuming voyage.

NORTH PACIFIC. The currents in the North Pacific run clockwise, the easterly current is called Kuroshio Current, sometimes the Japanese Black Current. This warm current runs from China, by Japan and arcs across the Northern Pacific to the American coast, then southwards to the equator and turns westward, paralleling both the Equator and the North Equatorial Current to near China. The most recent evidence of the Kuroshio current movement is that debris resulting from the Japanese Tsunami of March 2010, has been seen heading to the western coast of America and will arrive in the Spring of 2013. The Kuroshio Current was supposedly used by the early Chinese to access America, possibly up to 3,000 years ago. The voyages of Hsu Fu in 291BC are mentioned in the Shiji Classic of Chinese annals in 91BC. To prove the route was feasible, replica vessel builder and intrepid sailor, Tim Severin constructed a three masted bamboo sailing raft and named it HSU FU, this was the forerunner of the well known junk. This raft was sailed 8,851Km (5,500 miles) from Hong Kong, China, to within a 1,609Km (1,000 mile) of the American Pacific coast before being abandoned, as it was breaking up. The voyage showed that the route from China to America was feasible, but raft losses could well have been high. The DNA of the American Indians shows that 97% of those tested had an Asian origin, proof that the sea route from China to America was much used in ancient times. (Dr Simon Southerton's Human DNA studies, "Losing a Lost Tribe"). Profs Sorenson and Johannessen in their book "World Trade and Biological Exchanges before 1492" stated that the use of the so called land bridge from America to Russia was not feasible for human use. Their proof is that diseases such as hookworm, prevalent in East and South East Asia and the Americas could not have survived the intense cold in the land bridge area. So the introduction was via a maritime source.

On the Olympic Coast of Washington, 14mile (22.5kkm) south of Cape Flattery and of the Strait of Juan De Fuca which separates Vancouver Island from the mainland, an ancient fishing community was overcome by a landslide. In the 1970's further land slips exposed this site, excavations have shown that the site, now called Ozette, had been inhabited for a 2,000 year period by a community whose name became Nootka, part of the Makah Indian Nation. This community differed from the rest of the tribes due to their virtual reliance on the sea for their diet and their expertise with whale catching. Their midden stretched for nearly a kilometre long, by 3m deep, for one third of the length, thinning to 0.5m for the remaining two thirds. Whilst the Washington State University's Department of Anthropology produced a very comprehensive report, (Ozette Archaeological Project) sadly there is no mention of DNA testing of related tribe members. However the position of the site at the northern end of the Japanese Kuroshio Current, the occupants skills with whale catching and their reliance on the sea, especially the fur seal, for their subsistence and economy, suggests that this was the final port for a group of Japanese fishermen and their families. Further evidence of ancient vessels frequenting America's Pacific coast has been found by Bob Meistrell, well known for his work on designing diver's suits. During his dives on the Californian coast, Bob has located many ancient circular stone anchors, complete with central holes, some up to a metre diameter (3'-3"). Many of these stone anchors have been deposited in local museums.

NAVIGATIONAL KNOWLEDGE AVAILABLE TO THE ANCIENTS.

And their most successful vessel design which survived for 2,000 years, the Chinese Junk

One totally amazing piece of advanced navigational equipment was located in a Roman wreck off the Greek Island of Antikythera. It is thought that the device to be based on Babylonian astronomy, not Greek. The device contained a geared drive and a graduated face. The device enabled longitude to be calculated at sea with sufficient accuracy to produce world maps. An observer at sea with an accurate water clock, firstly shooting an eclipse of the moon as predicted by the Antikythera device, could then determine the longitude difference between himself and the observer sighted ashore.

VIKING NAVIGATION. My late colleague Ray Selkirk supplied the following navigational information. Ray was a professional marine and aviation navigator and pilot with an honours degree in Roman archaeology, he also served as a ship's navigator in the Gulf and Falkland wars. His major archaeological contribution was in proving that the Romans used water to transport their heavy goods, not their roads. (The Piercebridge Formulae and On the Trail of the Legions). I was privileged to both study and work with Ray for six years. For light relief Ray also served as the navigator on Drake's Golden Hind replica during a coastal voyage, he found that despite claims that such sailing rigs could only sail down wind, (running free), the Hind could sail (tack) up to 60degrees from the wind.

The Leif Erikson route across the Northern Atlantic was used by the Vikings who were not just blood thirsty adventurers, they were both expert navigators and farmers, one of their sets of 11th cent navigational tables survives, it is attributed to Star-Oddi. These tables give the Sun's midday altitude for every week of the year, as observed from Northern Iceland. As instruments they had a wooden pelorus, a kind of dummy compass for plotting bearings and also used as a Sun compass. It was circular and had 32 points of the compass cut into the rim, in the centre was a vertically adjustable gnomon (shadow caster). The Sun compass was capable of accurately reading latitude. This instrument could also be used at night by lining up the north point on the dial with the North Pole Star. Also when sailing north or south and changing latitude, the new latitude being traversed could be estimated by the midday shadow measurement increasing, if heading north, or decreasing, if heading south. The Vikings also used Sun Stones, these are polarised crystals of Cordierite, or Tourmaline, these allowed the navigators to take bearings on the sun in overcast conditions or fog. In such conditions, the crystal when lined up with the sun changes from yellow or pink to blue, even when the sun is up to seven degrees below the horizon. Pieces of these crystals have been found in Viking ship burials. These crystals are fairly widely available in the world. Although Roman and Chinese engineering are my prime interests, in my many years of surveying I have also visited a number of ancient stone circles, in Britain, one is only 300m from my home. Most are dated to around 3,500 years old. They all have a commonality, they

are constructed over springs. A sleeved dowsing rod held over a spring source will begin to rotate as a motor. The motor effect is created by the electricity generated by the molecular excitation of spring water flowing through a fissure or over rough surface, this does not occur in modern plastic pipes due to the low friction. The water dowser makes use of use of this electricity discharge to locate and size spring water flows, the greater the flow of electricity generated. For the same reason of the danger of the generation of static electricity, Chemical plants and Refineries have to both limit their pumping speeds of water white liquids (petrol, benzene, white spirits etc) and earth all their pipework to prevent static electricity discharge. Mix flammable vapours and a spark, equals a big bang and tears. Nobody could explain why all stone circles sat on springs, until Gavin Menzies and Dr Gunnar Thompson visited China's Beijing Observatory to examine an ancient map. For interest, Gunnar sent me a set of photographs of the ancient equipment on display. One photograph was of a graduated bronze water table, complete with an ornate gnomon (shadow caster) used for measuring the angle of day sun shots and night time star and moon shots, by reflection. It then dawned on me why the stone circles where built over springs, water was required for reflection channels. Sad that those experts who wax lyrical about stone circles had not appreciated the basics of their design. Gunnar Thompson's research also revealed that Hwang ti, an ancestral patron of civilisation sent astronomers around the world in about BC 2,650, (5,500 years ago), to spread the knowledge of astronomy. Apparently about 3,500 years ago the Egyptians were also sending out astronomers to study the stars in distant countries.

My next visit was to visit several of my local stone circles to scan then for evidence of water troughs, I found that every circle had two or three 25m (82ft) long x 0.5 (1'-7") wide troughs, outside the circle, each aligned to the north. Presumably each trough was lined with puddled clay to watertight them, each trough had a row of stones, a form of graduation down their length. Each trough was connected to the spring source by a small pipe, presumably made of clay. At only one circle in Cumbria, North England (Long Meg and her Daughters) was a gnomon external to the circle still in position, this is called Long Meg, her daughters are the stones in the circle. So 3,500 years ago there where expert astronomers in Britain who could also locate water underground and used an identical star and sun shot method to the Chinese to make their calendars. On the calendars they could plot the seasons for sowing and harvesting times, procreation periods, both human and animal, and for their food sources, bird migration and fish runs. Long Meg has a double spiral carved into the rock, this signifies the movement of the sun throughout the complete year. Those who live in the sun with time to spare and wish to emulate the ancients, obtain 365 pieces of timber each c 1m (1'-3") long x 150mm (6") and a large crystal ball. When my colleague setting up for this experiment in New Zealand, went to purchase an extra large glass ball, she was asked, Do you tell fortunes?. To start, firstly number the boards, one for every day of the year and at dawn, align one vertically to the noon sun, place large crystal ball in front of the board and replace the board every day. (ensure no combustible material is nearby, the wood blackens very quickly). At the end of a year, line the boards together and you have a complete double spiral. The

ancients knew this 3,500 years ago. It make you realise how much we humans have forgotten over the years. Little wonder that world wide navigation was undertaken with impunity by the skilled ancients.

Australian Lynda Nutter's research confirmed that Zhou Shou Jing (c 1276) a leading Chinese Yuan Astronomer, had constructed a truncated pyramid tower, the watertight flat top c 8m (c26) square was graduated circumferentially and fitted with a central gnomon (shadow caster). When the tower top was flooded the surface could be used for both sun, moon and star shots. Zhou Shou Jing also designed a torquetum on which the positions of the sun, moon, elliptic an Polaris and other key stars could be placed. This torquetum which could be used to determine longitude by using the slip between Sidereal and Solar time, or the slip between Sidereal and Lunar time. Sidereal time is the time between successive passages of a particular star over a meridian, a meridian is a circle of constant longitude passing through a given place and the terrestrial poles. Zhou Shou Jing was also responsible for the invention of an improved water clock which was compensated for reduced water flows and pressure as time elapsed, also for different water and air temperatures and salinity. Having an accurate clock enabled observers at the prime and the local meridian to view the chosen star and calculate the distance, this enabled accurate navigation tables to be computed and accurate mapping using Latitude and Longitude to be carried out, hence the map Chinese map of 1137. The late Professor Robert Cribb research confirmed that the Chinese could determine Longitude by using slip and sidereal time to an accuracy of 1.5degrees. The Datong Li (Great Universal System for Calculating Astronomy) based upon Gua Shou Jing's system of calendrical astronomy was officially adopted by the Ming Bureau of Astronomy in 1384. This contained phases of the moon and predictions of lunar and solar eclipses. All this navigational information was made available to the navigators of Chinese ships. It took the Europeans to the late 18th cent to produce a reliable chronometer and calculate accurate calculations of Longitude. Captain Cook had some of the earlier models of chronometer on his voyages. Researcher Gunnar Thompson considered that Admiral Drake who sailed in the Pacific in the later part of the 16th cent, must have had some form of mechanical chronometer to have charted the Pacific coast of America so accurately. Drake did have a professional map maker to record his surveys.

In the northern hemisphere Polaris, historically often referred to as the Lode Star, is one of the navigator's most used stars, because twice a day it can be seen in the north. Polaris lies nearly in a direct line with the earth's axis above the North Pole, so appears to be motionless, whilst the other stars rotate around it. By measuring the altitude of Polaris when due north and again 12 hours away from North and taking the average altitude, navigators could determine latitude. eg 90degree North when Polaris was right above them and zero degrees when Polaris was on the Equator. The Chinese astronomers constructed circumpolar navigation tables which told them when Polaris was due north. A circumpolar star is a star which due to it's proximity with the poles, never sets when viewed from a given latitude on earth. In the southern hemisphere whilst there is no direct equivalent as Polaris, the Southern Stars constellation points to where a Southern Pole star would be.

The Chinese navigators had compasses from c BC300, so as they collaborated with the Romans from BC170, sailed out of each others ports and interchanging technical information, it would be entirely logical that that they also introduced compasses to the Romans. In my surveys on Roman and Chinese sites I have found identical engineering design practices in canalisation of rivers, smelting, aqueduct design, army barracks and even to similar recoil absorption methods for missile batteries. As the Chinese also traded extensively with the Indians and Arabs, themselves brilliant astronomers and navigators, they too must have been aware of compasses. The accuracy of ancient Chinese maps shows that they could calculate Latitude and Longitude (by c 1,000 AD) from sun and star shots, using early forms of Sextants. They measured time using water clocks and candles, all from a prime meridian, this was firstly, the Yuan Observatory in Nanking, then in 1442 it was moved to Beijing's new observatory. Nowadays Greenwich is the world recognised prime meridian. The Chinese have the longest record of Astronomy in the world and published the first world star maps, so from a very early date their navigators must had access to very extensive star navigation information.

CHINESE JUNKS.

Those that live longest see most.

Over many years at sea in the 1950's mainly in the Far East and also having lived by the River Mersey, I have been fortunate to have observed many types of craft, from majestic liners and aircraft carriers, to dug out canoes in Borneo powered by 40hp outboards, manned by Dyaks and my favourites, sailing junks. As it is claimed that Mitchell, the designer of Britain's successful wartime aeroplane, the Spitfire, based his design after watching seagulls fly over the cliffs. I think that the designer of the first junk was inspired by watching ducks and their tiny families master the local river rapids.

Junks, other than the "Super" junks Baochuan's or treasure ships with their semi flat bottoms, could take ground alongside tidal wharves without tipping over, their lifting rudders ensured they did not suffer damage. The hull box shape ensured maximum cargo carrying capacity and their watertight bulkheads ensured safety for both vessel and cargo in the event of one section of the hull being holed. Some say the incorporation of bulkheads in junks evolved from the success of using bamboo with it's unique modules for sailing rafts. The use of full height bulkheads was 2,000 years in advance of the British designers of Titanic, whose bulkheads did not extend to the full height of the hull, hence it sinking. The hulls of some junks were designed to take in water in a specially constructed recess at the stern in a following rolling sea and then automatically dump it when lifting, this reduced pitching and kept the bow up and prevented it digging into the bottom of wave troughs. The sails were fitted with battens and attached to the masts, so they transferred their loading evenly to the masts and their sail area could easily and speedily, be reduced in bad weather by simply lowering the sail from the deck, no need for sailors to climb violently moving masts. Also if required, the junk could even sail backwards. The design of direct sail attachment to the mast minimised the need for massive expensive rigging, as in European square rigged ships. On the larger junks, the use of offset masts reduced the blanking effect of one sail in front of the

other. We also consider that the "Super" junks had a form of balance weight provision for compensating for the weight of the major sails, possibly the use of the modified "Moeraki" balls. Modified balls have been noted and photographed within the hull of the Moeraki junk.

Our locating the first Chinese Super Junk (Baochuan, or Treasure ship) ever found in the world, arced across a cliff at Moeraki in New Zealand, enabled us to understand how these vessels were constructed. Many folk had claimed that wooden vessels of c 120m x 50m could not have been built, nor could they possibly have survived in a rough sea. The hull design was a testimony to the brilliance of Chinese marine engineering, only now are the Japanese considering using this design of hull to build a ballast free tanker. (Marine Engineering Review May 2006). The Japanese hull design concept consists of a raked bottom (not completely flat) widening the vessel's draught and a fatter body around the bow and stern areas, this configuration achieved a propulsion efficiency 6.4% better than a conventional design. The Japanese designers considered that heavier hull structures would be required to protect against the higher longitudinal bending moments created by the wider hull design. The objective of the design was to eliminate ballasting of the ship to obtain stability when empty. Ballasting of empty sailing ships with stone or gravel was time consuming, expensive and there was always the danger of the ballast moving in heavy seas. Ballasting a modern ship to ensure stability when voyaging to collect cargo, is also time consuming, combined with inherent tank corrosion and the environmental restrictions of dumping ballast pumped from tropical waters and possibly contaminated with oil residue, into a northern hemisphere. Washing out cargo oil tanks is also hazardous and explosions can be caused by static electricity generated by the high pressure water jets used to clean the tanks.

The Japanese research concept hull design actually summarises the ancient Chinese design of their "Super" junks, the same as used by Admiral Zheng He and his fleets in the 15th cent, although this design had been in use for over 1500 years previously (Gang Deng Chinese Maritime Activities). The Chinese marine engineers solved the many problems associated with ballast handling by a radical hull design and solved the associated hull structural problems by both transverse and longitudinal bulkheads and lining the hull with waterproof cement, manufactured using volcanic ash high in silica, the concrete was bonded to the wooden hull with an old Chinese favourite, rice adhesive. Thus creating the world's first composite vessels. Yachts with concrete hulls found favour at one period, prior to the widespread use of fibreglass glass and I remember seeing many large concrete cargo barges in Birkenhead's docks. The hulls of the "Super" junks were protected against marine borers by a coating of Tung oil and lime. We know that these junks had a projecting keel by the 2m wide slots found in their dedicated harbours. This keel besides providing vital hull rigidity, also provided directional stability under sail. The mammoth junk at Moeraki also had concrete bilge keels, these reduced rolling and spread the load when the junks docked onto their hull pads.

-CHAPTER 6 .

NEW ZEALAND and the MAORI CONNECTIONS.

AOTEAROA. The land of the long white cloud.?

But it could be translated as "The Land of the Long White Ships".

Chinese junks used Tung Oil and Lime as an anti torredo borer worm compound, This treatment coloured the hulls of the Junks white. The cotton sails were treated with a solution based on an inedible yam to prevent mildew, this coloured the sails dark tan red.

Who was the first outside of New Zealand to discover it, we will never know, it certainly was neither Captain Cook who surveyed the coast of New Zealand, well after the Spaniards and Portuguese had visited the islands, nor the Maori, who according to Government sources arrived in the North Island c1,350AD and much later in the South Island.. As DNA studies have shown, the New Zealand Maori have a maternal DNA of an East Asian background and a Paternal DNA of a Melanesian background, thus indicating that at some period in the Island's history, the Asian males had been disposed of and the Asian females retained. (Dr S.Southerton Human DNA Studies). These DNA studies indicate that New Zealand had a considerable Asian population, prior to the arrival of the Maori. The majority of countries take a keen interest in their history and archaeologists make every effort to fully report and follow up ancient finds, many located by chance whilst excavating for new developments. However in New Zealand such actions appear to be very selective, for reasons totally unknown to onlookers, archaeological finds appear to be handed over to none professional Maori representatives to dispose of as they think fit, without any reports of their origin being placed in the public domain. One is left with the impression that the past must be hidden. Without complete transparency, one cannot have either a true democracy, nor ever have a reliable history of the country..

So until the New Zealand government changes it's present policy of disposing of any evidence including skeletons, regardless of their origin etc to a self interest group dedicated to the status quo re New Zealand's history, and refusing to subject them to carbon dating and DNA, no one will be fully able to explore New Zealand's ancient past. If Australia, New Zealand's closest neighbour and one time fellow land mass has been occupied by Aborigines for c40,000 years, why not New Zealand with its more hospitable climate. Experts also said that New Zealand did not have any Dinosaurs, until Joan Wiffen and her colleagues found their bones in Hawkes Bay. (In Search of Ancient New Zealand Campbell & Hutching pg 121). Possibly the reason why New Zealand's indigenous aborigines cannot now be found is that they were exterminated and the evidence systematically destroyed, as and when it is exposed. There are many references in old publications, far too many for fairy tales, of ancient skeletons disowned by the Maori, including one in the New Zealand Gazette of 1869 which quoted 60,000 skeletons, had been found in caves and other sites which had been ground up for bone meal and used for fertiliser. Recently, a North Island builder exposed a cemetery of small folk buried in the foetus position, he informed the local government archaeologist, who said inform the local police, who said inform the local iwi, who said bulldoze them. None wished to get involved with "The Truth" re ancient New Zealand.

Recently a New Zealand Christchurch newspaper, The Press, published a statement from a scientist, who stated that their team had obtained overwhelming evidence which confirmed the first occupation of New Zealand was by the Maori, who arrived in canoes in the 12th century. This study was based on carbon dating the remains of rats found on (Presumably) Maori sites in North Canterbury, North Otago and North West Nelson. One is entitled to ask, from such a study on a few rats, how did they know these immigrants had arrived in canoes and how did they establish their precedence of arrival over any other immigrants?. These are assumptions, not scientific facts. The only scientific evidence generated by the survey was that they had located sites in which the occupants ate rats in the 12th century, full stop. Other evidence on the site, ie human bones in the midden could well assist in establishing who had occupied the site. Carbon dating of artefacts found on a known Roman site in the UK, will no doubt obtain dates commensurate with the Roman occupation. If I dared claim that these dates proved that the Romans had arrived by canoe and that prior to their arrival Britain was unoccupied, my statement would rightfully be treated with amusement. Yet in New Zealand this archaeologist's statement was treated as fact. Even worse, the report inferred that they had cherry picked the carbon dating laboratory (Oxford, UK) which presumably gave the answers they desired and disregarded Rafter (NZ), who did not. The company which I spent most of my working life with, had 37 plants around the world, all with laboratories. On a regular basis from our UK master research laboratory, identical samples were sent to each laboratory for testing to ensure all test equipment was correlated. When I queried SUERC, the Scottish Joint Universities Research Establishment re correlation of carbon dating, as we used Rafter and Waikato laboratories in New Zealand and SUERC in the UK. (we spent c\$NZ 30,000 on laboratory and technical services.). SUERC informed me that they ran correlation carbon date tests with New Zealand. If all the laboratories ran correlation tests with each other, one does wonder how the divergence in results occurred. It was very interesting to note that when Gavin Menzies wanted to carbon date an ancient Chinese map, one sample was sent to Waikato University and one to Cambridge University, who promptly sent it to New Zealand, not Oxford. A vote of confidence from one of the top universities in the world to New Zealand's laboratories.

If carbon dating a few rats can be claimed to provide the complete answer to New Zealand's mysterious past, surely it would be far easier to use the evidence we have, already, ie lost coins dated by the mints which produced them. Why not accept that the 2,000 year old Roman coin found in Blenheim formed overwhelming evidence of the Roman occupation of New Zealand, or the Ming coin in found in Wellington was cast brass evidence of the Chinese occupation in the 14th cent. No carbon dating required, no disputes re laboratories, no politics as to who arrived first. The perfect answer, no need for many of us to have spent years of our lives searching for "The Truth". I BUT WISH.

An example of cherry picking, Science, or it's avoidance in New Zealand, is best indicated by the following; Gavin Menzies author of 1421, in his standard scientific approach, entered into correspondence with the Directors of Canterbury Museum and offered to pay for the carbon dating and DNA analysis of the 43 skeletons excavated

from Wairau Bar, which lay in the museum vaults. Wairau Bar is claimed to have been one of the very first Maori founding sites in New Zealand. We were aware that two distinct groups of unrelated inhumations had been observed by the original excavating archaeologists. (Duff 1956). This scientific approach to history afforded a unique opportunity to help understand New Zealand's mysterious past and ascertain the origin of the skeletons, possibly even identify if these were some of the first migrants to land on this site. Also it would have possibly helped to explain why two of the skeletons were, very unusually, located face down. (prone burials). For reasons known only to themselves, the Maori representatives refused to allow scientific testing to be carried out. The New Zealand Underwater Heritage Group also offered their skilled divers to survey the shores around Wairau Bar to search for any missing artefacts, but their offer was refused. Bob Parker, the Mayor of Christchurch, via a web site, requested openness in the project, but this request was ignored, even though public money had been used for the excavations.

Then hurriedly, the 43 skeletons ex the museum and plus, unbelievably another 10 skeletons, which mysteriously appeared, a total of 53, two with square jaws, not the standard Polynesian rocker jaws, were buried at Wairau Bar in 2009. One wonders where these spare skeletons emanated from, hardly items you stock. But you have to remember, in New Zealand, there are many skeletons in the cupboards. Otago University claim that they propose to carry out research into the Wairau Bar skeletons, but have not published what form their research will take, nor who will monitor their research and ensure that it is free from influence by interested parties. With the importance of this project, and the frequent advice such as we receive from archaeologists re the criticality of peer group monitoring, one would have thought that monitoring by their peer group, say scientists from Britain's Cambridge University, would have been advisable. It should not be forgotten that the Kurahaupo Trust was given NZ\$79.6 million on the basis that the ancestors of the Trust's members had been the first to occupy the area, including Wairau Bar. Certainly to date, Otago Universities staff's operations have not inspired confidence, from the refusal to allow bona fide researchers to visit the Wairau Bar excavations, to their private agreement with Canterbury Museum and Rangitane. This agreement gives the three parties complete control over intellectual property, as the acquisition of this information is paid for by New Zealand tax payers, it should be placed in the public domain and be available to all researchers. Professor White, formerly Deputy Vice Chancellor of Research at Otago University has stated that it will take five years before any information will be published. We await 2014 with interest. bpc

In Christchurch's Canterbury Museum, which thankfully survived the 2010 earthquakes, there are a few items ex Wairau Bar. Some especially intrigued us, the small circular items of several diameters, carved in bone, are listed as necklaces, they are akin to sections of a three or four screw threads, except the thread does not advance, with a hole through the centre. Any sailor would recognise these as mast rollers. A number of these would be strung on a rope passed around the mast and tied to the sail, this was repeated right up the mast. The rollers held the sail against the mast and ensured that they could be raised or lowered without friction. Some of the rollers had regular circumferential nicks,

akin to a milled edge on a coin, this ensured the rollers, rolled, not skidded up the mast. But the design of sails and mast on Maori canoes "did not" require mast rollers. It would appear that the Maori had not recognised their true purpose, so used them as necklaces. One wonders how these Chinese mast rollers came into the possession of the Maori on Wairau Bar, supposedly the first arrivals in an empty land.

Ross Wiseman in his "Pre Tasman Explorers" lists seven civilisations whom he considered visited New Zealand, prior to Tasman. In addition to the Maori, Moriori or Waitaha, the other visitors range from Phoenicians c666BC, Mauryans (ex India) 240BC, Greeks 180BC, Arabs 790AD, Tamils (Cholas) 1170AD, Portuguese 1522AD and Spaniards 1576AD. E.M and F.M Pearce in their interesting book *Oceanic Migration* are adamant that the origin of the first to occupy New Zealand were the Spice Islanders (Malluccan Archipelago) some 3,400 years ago. The claim is that these folk also populated the Pacific Islands, ie were the Lapita and eventually repopulated New Zealand.

As New Zealand does not have transparent democratic archaeological procedures in place, it is very difficult, if not impossible, to trace the origin of the earliest settlers in New Zealand. One of the objectives of this book is to primarily concentrate on a period of New Zealand's history for which there is excellent evidence of occupation, the period from c BC190 to c1450AD. In the many books published re who visited or occupied New Zealand, only in Gavin Menzies's books are there any mention of the Chinese, yet they left the most evidence in New Zealand of their civilising presence. A definition of civilisation is one that maintained law and order, constructed linked transportation highways, ie roads and canals, housed their population, introduced agriculture to feed them and installed water supplies and sewage disposal. Some of New Zealand's overseas visitors have left tantalising fragments of items as evidence of their brief visits and aroused much discussion, but only the Chinese visitor's operations satisfy the definition of civilisation. New Zealand's latest mystery is the finding of a skull of a European female, found on the bank of the Ruamahanga River. It can only be assumed that the lady was a survivor of a wrecked vessel. Fortuitously and unusually, the skull escaped being destroyed before it could be scientifically examined and subjected to both carbon and DNA testing. The skull was dated to be 296 years old, plus or minus 35 years before 1950, ie around 1716, not long after Abel Tasman visited New Zealand in 1642. DNA tests confirmed the skull was European of haplogroup H. The first previous records of females in New Zealand is of two convicts who escaped from Australia's New South Wales Penal Colony in 1806. (*Geographic Magazine* New Zealand 4/2009).

Other well publicised mysteries are The Colenso, (Tamil), ship's bell. This bell was noticed being used by a group of Maori as a cooking pot in the Whangarei District of the east coast of North Island. It was bought from the Maori by William Colenso, missionary, painter and botanist. To this Tamil (Chola) find we can add a small section of a carved stone plaque located at Akaroa, Banks Peninsula. Following world wide web circulation of this find to identify the script, it was finally agreed that it was Tamil (Chola). Other finds include, a Spanish helmet supposedly dredged from Wellington harbour, the

Spanish plaque on the island at the entrance to Doubtful Sound, Fiord Land, even the Takiroa Rock art picture of a ship, who some claim to be a Portuguese caravel, but having viewed the rock art, it is not caravel rigged, but sometimes such vessels changed to square rigged. The stone dove carved in rare Serpentine, found near the Waikato River, has generated the comment that as Serpentine is only available in Indonesia, or China, it must have originated in Indonesia. However Serpentine is found at Takaka River, accessed by the Asbestos Forest Road, NW Nelson. (Reeds Field guide to NZ Geology pg.38). Serpentine (Soapstone/ Steatite) is an ultra mafic, a soft igneous rock rich in magnesium and iron, sometimes associated with asbestos. The ancients used asbestos for cremation shrouds, asbestos has always been used for wicks on oil lamps. Another statue carved in Steatite, was a Manchu Chinese figure found in Mauku, Auckland in 1919.(Evening Post, Firstly reported in Journal of Science and Technology, issue 92 March 1919)

In one of my books "Northern Scotland's Roman Heritage" (Originally Three Roman Harbours on the Moray Coast, (NE Scotland) I mention that Serpentine is found at Portsoy (near Inverness). Serpentine carvings, locally called Portsoy Marble, are still made and sold. In the book I described the early Roman enclave I located in the area, complete with two towns, harbours and even an amphitheatre, the most northern in Britain and probably the best preserved provincial one ever located. We know that the Romans and Chinese traded from 170BC and evidence of the dedicated harbours of Chinese junks and their sailor's barracks has been located in Scotland. Well documented is that a Caesar Augustus 7BC Roman coin was located near Blenheim in New Zealand, by Picton based Archaeologist Reg Nichol and a Ming (15th Cent) Chinese coin in Wellington, by Dargaville based Mrs Banner. Whilst I am not proposing to use this circumstantial evidence to suggest that the Romans occupied New Zealand, (although as a surveyor with a known Roman interest I have been accused of such), but the presence in New Zealand of both 2,000 year old Roman coin and a 15th Cent Chinese coin in New Zealand does suggest the activities of a world wide trading operation. The total contrast between Africa and New Zealand's attitude to history was demonstrated by the reception accorded when a 15th cent Chinese reign Yongle Tongbao coin (Unique to envoys of the emperor.) was excavated recently in Mambrui, Kenya (BBC News 18th Oct 2011). The Chinese experts excavating the site immediately regarded this unique coin as evidence of global trading and confirmation of a visit by a Chinese government envoy.(Admiral Zheng He) with his fleet. In New Zealand, the 2,000 year old Roman coin was written off, as dropped by a tourist.

This book is not an account of Maori inter tribal feuding or movements, appropriation of land, or musket wars, there are many such books available which describe these events in detail. The prime objective is to detail the previously unknown period of New Zealand's history when New Zealand was a major Chinese base for both their Transocean trading route, from Africa to China and also for Pacific trading. Our research also highlighted how some Maori were transported to New Zealand, we will never know how many, to a land with a very much different climate than the ones they had been born to. The research

confirms that the Polynesian Maori are but recent immigrants within the long history of the human occupation of New Zealand, so their presence covers only a short period of the country's total occupancy. The Maori, a stone age group, with many of the tribes cannibals, as many wrecked sailors found to their cost, appeared to have lived in isolation after their arrival, apparently not having the expertise to return to their original homelands in the Polynesian Islands. To date, no archaeological evidence has been found in the Polynesian Islands which can be directly related to New Zealand, only some which possibly links Polynesia to South America, confirmation of one aspect of Thor Heyerdahl's research. The lack of evidence of artefacts attributable to New Zealand in Polynesia, questions the viability of culture historians' claims of multi return canoe journeys between New Zealand and Polynesia. Recently Professor Lisa Matsoo-Smith came upon some interesting evidence in a South American museum, both of chicken bones with a similar DNA to Pacific chickens and some human bones which looked as if they may be Polynesian. When one considers the wealth of information left by the early Spaniards regarding the sea going qualities of the South American cargo carrying sailing rafts, one would expect to find Polynesian artefacts in South America and visa versa. However Professor Matisoo-Smith's research is invariably based on the assumption that all movement in the Pacific was by Polynesians travelling by canoe, and China, the greatest maritime power in the world, pre mid 15th cent, was unaware of the Pacific and their junks never traded on its waters. A somewhat quaint assumption.

The following incident highlights this extent of the Maori isolationism and certainly by the 19th century, only 150 years after the Maori arrived on Banks Peninsula, an inability or unwillingness, to navigate offshore. In island Britain, in thousands of years we have never lost our expertise in boat building, or offshore seamanship, so one has to question, did the New Zealand Maori ever have this expertise to lose?

The Chatham Islands are a group of small islands 800km (500mile) east of New Zealand's South Island, these islands were populated by a peaceful tribe called the Moriori, whose origins appear unknown, although some claim they originated from the Spice Islands. Only the founding names of their canoes have survived in oral history, these are Rangi Houa, Rangi Mata and Rangi Oropuke, Rangi means heaven or sky. Sadly in 1835 a Maori tribe, having heard of the peaceful Moriori, possibly via crew men of European island traders or whalers, enlisted European ship masters to ferry them from New Zealand to the Chathams. On arrival, the Maori proceeded to massacre the majority of the island population, some of the remaining females being retained as sex slaves. It is noteworthy that the Maori, who the culture historians widely praise for their boat building, seamanship and navigational expertise, could not manage to provide the famed huge sailing canoes, crews and skilled navigators to transport themselves the relatively short distance to the Chathams. The culture historians tell us that the Maori frequently voyaged the 2,200 mile journey from New Zealand to and from their Polynesian homelands, combining it with the odd trip to South America and back to collect potatoes. In doing so,

totally ignored the westerly currents and winds and the known inability of European ships combined with "modern" replica raft and junk attempts to cross the Pacific, west to east.

There is adequate evidence to indicate that once in New Zealand the Maori became isolated, and were unaware of developments in the Pacific. Eg such as outrigger canoes, pottery, improved fishing hooks, weaving, cloth manufacture, only plaiting, fishing net design and certainly were totally unaware of metal working, nor most oddly, of the use of bows and arrows for both warfare or hunting, yet used everywhere else in the world in some form or other, ie cross bows, long bows, or composite bone bows.

Thor Heyerdahl's *Early Man and the Ocean*. Thor Heyerdahl, probably one of the most experienced Pacific researchers ever and one of the most maligned, goes into great detail regarding the evolutionary process in the Pacific. This isolation meant that the New Zealand Maori made no contribution to the trading operations within the Pacific sphere, progress passed them by. In an attempt to prove that New Zealand was first populated by Polynesians using canoes, one so called replica construction of a twin hulled canoe was constructed. The catamaran was named *Hokule'a*, (18.7m (61'-5")), it was not a dugout, but was constructed from plywood coated with fibreglass to strengthen it and prevent it being consumed by marine borers, these are capable of destroying a wooden hull in a month. The construction of this vessel ensured that it was really a modern catamaran, sails and all. The loading capacity of the *Hokule'a* was stated to be 4.99 tonne, this was achieved by constructing what was in fact the equal to a modern planked vessel. The *Hokule'a* catamaran sailed from New Zealand to Raratonga, 2,000 miles in twenty two days, (not known if sea miles are used by the crew) but with it's limited load carrying capacity, was only capable of carrying an eleven man crew. Hardly sufficient to found a colony.

In Hawaii, another replica called *Hawai'iloa* was constructed, this started as a real dug out catamaran, but it had to have another 3 tonne of wood cut out of the logs after it's first sea trials, in order to achieve a safe freeboard. The load carrying capacity of this vessel is not available. The *Hawai'iloa* a 17.5m (57'-0") catamaran was constructed from two 400 year old trees, each originally starting at 61m (200'-0"). No trees of this size existed in any of the Pacific Islands, so had to be obtained from Alaska. This suggests that it was not possible to construct longer dug outs at any time, as trees over 61m are most unusual. Due to water entry to the open hulls under sail conditions creating instability, most of the hulls open spaces had to be covered in, so were not available for paddlers. The sails for this catamaran were manufactured from modern material. The catamaran crew was around 12-14. Following one early capsize and the inability to right it, coupled sadly with the loss of one crew member, all subsequent voyages were accompanied by a safety vessel. The log hulls were coated with fibre glass to prevent borer damage and decrease friction. Neither of the crew carrying capacities of these so called replica canoes can be associated with the claims made for the long distance carriage of complete tribes totalling up to 150 and their animals. It is a reflection on the ocean going characteristics of catamarans, whilst they are good load carriers, they are not used for the extreme form of sailing, racing around the world. Catamarans have several inherent problems, as once they overturn they cannot be righted, whilst normal single

hulls with weighted keels can self right, also the connections between the two hulls is a source of failure, plus two hulls, equals twice the friction of one. In 2012 the French designed a single hulled yacht with double outriggers, this amazing vessel circumvented the world in the fastest time ever for a sailing vessel, the highest speed recorded was around 45 knots. The design of using a mono hull with double outriggers originated from Indonesia, strangely, despite some claims that the Maori originated in Indonesia, they did not appear to use the design in New Zealand. Recently in India, a paper highlighted the serious problems experienced with teredo worms damaging the wooden hulls of vessels and even the fishermen's dug outs which are pulled out of the water on a daily basis, even when pulled out of the water on a daily basis. Yet the subject of borers is not mentioned when discussing Pacific Ocean voyaging of wooden canoes, strange. Yet borers destroyed many European vessels and also one known replica junk.

David Lewis in his interesting book "We the Navigators" which recorded the early navigational methods used by Pacific canoeists, also recorded that whilst the canoes were gathering for the 1992 pageant of voyaging canoes, the double hulled canoe Atiu overturned and had to be towed to land to upright it. Early European sailors reported that the Pacific single hull dug outs had double ended asymmetric hulls, ie one side more curved than the other, to compensate for the drag of the single outrigger. These dug outs always sailed their outrigger up wind, as the dug out could sail either way, shunting.

It is interesting to note that the Chinese excavated a planked catamaran in Shandong Province in 1978, from the Sui Period 581AD – 618AD, it was estimated to be capable of carrying 23 tonnes. (Gang Deng. Chinese Maritime Activities etc Pg 78). The suggestion is that such vessels being good load carriers and as they were more manoeuvrable than rafts and easier to beach, were used for cargo transfers from shore to larger vessels anchored in deeper water. As the excavation in Shandong Province, China proved, one cannot automatically assume that all catamarans in the Pacific were of Polynesian origin. During our surveys at Moeraki, alongside a Chinese harbour we located by magnetic anomaly scan, a sand covered craft which by the dimensions 28m x 14m (91' x 45') had to be a catamaran, or raft, presumably used to service large junks anchored inside the bay.

Unlike the Indonesians or Chinese, the Polynesians did not work metals, so used stone adzes. I commenced my working life in the late 1940's in a ship repair yard working alongside shipwrights using steel adzes, prior to several years at sea. I was always fascinated by the skills of shipwrights in shaping timber, so would have loved to see ancient shipwrights using stone adzes. From the age of 12 to 16, I trained under the wartime Admiralty Y scheme for Sea Scouts, designed to prepare us for life at sea, no one knew how long the World War two would last, so future cannon fodder was in great demand. We were taught to handle small boats with and without sails, including navy whalers from HMS Irwell, a dock based training ship, in the local docks and on the River Mersey and canoes on the River Dee. We were also fortunate to have an expert rigger from Cammel Lairds shipyard teach us to splice and use square and diagonal lashings. Later I also spent a month at the Outward Bound Sea School and even sailed as a deck hand for a short voyage off Wales on an 80 tonne ketch with Commander Alan Villiers of the square rig sailing ship Conrad fame. The rope work I learnt makes one appreciate the

problems involved with lashing a stone adze to a working handle, when every heavy blow tends to loosen the lashing and also lashing two canoes together. It was frequently the failure of lashings which contributed to the failure of the rafting voyages of exploration.

As the Maori did not possess a written language, their only history was an oral one. A Chinese proverb sums up oral history, "Even Pale Ink is better than Memory". The only section of their oral history which we have been able to verify, is that of Maori being brought to New Zealand in "Bird Boats" and living in "Stone Houses". One Maori historian wrote to us and said that his family history claimed that his ancestor came to New Zealand in a Bird Boat, not as the others who came later in canoes, and then on arrival he lived in a stone house, not in a wooden house. He asked us what a Bird Boat was. We explained that Bird Boat were the names given to Chinese planked junks, due to the battened sails looking like bird's wings, the stone houses are the Chinese barracks, these have nine rooms, each c 4m sq, eight are unpaved and one paved, we have found their foundations all over New Zealand. Around the world, Phoenician, Roman, Chinese, Spanish, Portuguese, Dutch, Egyptian and British ship wrecks have been located and examined, including 1,000 year old dug out canoes. The oldest excavated planked vessel found in Britain, was on the Humber estuary, the craft was 4,000 year old and 16m long (52ft). The oldest log boat I have located (not excavated) was on the bed of the tidal River Eden, Cumbria, exposed by a massive flood, it was 10m long (32ft), the timber carbon dated to 7,000 years old. One of the oldest ships recently located 400 mile south of Singapore, was a planked Arab Dhow which had been trading to China in 900AD. Freshly minted Chinese coinage was in the cargo, dating it very accurately. Blue and White porcelain was also found on this Dhow, previously such porcelain was thought not to be produced before 1,400AD and is often used to date a site it was located on, ie it could not be pre 1400AD. So now we have to revise such dates sites to 500 years previously. Back to Maori canoes. To date, nobody has been able to produce one of the Maori fabled seven founding dug out ocean canoes. Such a canoe find would enable both carbon dating and the origin of the timber to be evaluated. We await such a find with interest. Interestingly D.Simmonds in his "The Great New Zealand Myth" comprehensively demolishes the myth of the founding canoes and claims that the tales refer to isolated internal, not contemporaneous ocean migrations.

Two of the fabled sites of the landing of the founding canoes have been surveyed. In the South Island at Shag Point, Katiki Beach, 10km South of Moeraki, there is a notice erected by the Department of Conservation (DOC), this states that this is the site of the 15th cent wreck of one of the founding canoes, Araiteutu, the cargoes, including gourds, turned into the Moeraki balls, in varying sizes. G.B.Stevenson's fascinating book "Maori and Pakeha in North Otago", tells us that in Maori oral folklore, the canoe Araiteutu was reputed to have brought the kumaru (sweet potato) to New Zealand from Hawaiki (homeland) probably Tahiti. In c 1350 the canoe was wrecked on Shag Point, Near Moeraki although the crew and passengers numbering 150 survived. The names of the survivors being given to many of the mountains, hills and rivers in South Island.

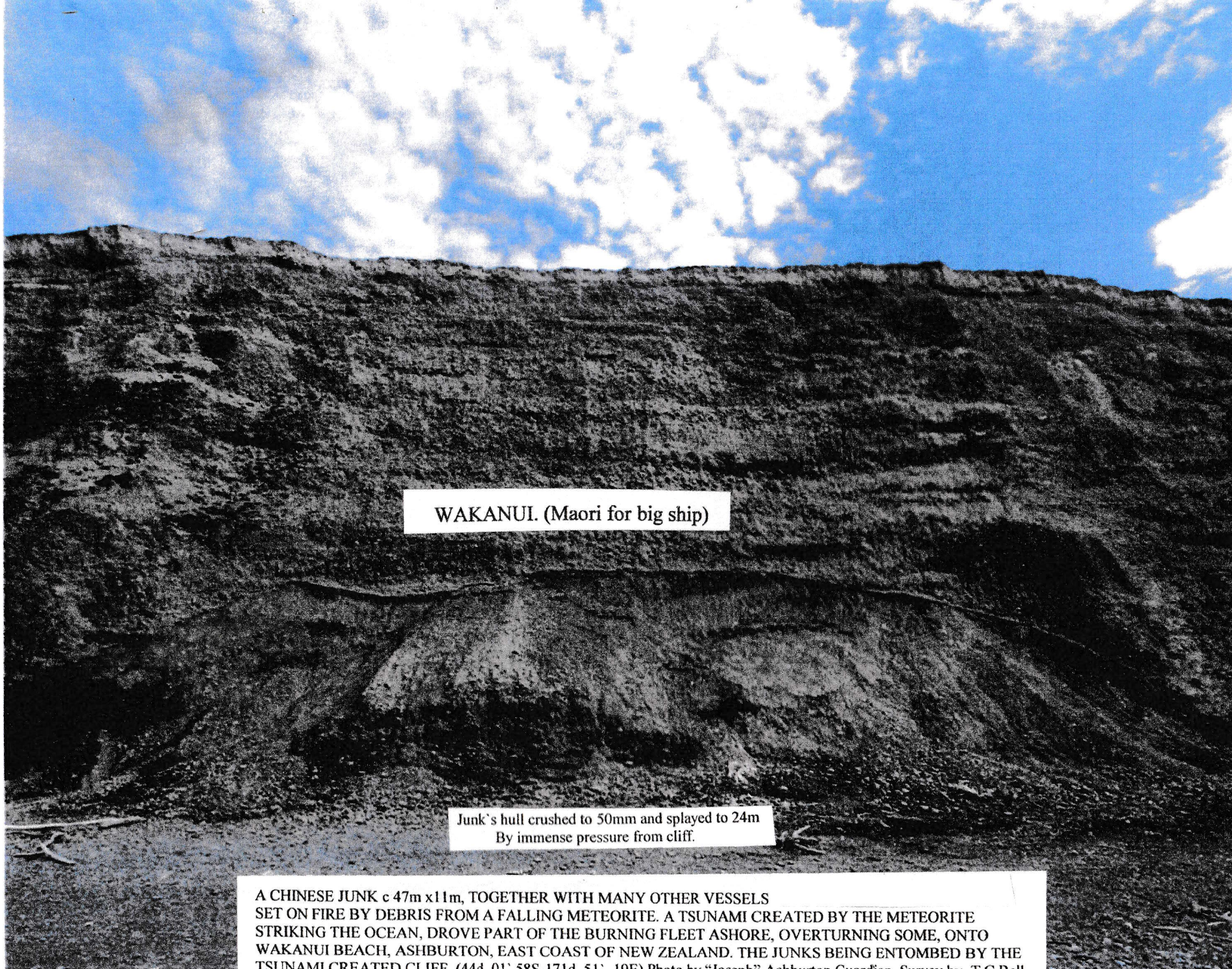
A coal mine also exists on Shag Point and was worked in modern times, but the evidence is that it was firstly worked by the Chinese, their canal of a unique design is still visible, within it are the remains of a sampan. A scan was run along the Katiki foreshore at low tide. At the section of foreshore which turns westwards to Shag Point, the scan located two sand covered wrecks, each c 100m x 50m. The most southerly 170d,48',33E 45d,27',22S was broached to, side ways on to the beach, it had two anchors out. The northern wreck was stern on to the beach, 170d,48',32E – 45d,27',18S, both bow anchors where located, unusually, two stern anchors had also been used to secure the junk, presumably after grounding it had been thought there was hope of re-floating it. The size of the vessels and their unique design of anchors confirmed that they were Chinese junks. Recently a similar anchor was recovered from an Indian harbour. These anchors consisted of two blocks of stone, presumably of granite, each block shaped to provide double flukes, c 3m apart, the flukes were linked by c long shaft, the anchor cables were secured to the centre of the shafts. Thus, which ever way the anchor dropped two flukes came into contact with the sea bed. This design of anchor with it's two flukes biting into the sea bed at the same time, was far superior to the European Admiralty type anchor, which only ever had one fluke engaged in the sea bed. The "modern" double fluke design, as the original Chinese anchor, was finally used by European vessels when steam ships came into use and can be seen on every ship, the only variation is that they have two tilting flukes which move left or right by c 30 degrees to engage the sea bed, which ever way they hit it, whilst the Chinese anchor had four fixed flukes. Usually all that divers find is one stone block with two well worn rounded flukes, the key to the original design being the square hole at the centre of the block which originally held the anchor stock, presumably formed from hard wood. The c 47m x 11m junks we have traced had anchors of similar design, but smaller. Another identifier of Chinese junks.

Adjacent to the Shag Point site of the wrecked junks and embedded into the adjacent rocks, are some of the solid round stone, c 300mm diameter, these are not concretions, similar balls can be seen at Moeraki alongside the wrecked junk in the cliffs, these large balls, cut out from solid rock, appear to have been used as mortar bombs and fired from a short bell mouthed mortar at nearby ships, they would go right through the deck and hull of a nearby vessel. Two stone cannon balls were also found at this site over 30 years previously by a local resident, who made them available to me to examine, they are 200mm diameter and weigh 10kg each. Pre the 15th cent stone cannon balls were in general use, iron was too expensive to fire at others. I also photographed one stone cannon ball of a similar size which had fallen out of the Moeraki Junk. Presumably the two junks driven ashore or beached at Shag Point had struck the visible reefs, and were either driven ashore or deliberately beached.. Oral tradition has it that the crew and the Maori passengers managed to struggle ashore. The evidence is that the damage to the junks was too great to refloat them. The foundations of a small compound with a standard Chinese barracks was noted on the shores edge, the construction of the modern road appeared to have destroyed the rest of the barracks, presumably the home of the crew attempting to recover the huge junk.. Over the years by oral history the large junk (s) became a large canoe. But, as the replica ocean voyaging canoes have shown, especially the real dug out, the Hawai'iloa, crews of c12 are the norm. BUT, oral history tells us that

the Araiteutu canoe carried 150 people, plus stores, and water for a 2,000 mile trip, only a planked Junk could carry so many folk and cargo. The claim that this vessel introduced the Kumaru to New Zealand is very feasible, only that it was a junk, not a canoe. The Chinese as expert horticulturists would have cultivated these plants and any others they introduced specifically for use in the New Zealand climate. Driving through the same area one day I noticed a field of superb cabbages growing, I asked a local whose they were, he answered a local Chinese who grows them for the local shops. The horticultural expertise still lives on. As will be described in a later paragraph. Moeraki best known for the large boulders, was also the site of probably the largest Chinese harbour in New Zealand, presumably that is where the ill fated Araiteutu and its sister junk named Tahi a Maru (Maru is Japanese for ship) where headed until they hit the nearby reef. The mouth of the Shag River has been the site of several excavations, one report titled Shag River Mouth, The archaeology of an early Southern Maori Village", edited by Atholl Anderson and others and published by ANH Publications Australian National University was published in 1996. On page 16, chapter 2, Bruce McFadgen recorded that he had found a piece of Blue and White pottery on a layer of shells at about 600mm deep. Based on the fact that Blue and White pottery had to be ex an European immigrant, the shore line was dated as c 150 years old. The thought that it represented a Chinese site did not enter into the equation. As we have shown finding the 900 year old Arab Dhow with Blue and White pottery potentially puts back the dating of the find site to c1,200 AD, pre the Government accepted date of the Maori arrival. One cannot assume such Blue and White pottery finds are a result of European occupation. As mentioned in a later chapter, this assumption was also made in Flea Bay, Banks Peninsula, the Blue and White pottery being attributed to a wealthy Scottish immigrant who first farmed there. History tells us that the wealthy Scots stayed at home, only the poor or desperate emigrated.

The next famed founding canoe site visited was Maketu, south of Tauranga, on the East Coast of North Island. Here there is a large stone monument to the Te Arawa Canoe which landed in 1340AD. A canon and a plaque also form a memorial to a wrecked European vessel. A scan was run along the adjacent beach, again the sand covered outline of a wrecked junk c 100m x 50m was located, also one of the distinctive anchors, further confirmation of the junk's identity and size. A further check on the Maketu site was made by hiring an expert marine archaeologist Tim Akers, who specialised in enhancing commercial satellite films. This method can locate foundations or vessels under metres of earth or sand. A recent major use of this system has been the mapping of the entire Egyptian desert, some of the pyramid sites located being excavated for spot checks. The Egyptian director of archaeology said that the survey had saved years of expensive and time consuming excavations and greatly enhanced their knowledge of the number of archaeological sites in Egypt. Our satellite scans of the beach alongside the Maketu monument also located the outline of the wrecked junk. Only the Chinese, Japanese and Korean constructed junks of those dimensions and anchors of that unique design. Further proof that over the years, oral history had changed junks to large canoes, so appealing to the ears of the listener. Thus we have to update the ancient Chinese proverb to, "Photography and pale ink better then oral tradition", Memory.

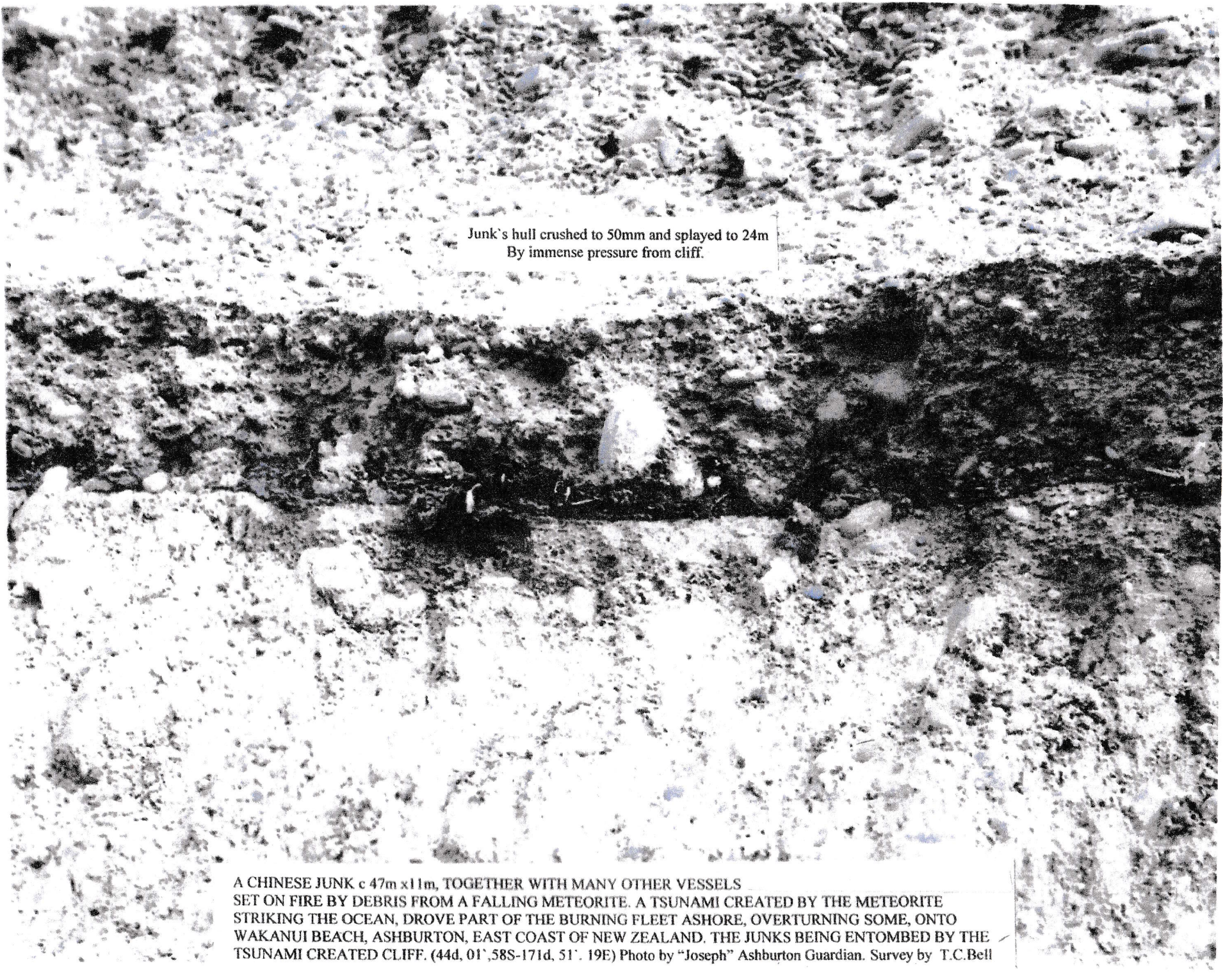
Traditionally immigrants to prove that they were among the first arrivals, have associated themselves with the names of the vessel they travelled in, The Pilgrim Fathers to America, on the Mayflower and the first post war immigrants from the West Indies to Britain on the Empire Windrush. In New Zealand the practice appeared to have been for the first Maori to associate themselves with the names of the Chinese or Japanese junks they arrived on. This is why names of the so called founding canoes are interesting. For example "Tainui", Tainan is the chief town of Taiwan (Once called Formosa). (DNA links some Maori to East Asia via Taiwan. via the female line). "Takitumu", An ancient fable of a Bamboo Gatherer, mu is wood in Chinese / Japanese. This canoe was reputed to have been wrecked at the mouth of the Waiau River Southland c 1350. "Tokomaru", Maru is Japanese for ship and is still used for Japanese ships. Possibly the ship of Toku. Interestingly, there is a reference in the History of Louisiana, (Now USA) by Le Page du Pratz, of a Chinese Junk loading slaves in 1720AD, their destination is not known. It is fascinating to note that even at that late date the Chinese were still in the slave / worker transportation business. Sadly there is no record of the Junk's destination.



WAKANUI. (Maori for big ship)

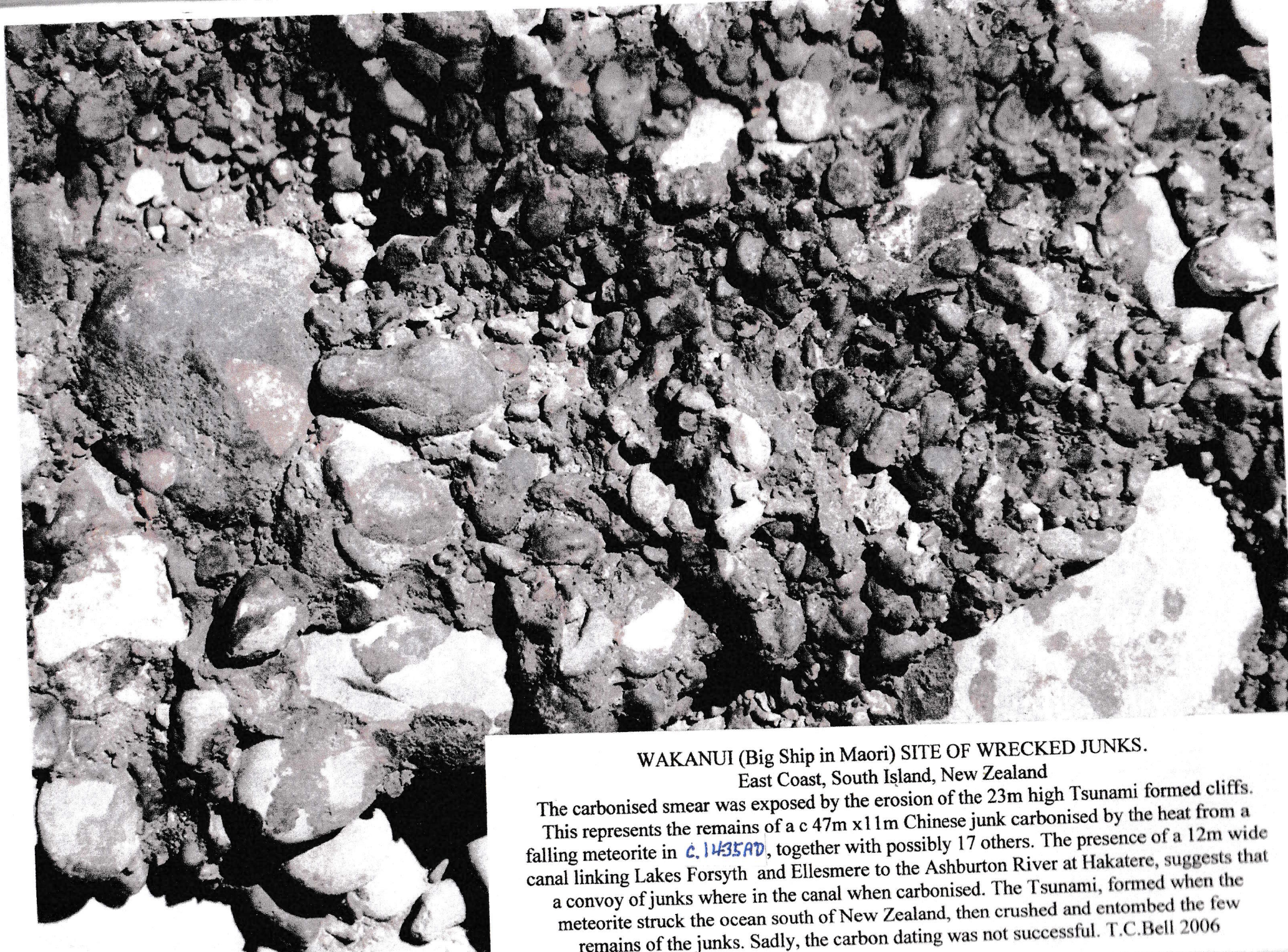
Junk's hull crushed to 50mm and splayed to 24m
By immense pressure from cliff.

A CHINESE JUNK c 47m x 11m, TOGETHER WITH MANY OTHER VESSELS
SET ON FIRE BY DEBRIS FROM A FALLING METEORITE. A TSUNAMI CREATED BY THE METEORITE
STRIKING THE OCEAN, DROVE PART OF THE BURNING FLEET ASHORE, OVERTURNING SOME, ONTO
WAKANUI BEACH, ASHBURTON, EAST COAST OF NEW ZEALAND. THE JUNKS BEING ENTOMBED BY THE
TSUNAMI CREATED CLIFF. (44d, 01', 58S-171d, 51'. 19E) Photo by "Joseph" Ashburton Guardian. Survey by T.C.Bell



Junk's hull crushed to 50mm and splayed to 24m
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A CHINESE JUNK c 47m x 11m, TOGETHER WITH MANY OTHER VESSELS
SET ON FIRE BY DEBRIS FROM A FALLING METEORITE. A TSUNAMI CREATED BY THE METEORITE
STRIKING THE OCEAN, DROVE PART OF THE BURNING FLEET ASHORE, OVERTURNING SOME, ONTO
WAKANUI BEACH, ASHBURTON, EAST COAST OF NEW ZEALAND. THE JUNKS BEING ENTOMBED BY THE
TSUNAMI CREATED CLIFF. (44d, 01', 58S-171d, 51'. 19E) Photo by "Joseph" Ashburton Guardian. Survey by T.C.Bell



WAKANUI (Big Ship in Maori) SITE OF WRECKED JUNKS.

East Coast, South Island, New Zealand

The carbonised smear was exposed by the erosion of the 23m high Tsunami formed cliffs. This represents the remains of a c 47m x 11m Chinese junk carbonised by the heat from a falling meteorite in [C.1435AD](#), together with possibly 17 others. The presence of a 12m wide canal linking Lakes Forsyth and Ellesmere to the Ashburton River at Hakatere, suggests that a convoy of junks were in the canal when carbonised. The Tsunami, formed when the meteorite struck the ocean south of New Zealand, then crushed and entombed the few remains of the junks. Sadly, the carbon dating was not successful. T.C.Bell 2006



WAKANUI BEACH, ASHBURTON, SOUTH ISLAND, NEW ZEALAND.
 (44d, 01', 58S. 171d, 51', 19E) T.C.Bell . Upper photo View North. Lower. View South.
 THE TWO CLIFFS ORIGINALLY JOINED, BEING FORMED BY THE TSUNAMI (1420s)
 THE BLOCKED RIVERS THEN FORMED A LAKE BEHIND THE CLIFFS & THE BUILT UP
 PRESSURE FINALLY BURST THE CLIFFS AWAY FOR c 400m ..
 THE CLIFFS WERE FORMED OVER THE LINE OF A CHINESE CANAL, PROVING BOTH THE
 PRE 1420s CONSTRUCTION DATE OF THE CANAL & THE OCCUPATION OF SOUTH ISLAND.



CHAPTER SEVEN

FOLLOWING THE CHINESE TRAIL IN SOUTH ISLAND

The Waitaha People. (?)

Governor's Bay, Christchurch and around Bank's Peninsula.

Our belief is that the Waitaha arrived from East Asia, possibly some via Taiwan in consequence of Emperor Wu Di's expansionist programme (141-87BC). It is also possible that when the Waitaha arrived, New Zealand was already populated. The evidence for this is sparse, because it appears to be deliberately suppressed. We know that c30 years ago, after torrential rain fall, substantial land slip of volcanic ash deposited by the 186 AD volcanic explosion occurred near the western shores of Lake Taupo. The land slip exposed a cave within which skeletons of humans were found. Proof that New Zealand was occupied pre the arrival of the Maori. Needless to say no accounts of these finds are in the public domain. In between 1950 and 1970, Russell Price, a New Zealand amateur archaeologist (who in my own experience, with bulldozer drivers, find the most), located below volcanic ash band layering at Poukawa, evidence of man's activities pre the Waimiha volcanic explosion of 1,320BC. The evidence was both the presence of tools and Moa bones which had been cut open to extract marrow. The suggested date was around 2,500BC. Needless to say these finds "under the known and dated" volcanic ash levels, were denied by the Establishment. See John Trasker's Chain of Evidence pg 138-155. Yet further proof of the long term occupation of New Zealand, pre both the Maori and the Chinese.

In 1965 the Tameana and Hineana burial caves at Port Waikato were excavated, there are reports of large skeletons some as tall as seven foot tall, some with red, others with blond hair. These skeletons had Caucasian, not Maori features. Some folk in New Zealand attribute these Caucasian as evidence of an early Scottish migration. However, it is interesting that in the Gobi desert, part of China, that explorer Aurel Stein in the 1930s and more recently John Hare in his book *Mysteries of the Gobi* (pg 173-183) and Elizabeth Barber in her book *"The Mummies of Urumchi"*, all highlight the existence of ancient mummies from 2,000BC to 1,000BC of entirely Caucasian origin, some around 6'-6" giants in their day, some with red and some with blond hair, then by 300BC, the mummies showed a dilution with Chinese and other nationalities. Elizabeth Barber an authority on ancient weaving, traced the design of the mummy's garments back to Austria, evidence of an early migration. It would appear that the origin of the tall folk of Caucasian appearance with red or blond hair located by excavation in Pacific islands and in New Zealand, was via China, not Scotland, as some claim, but their ancestors were certainly of Celtic origin many, many, years ago. Interestingly Elizabeth Barber comments on the excavations at Qizilchoqa in the Gobi, as having generated woollen plaid of similar weight, feel and thickness as Scottish tartan. As these Gobi folk had a reputation as metalworkers at one time, possibly that is why some sailed with the Chinese

fleets and settled in New Zealand, hence the giant's skeletons, yet further proof of Chinese occupancy of New Zealand, pre Maori.

As mentioned in the introduction, our first realisation of the presence of none Maori fortifications was locating at Governor's Bay, a raised platform with a distinctive gateway, the site had been recently bulldozed by the Department of Conservation. (?). I had heard of this policy in previous discussions with New Zealanders, this was my first experience of an ongoing policy of obliterating any evidence of Pre Maori occupation. Fortuitously for our research, the perpetrators did not have sufficient expertise to also recognise the scrub covered small moated Chinese fort platform, otherwise presumably that would have been bulldozed as well. The fort platform was defended by double rammed earth dykes with cores of mortared stone. In the centre of this fort we located the foundations of a standard Chinese barracks. Carbon dating on the site, carried out by New Zealand's world class laboratories, ran from c190BC via c800AD to 1,600AD. These dates suggest that the site had a long period of occupancy and by the strength of the fortifications indicate that hostiles had arrived in the area, hence the construction of the fort in addition to the adjacent walled barracks

A survey over the shore, adjacent to the small fort, located the foundations of three standard Chinese finger harbours. These were designed for 47m x 11m junks, one wreck was located in one of the harbour bays, complete with the distinctive double clawed anchors out. A 2.7m trial hole in the bay over the harbour site, located iron which carbon dated to c 190BC. For a stratification check, an adjacent shell was carbon dated this gave a reading of 6,186 plus, or minus 45BP, indicating that the iron was found on an ancient sandy shore, well pre the first European visits. Often folk trying to knock the dates of metallic finds, state the old date is due to the smelter operator or smith, using coal, not charcoal, thus the laboratory results are contaminated by the presence of ancient coal. On one site, the iron we located was dated to 20,000 years old, it was either Martians or the smith had used coal, we settled for the smith using coal, not charcoal.

The Governor's Bay fort's position and its design were explained to an archaeologist of the Department of Conservation, he confirmed that no records existed of this site and it was not Maori. NZ TV filmed the site in 2005, together with several of our other survey sites and made it available to the general public on the peak time Holmes show.

The Chinese had evidently established the Governor's Bay base to serve the exploitation of iron ore from the Port Hills, which overlook the bay. Assay of the local rocks showed iron ore contents between 7.68% to 8.6%. Evidence of man's shaping of Port Hills can be best viewed from the water, including the channels (canals) fitted with ladder locks, these canals carried the excavated spoil down to the smelters. Noteworthy is the carved face of Britannia Rock overlooking the whole area, this formed a harbour marker for vessels approaching Governor's Bay. The presence of several of these ancient carved face harbour marker around the shores of New Zealand are well documented eg at Whangape, Manganui Bluff, Kaipara and Hokianga (Also named after the Chinese

province) are yet further proof of ancient pre Maori and European maritime operations. Tasman's log also records the carved head of a lion marking the entrance to an Australian harbour, indicative that this was a standard form of harbour identification.

Whilst walking over Christchurch's Port Hills near the Pass of the Kiwi, we noticed an unusually flat area, obviously created by man, some free stone existed. Running a scan over the site located the foundations of a complete turreted double walled fort of Chinese design c100m x 80m, inside the walls were the foundations of 10 standard Chinese barracks, capable of holding c 640 men. The fort would have controlled the Pass of the Kiwi from Christchurch, to what is now Governor's Bay. Nowadays there is a tunnel to access Port Lyttleton, the port for Christchurch. The large quantity of cut stone lying below the rim of the flat area above the pass, suggested that it originally formed an observatory, the situation was ideal. A small hill, overlooks the fort site, around the sides of the hill I noted a considerable quantity of cut stone which had originally formed a defensive wall around the hill, obviously once the site of a superior dwelling (172d,38',38.2 – 43d,35',33.6). To my total surprise I realised this site was a mirror image of a site we had located on Kelly's Mountain, Cape Dauphin, Cape Breton Island, Nova Scotia. I even knew exactly where the site's toilet would be. The Kelly's Mountain site was probably constructed by the Chinese to form their Atlantic Base when the NW and NE Passages were ice free. This very remote site on Cape Dauphin (Described in a previous chapter) covered roughly 80sq km, it was defended by rammed earth walls (dykes), and external ditches and had a small village and a religious site at the core. Possibly it's mountain top situation also housed an observatory.

On the Port Hill's site, adjacent to the small walled hill, the senior official's residence, I located the foundations of walled area c 50m sq, inside where the foundations of a an open bath c 30m x 20m. This form of building constructed with an outer rectangle and an inner one, in Europe is called a Romano-Celtic Temple, at the centre is always an immersion bath, usually 2m x 0.75m. The bath was fed via an aqueduct from a nearby spring, the immersion bath as usual, overflowed to an adjacent toilet block. Firstly one cleansed oneself physically, then in the temple, spiritually. Again, to my surprise, we found several bath houses of this design, but smaller, in the three Chinese cities we located in New Zealand. An identical bath house was also located in the centre of the religious site on Cape Dauphin, Nova Scotia. Such identical temples are found on every Roman site in Britain, but without the external boiler house..

On our list of, must see, was Christchurch's lovely Botanical Gardens. It was fascinating to note that children's play area and the gardens were constructed within an odd loop in the river. As the Chinese had constructed a fort and city within the loop and has used the river to form a transportation highway, it is highly likely that the river had been diverted to form this defensive loop. The fort occupied an area by the children's play area, it covered c150m x 100m (172d,37'06- 43d,31'39). A 50m long section c 4m high of the fort's rammed earth walls with a central stone core, was still standing in 2003 when we visited the site to enable NZTV to film it. The garrison were housed in nine roomed barracks, their foundations are still in place. The water garden was formed from the site's original puddled clay lined harbour, this supplied the city and fort. From the water garden,

pleasant riverside walk past the rich variety of trees leads to the museum. Flanking this to a walk from the steps near the toilet block, opposite the band stand and a magnificent Eucalyptus, are the c 400m long ramparts of the Chinese city, now incorporated into a raised bed for bushes. One of the city's gateways is alongside the steps (172d,37',17 – 43d,31',52.). The city's inhabitants were housed in standard Chinese designed buildings, each c 30m x 10m, with three rooms, one paved, two unpaved, their foundations are still in place. Scanning along the side of the city's wall located the multi drainage aqueducts discharging into the River Avon, their unique design confirms the constructor's identification. ie they are totally different from modern circular drains. The design of Chinese and Roman aqueducts is akin to viewing a Mars, or Snickers bar, sideways with a rectangular hole though it, this is the duct. On each side of the duct are backings of small stones. When a duct is scanned the stiffened sides present a solid anomaly, but the duct, a lesser anomaly, so making the identification of aqueducts very simple. An average duct could be 1.5m wide with a 200mm wide duct. Some aqueducts have been located constructed in puddled clay, the ducts formed in corbelled stonework bedded in the puddled clay, this both gave them flexibility and water proofed them.

It would appear that Christchurch was the Chinese capital of South Island. East of Christchurch is the lovely Banks Peninsula. This peninsula was named after Joseph Banks, the naturalist who with his team, accompanied Captain Cook on his first voyage and financed the scientific studies. The peninsula is shaped somewhat akin to a doughnut, the hole is the blown out core (caldera) of a volcano. The caldera is now the harbour with a single entrance. The rest of the doughnut is the rocky rim, with many lovely bays. On the first of many visits to the area we took advantage of a locally arranged four day, back pack tour (BP) around some of the bays, staying at old farmhouses, where we self cooked. This superb, highly recommended tour enabled us to visit sites not normally accessible.

We started from Akaroa, a fascinating small town with a French background, which we will return to later. The first evening we stayed at Onuku Homestead, high above Akaroa. So were not unsurprised to see that the two wooden buildings had been constructed on a man made platform, with a visible raised gateway access. A scan over the platform located the foundations of an external defensive wall c 40m x 20m and three internal barrack blocks, yet further confirmation that our first findings at Governor's Bay were not just an isolated discovery. The opportunity to visit an enterprising local who provided evening meals was accepted with alacrity, a good opportunity to meet our fellow walkers, three Israeli girls who had just finished their military training, five New Zealanders and we two Brits. Next morning in perfect weather, which we enjoyed for the complete walk, we set out for Flea Bay (No fleas were encountered, only one lonely penguin). Pre-warned by our finds at Onuka Homestead, we ran a continuous scan over the volcanic rim. Magnetic anomaly scans can detect the presence of anomalies in the country rock, ie the presence of metallic ores. This was the method used by the ancients to locate ore, Georgius Agricola's *De Re Metallica*, a German Miner's handbook published in 1556, devotes a complete chapter to the methods used to locate metallic ores. German miners in Europe were as to Chinese Miners elsewhere, the best. This is why Queen Elizabeth First

in 1569 imported German miners to work Britain's metallic ore mines. One of my ancestors was also a German miner who changed his name from Schmitt to Smith.

We noted substantial pockets of ore impregnated rock whilst walking over the volcanic hills to Flea Bay. Flea Bay is divided by a central spur into two sections, each held a host of evidence of ancient man, including man made raised platforms and a puddled clay lined inland harbour. Noting large depressions one on either side of the central spur we ran magnetic anomaly scans, both proved to be harbours, each contained the remains of a c47m x 11m wreck, one with the anchors still out. Clay pipes and Blue and White pottery had been found on this site, all attributed to early settlers. I have difficulty in equating Blue and White Chinese pottery with early impecunious Scottish immigrant shepherds, more likely enamel mugs, or thick brown pottery. Experts have always claimed that Blue and White pottery was not produced until the 14th cent.(Tang). Recently the wreck of a 9th cent Arab Dhow was located 400 mile south of Singapore at Belitung. Cargo included recently minted Chinese coins which fixed the date of the wreck, and also included Blue and White pottery, this put back the first production date by 500 years. I notified several major British museums who display Chinese pottery of this find, enclosing a copy of the relevant section text and photographs of the pottery ex the Singapore exhibition catalogue, sadly none acknowledged, par for the course.

Stony Bay was our next destination. It was stony, but the water was very inviting after a days walking. The accommodation in the old homestead, as with all the other bays was very good, I slept on the outside veranda, waking up at times to view the wonderful star display. When we entered the bay from the shore, we were immediately struck by the immense, obviously man formed terrace c 50m x 40m x 2m high with it's major axis at right angles to the beach. A scan showed that it had been walled and contained the foundations of four 36m x 4m barracks. A harbour fed by the adjacent creek, had been excavated alongside and the spoil used to form the platform. The harbour contained a c47m x 11m wreck, complete with anchors out. The depression of a short length of canal connected the harbour to the shore.

Otanerito Bay was our last Banks Peninsula (BP) bay. This lovely, somewhat larger bay, had a vast amount of highly visible evidence of ancient man's occupation. A water pound with twin aqueducts (located by scan) had driven an ore crusher, it's 10m sq platform was still in place. Two raised platforms contained the foundations of barrack blocks. A large depression c 40m x 20m was scanned, it contained a c28m x 11m wreck. From the harbour depression there was a very clear stone walled depression of a 160m long x 11m wide running to the shore. Scans alongside the harbour located the standard feeder aqueducts, the adjacent creek was connected into the harbour to keep it free from a build up of sand.

The walk out from the bay over the Purple Peak, with the superb views over Akaroa Bay, followed a well formed and paved ancient road, not the one used by the European farmers. Noticing that the grass flanking the path was unusually lush, a scan was run across the

path, it showed the presence of an ancient aqueduct, this carried water to yet another man made platform containing barracks, (172d,59',15-43d,48',40.) this was c 400m from the Akaroa sealed road. A walk around Akaroa's sports field by the harbour side was very rewarding, a virtually burnt area near the modern road indicated the presence of stonework. A scan indicated the presence of the foundations of a walled fort, c90m x 70m complete with external turrets at the corners and a large gateway under the burnt area of grass. The local council had a very up market web site which used satellite imaging for identification of planning areas, including the ability to overlay the site chosen with the local services. This web site also showed the burnt grass and one could trace the outline of the fort. At a later visit we ran a ground radar scan over the site. This totally confirmed the previous fort find. The advantage of ground radar is that you can actually see the foundations of the walls under the surface of the site. The adjacent Chinese harbour site had been back filled to form a now disused ferry quayside.

Okains Bay and it's museum was on our list of bays to visit. The interesting, privately funded museum, complete with a small café and very helpful staff, is in the best New Zealand tradition of private enterprise. All well worth a visit. The museum contained many items depicting life in the 19th and 20th cent, a plaque recorded the arrival of the first Maori in 1680AD. Interesting exhibits included a section of ships frame secured by a brass pin and fishhooks made of brass. Obviously all sourced from local wrecks. A wander down the tree lined path flanking the beach was very rewarding, the shore side ramparts of a walled site c100m x 45m where clearly visible within the woods. A scan detected the presence of a large aqueduct fed cistern, this indicated the presence of a cavalry unit, the first we had located. Following a visible path to the shore from the earth ramparts, I quickly located by scan the foundations of two stone arms c 11m apart forming a harbour. The site of one sand covered wreck c 20m x 7m was located broached to, presumably blasted out of the adjacent harbour.

From the road entrance to Okains Bay, a rocky ridge led down to the shore. Two sections of the ridge had been quarried leaving caves, these accessed the highly visible bands of red hematite iron ore. This iron ore was the reason for the establishment of the pre Maori settlement. Maori did not work stone, nor smelt iron. Two sand covered smelter ramps were adjacent the caves, a scan located the furnaces in the ramps. The walk way to a deep water jetty was stiffened by the use of ancient ships timbers (rimu) all showing that they had been worked using adze. A familiar sight to me with my Birkenhead ship yard background, the UK one that the New Zealand township is named after. Two sections of a junk's keel, complete with standard basic scarf overlapping jointing lay on the front, such joints were a standard Chinese method of joining frames and shown in Dr D.Chambers RN Naval Architect and X. Longfei Wuhan, University of Technology Paper "The Rise and Decline of Chinese Shipbuilding in the Middle Ages". Presumably all the ships timbers had been located in the nearby sand dunes. I wondered where this New Zealand ship yard had been and who had operated it, building their craft with iron hard local Rimu. (Mu in Chinese is wood). One sample of timber from the walkway carbon dated to early 1700AD, well pre Cook and the whaling industry. Nearby Pidgeon Bay was briefly examined without anything of interest being located.

Le Bon Bay was our final Banks Peninsula site, rightly named the good bay and one of the most rewarding sites we visited. The steep drive down from the mountain road flanks irrigated cultivated area fields, presumably cultivated by the first inhabitants. When we saw the notice "Great Wall of China" on a house fence, I thought that must be an omen. It turned out to be an enterprising lady with a sense of humour, she collected damaged china pottery for her "Great Wall" and also sold teas and scones, most enjoyable. A walk around the BBQ area and car park gave us quite a shock, it was flanked by a pair of c 1m high rammed earth walls with stone cores. The cores in the dykes were identified by a magnetic anomaly scan. At a later visit we re-examined the dykes using ground radar, this enabled the actual stonework cores to be viewed on a TV screen.

A scan over the car park and BBQ area indicated that the foundations of Chinese barracks were still in place. Working sites appeared to have nine roomed barracks each 36m x 4m and cities, 30m x 10m buildings, each with three rooms, such building design is recorded in the Shang Dynasty, 1600-1050BC. The walled site was divided into four sections by still visible earth dykes. The first and largest under the car park, the worker's living area was c 160m x 114m. (520' x 370') In the trees where three other sections, the centre citadel or fort c 80m x 35m, (260' x 113') the third section c 80m x 35 (260' x 113'), this contained a series of smelter ramps. The fourth section, nearest Le Bon Stream was 80m x 28m, (260' x 91') this contained a line of barracks for the smelter operators. A further series of smelters had occupied a site on the opposite side of Le Bon Stream, accessible at low tide, the worked ore faces are still visible. Assay of the face showed an iron content of 9.74%. Slag from this site was carbon dated to c 1,100AD. So when the Normans were invading Britain in 1066, the Chinese already had large commercial smelting operations in New Zealand. Le Bon Bay foundry probably employed several hundred workers. This was over 600 years before the Maori arrived locally and around 680 years before Captain Cook arrived.

Le Bon Stream was surveyed at low tide using magnetic anomaly, this works under sand or water, upstream we located harbour sites and near the mouth of the stream, an outline of a wrecked junk broached to across the river, together with a raft and even the outline of it's tow rope. The raft was used to transfer iron rich spoil from the adjacent work face to the smelters. At a second visit, we ran ground radar checks over the earth dykes, always interesting to see the stone cores on a TV screen. We tried and quickly discarded the ground radar and resistivity equipment in rechecking for the junk, neither would work over salt encrusted wet sand. Then fighting to beat the incoming tide, we ran a grid survey with an electronic magnetometer gradiometer and obtained correlative results of the junk and raft with our first magnetic anomaly survey.

By this time we had started to wonder, every site we had surveyed contained wrecks, all appeared in suspended animation. Whilst several of the hundreds of Roman sites I have surveyed in Britain contained odd wrecks in their harbours, but certainly not everyone did, as we were finding in New Zealand. We started to wonder, had the island been hit by a massive typhoon or similar. It was not until months later that we learnt the true horror

and magnitude of the disaster which affected the course of the histories of New Zealand and China and probably also the demise of majority of the Moa.

NEW ZEALAND and CANALS.

Land based folk regard water as a barrier, mariners regard water as a potential transportation highway. C.W. Adams the Chief Surveyor for the Department of Lands and Survey to New Zealand recorded the huge canal systems around Marlborough, NE coast of South Island, (W.H. Skinner 1912, Journal of Polynesian Society). Similar canals were noted on the SE coast between Dunedin and the Catlins, over 320km (200 mile) of canals being recorded in all. Those at Marlborough exceeded 19km (12 miles) long, and were c 4m (12ft) wide and c a metre (roughly 3ft) deep. The construction of such large canals indicate the presence of a large, highly organised community with considerable engineering skills. Not the skills that the Maori possessed, especially as their only digging implement was a stick. But possibly why the Maori were firstly brought to New Zealand by the Chinese to labour on the ditch excavations, in which case they would have been provided with Chinese iron tools. With my marine engineering background, I have had a great interest in ancient canals and following my research and excavations was the first in Britain to appreciate the unique design of Roman canals and publish the results. I also give talks on Roman canalisation. My manual on navigation is now on issue 14. Roman canals incorporated a unique design of biological oxygen control. This control was achieved by constructing an aqueduct using stone bedded in puddled clay at the base of the walled canal, this also waterproofed the canal base, at regular intervals, the bottom aqueduct had connections to the canal. Aqueducts were constructed on either side of the canal, these connected into the base aqueduct, alternately every 36metres. From the flanking aqueducts, at every 18m, at right angles to the canal, 18m long aqueducts (field drains) were constructed. Along the canal route very available spring or water course was connected into the flanking aqueducts. The continual flow of water into system was fed into the bottom aqueduct of the canal and then into the canal. The flow from the side aqueducts was also fed into the canal locks, control being via vertical wooden slide valves. This incoming oxygen rich water, replaced water lost to leaks, evaporation and craft locking up and down to land level variations. The inflow of fresh water also neutralised the oxygen demand created by sewage discharged into the canals, eliminated the formation of Hydrogen Sulphide (Bad Egg Gas) and reduced the growth of weed which would have obstructed the passage of craft. Understanding the cross section of Roman canals and flanking aqueducts, a surveyor can swiftly identify their constructor and even when they are infilled, and easily follow their routes using magnetic anomaly.

So, on my early surveys in New Zealand when I first noted regular linear infilled filled depressions and suspecting canals, I scanned them. I then realised that the Chinese canal design was slightly simpler and of course cheaper to construct than the Roman design. The Chinese did not use the flanking or bottom aqueducts, but had retained the c18m long side aqueducts (Field drains) discharging directly into the canal every 18 metres. Having surveyed Banks Peninsula and realised the close proximity of Lake Forsyth, with evidence of iron working along its shores, to Lake Ellesmere, I wondered if the two

lakes were connected by a canal. A visit to Birdlings Flat, (Kaitorete Spit) between the two lakes soon located the line of the linking 12m wide, infilled, stone walled canal, complete with the standard 18m long field drains laid at right angles to the canal sides, spaced at 18m intervals along the canal route. Along the route of the canal I could see clusters of bright red succulents, each cluster receiving water from the still flowing make up aqueducts. I then wondered if the Chinese had also constructed a canal down the East coast of South Island, as they had constructed the Grand Canal from Shanghai to Beijing. Such a New Zealand canal by connecting in all the rivers, which in turn lead to the inland sites of metallic ores and coal deposits, would form a complete series of transportation highways, safe from the turbulent seas.

A year after my surveys on Kaitorete Spit, in March 2004 the Christchurch Press reported that an excavation on the Spit had located some artefacts, including a primitive flax cloak, not woven, only plaited. Historic Places archaeologist Chris Jacomb stated that the cloak was of particular significance as when Polynesians settled in New Zealand they quickly realised tapa cloth was not hardy enough for the country's colder climate. It was stated that the site dated to mid 1,400AD, had been razed by fire and then covered in sand. I wrote to Chris Jacomb and thanked him for supplying another link in the chain of confirmation of events of fire and Tsunami in New Zealand in the 15th cent. I also supplied details of the canal across Kaitorete Spit linking Lake Ellesmere and Lake Forsyth, not surprisingly I did not receive an answer.

So as the surveys along the east coast progressed, so did the search for the canal. We visited Rakai Huts, a small holiday site, with a small campsite is sited alongside a lagoon, and a complete with large family of lovely black swans. Walking past the campsite I immediately noted the man made ramparts created when the site was first formed. Running up the bank was a very clear agger which would have led to the gatehouse controlling access to the site. This is a mirror image of the Roman site on my friend's farm alongside Ullswater where I have helped for 17 years. A survey across the camp site and adjacent area confirmed that the 3.5ha (8.4acre) walled Chinese site contained the foundation of barracks. The adjacent lagoon had formed part of the canal route. Amusingly, walking on the track northwards from the end of the lagoon, alongside a section of the visible canal, Selwyn Council had erected a notice, it stated "Dangerous Bank Subsidence, Approach at Your Own Risk.". The subsidence intervals mirrored exactly the canal's make up Chinese feeder aqueducts.

In the Transactions of the New Zealand Institute c 1871, the article quotes Dr Haarst as having located a 8.3ha (20acre) site by the mouth of the Rakaia River. He highlighted finding vast number of rimmed dished areas of closely packed stones c 8' x 5', even some 8' in diameter, some contained charcoal. Charcoal, as opposed to the general residue from a wooden fire, is time consuming to produce and so expensive, so only used when high temperatures were required with minimal contamination of the product heated ie metal production, not food production on a commercial scale. Sadly, archaeologists do not always differentiate in their reports and use the term charcoal as the residue from a wood burning fireplace, not in the sense that it was commercially produced charcoal.

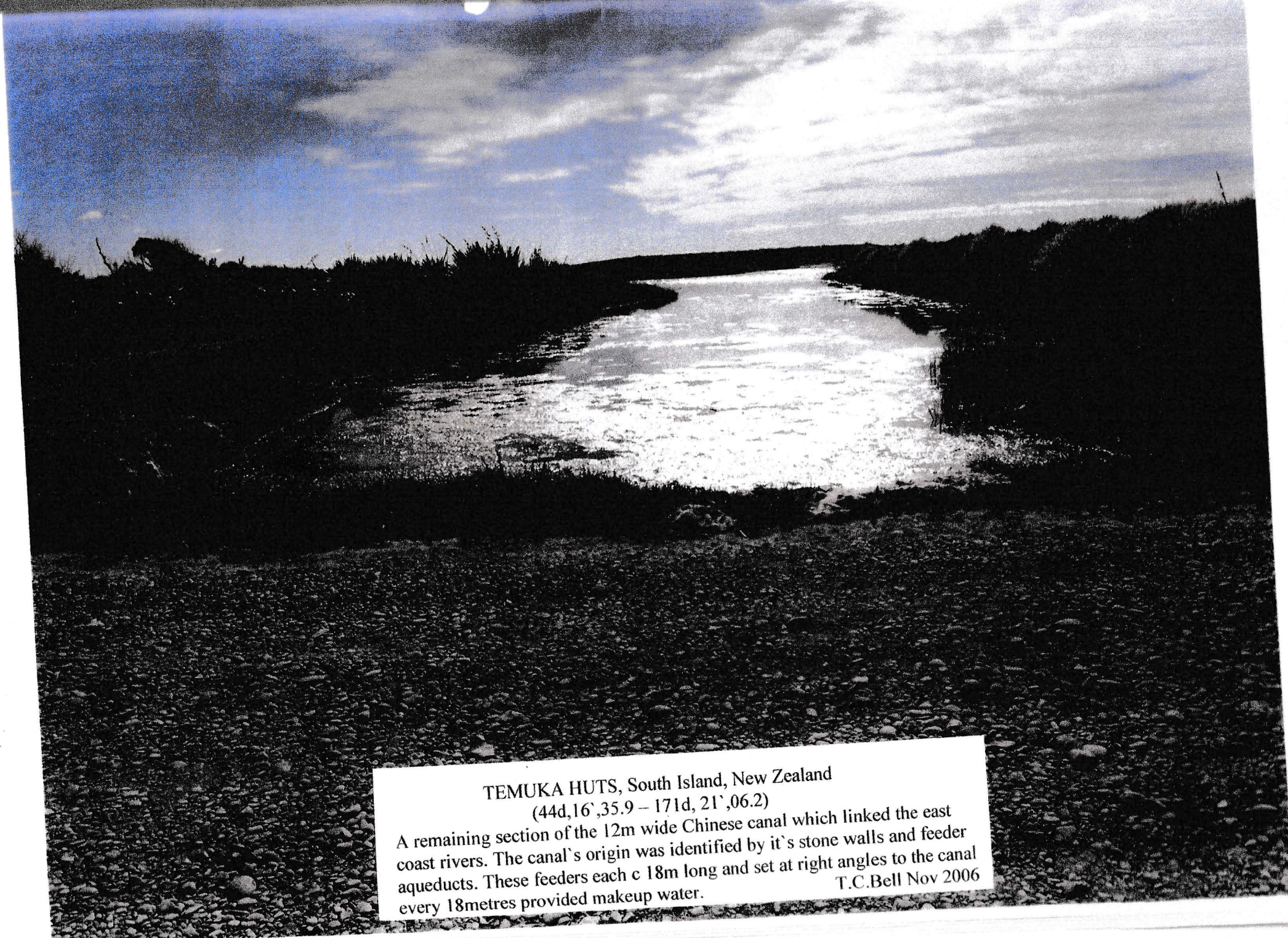
What Dr Haarst appears to be describing are metallic ore roasting dishes. Roasting iron at a lower than smelting temperature when the iron is present as ferrous carbonate (FeCO_3) drives off the carbon dioxide (CO_2) leaving Ferrous Oxide (FeO). Ore taken to a second stage of roasting will convert the ore to Ferric Oxide (Fe_2O_3) which is chemically the same as Haematite and a higher quality. (Prof Tylecote Metallurgy in Archaeology). It is essential when investigating an ancient site to clear one's mind of pre conceived ideas re the occupants involved. Sadly in New Zealand the assumption is always that every site has to be Maori, as it is known that they did not manufacture metals, so the possible presence of such metal manufacturing infrastructure does not enter the equation.

Waikato University have published carbon dating of so called ovens at Rakaia River area, from 1026AD to 1735AD and at Wakanui near Ashburton, one was dated to 1321. The date quoted at Okains for the first Maori to arrive was 1680AD. In the Rakaia area Dr Haarst also reported locating large middens containing Moa, but no human bones. As families tended to kill for the pot, not having the luxuries of modern refrigeration, large volumes of bones by a harbour, indicates ship provisioning. The absence of human bones in these large Moa pits rules out the sites being Maori, who in Dr Haarst's opinion arrived after the extinction of the Moa. Dr Julius Haast a geologist, later Sir Julius Haast was born in Bonn, Germany and became professor of geology at Canterbury College in 1876. The Haast Pass is named after him. G.B Stevenson in his interesting and rare book "Maori and Pakeha" lists nine specimens of Moa located in the Waitaki County ranging from the c4m (12ft) Dinorsis Maximus down to the c 1.2m (4ft) Emeus Crassus. Mr Stevenson also quotes several reports of the existence of Moas in mid 19th cent including a report from Mr W.B.D.Mantell, a government surveyor, who reported finding a complete moa skeleton in 1852. The skeleton was located at the foot of a cliff north of the Awamoa stream. In Mr Stevenson's experience such a skeleton would not have remained intact for over 20 years, so the moa's death had been fairly recent. The book also contains an account, attested by a solicitor, and printed in the New Zealand Herald of the 31st October 1892 of two Europeans c 1870, shooting (and missing) at a Moa c4m (12ft) high about 30m (100ft) away. Mr Mantell's survey reports portray a fascinating glimpse of life in New Zealand around 1848, including the widespread use of reed boats called mokihis to cross rivers.

In a later chapter we describe being taken by our guide to an totally enormous midden in the North Island, recently exposed by wind blown shifting sand, complete with an exposed fireplace, an interesting carbon date was obtained.

THE BEGINNING OF THE END FOR THE CHINESE IN THE PACIFIC.

By this time we had been informed that Dr Dallas Abbot of the American Lamont Doherty Earth Laboratory had identified a 20km diameter crater, 120km south of New Zealand's Stewart Island, which had been created by a meteorite. (Geological Society of America 2003) and (New Zealand's Investigate Magazine March 2004). Dr Ted Bryant an Australian Tsunami expert, found evidence that the meteorite had created an immense Tsunami and also burning of the forests. (Bryant, Tsunami an Underrated Hazard p234). Later we also learnt that the late Dr Snow based at Arrowtown, New Zealand, was also



TEMUKA HUTS, South Island, New Zealand
(44d, 16', 35.9 – 171d, 21', 06.2)

A remaining section of the 12m wide Chinese canal which linked the east coast rivers. The canal's origin was identified by its stone walls and feeder aqueducts. These feeders each c 18m long and set at right angles to the canal every 18metres provided makeup water.

T.C.Bell Nov 2006



BIRDLINGS FLAT, SOUTH ISLAND, NEW ZEALAND.

(72d, 41', 48E. 43d, 49', 33S) T.C.Bell

LINE OF CHINESE 12m wide CANAL CONNECTING LAKE FORSYTH
TO LAKE ELLESMERE INDICATED BY THE GROWTH OF THE FLOWERING
PLANTS & THE POSITIONS OF THE STILL FLOWING AQUEDUCTS WHICH
ORIGINALLY PROVIDED MAKE UP WATER TO THE CANAL.



studying the effects of this meteorite and had published his findings under "The Fires of Tamataea". We then realised what had caused the suspended animation we had found in the sites we have surveyed, total cremation from the heat of the meteorite. The meteorite finally struck the ocean south of New Zealand and created a Tsunami, this flooded and destroyed the coastal settlements. (B. McFadgen *Hostile Shores* and Goff). We were soon to see dramatic evidence of the devastation that these twin events had caused.

The Song of Waitaha, (Barry Brailsford) commemorates the fires. Sad are the ancient songs that tell of the fire from the heavens. It is said that Tamataea Mai Tawhiti called the fiery darts out of the skies, the venerated mother of fire was set free through the land, to burn the forest, night became day, and the day became night. Trees shrivelled and rocks ran like water. We were all saved by sheltering deep within a cave. When we emerged to the light we found the land changed forever. There are also references to the fires and the following tsunami from a Chinese vessel's log, who fortuitously was near enough to see, but far enough to survive. Our next stop south was Rakaia South, this tiny holiday site turned out to be yet another small ancient settlement with part of its ancient defensive rammed earth dyke still in place. A small, still visible canal served the site from the main canal. Then to Ashburton, a pleasant inland small town, I used McDonalds as my marker for the turn off for the road to the beach, called Wakanui, the translation means "Big Boat" and so it was. The shoreside car park is sited in an open gap roughly 500m long, between c 23m high Tsunami formed near vertical cliffs flanking the shore, the cliffs undulating layers of sand and gravel indicating the tumultuous seas they were formed in. The tsunami had originally created one continuous line of near vertical cliffs, which blocked off the rivers behind, forming vast lakes, then the immense pressure from the water built up and finally blew out the c 500m long section, the site of the car park. The gap in the cliffs allowed the water courses to flow normally and created the opening at Wakanui, it also exposed the line of the ancient East Coast canal, which the Tsunami cliffs had totally covered. (B. McFadgen's *Hostile Shores* pg 136 gives a dramatic account of the results of a similar episode in New Zealand's history). Southwards, the cliffs were followed to Hakatere, the present camp site overlays another large Chinese site, with an adjacent cemetery within the cluster of trees on the bank overlooking the camp site. The road up the bank is still visible. Below the site is a lagoon, the canal ran through the site of the lagoon, the foundations of the locks which connected the canal to the River Ashburton were located in the mud.

Whilst walking along the shore, south from the Wakanui car park, I was faced with the amazing sight of a section of a vessel's hull, upside down, splayed open and compressed to 35mm by the thousands of tonnes of cliff above it. Close examination revealed that the hull had been carbonised. At this horrific sight, as a former marine engineer, I could only mutter the words of the sailor's prayer, "For those in Peril on the Sea". To my complete surprise, in a recess in the cliff above I could see the 0.750m length of what appeared to be the curved metal barrel of a cannon, sadly far too high for me to reach. I revisited the site two years later, but it had fallen out of the cliffs, I can but assume it is now someone's trophy, also many parts of the cliff had been washed out including the remains of the wreck.

I reported the wreck to the editor of the Ashburton Guardian and he kindly sent his photographer Joseph, to record it. The editor ran an article re my surveys over a two week period. Joseph looked at the wreck with total amazement said, "It cannot be, but it must be, there is no other explanation". We both viewed the other evidence of the immense heat which the area had suffered, the carbonised remains of other craft, totally crushed to a single purple line c 50mm deep and 11m long along the base of the cliffs. Altogether I counted 17 carbonised sites. Along the beach in line with each site and exposed by the receding cliffs, were clusters of stones welded together by the remains of the carbonised junk hulls. I attempted to obtain carbon dates from the clusters of carbonised stones, but there was insufficient carbon for the laboratory to obtain a date. The site is frequently scoured by high tides. It is probable that these junks were being towed along the canal, then carbonised by the immense heat from the passing meteorite. The meteorite crashing into the ocean south of New Zealand formed an immense Tsunami which gouged out the sand and gravel deposited over millions of years at the mouths of the adjacent rivers and deposited the debris over the carbonised junks, entombing and crushing them under thousands of tonnes of virtually wet cement. Two items were found exposed by the receding cliffs. A c 150mm long piece of blade, fire welded from three pieces of metal, which later disintegrated in spite of conservation attempts, and a most unusual broach. This 50mm diameter broach was cast in iron to form a circular cross section, complete with the remains of the back hinge of the securing pin. This form of broach was used by Buddhist monks to secure their robes. Sadly the wearer had been vaporised by the heat from the meteorite, the line of the seared robe can still be seen on the face of the broach. The broach and knife blade were taken to the British Armoury at Leeds and examined by the resident metallurgist who confirmed their construction.

One of the purposes of this visit to New Zealand, one of five, was to carry out the New Zealand section of the Pacific launch of Gavin Menzies 1421 The Year China Discovered the World, so I had the full backing of the publicity department of Random House, led by the formidable, but charming, Sarah Thornton. Sarah had been very well trained by the renowned London based, Midas Public Relations company. Sarah obtained coverage re the book and our survey finds from Dunedin to Christchurch and also three days filming with New Zealand Television. Over thirty Chinese mainland papers with a potential of 100 million readers printed our exploits. New Zealand's Historical Establishment were more used to members of the public making claims for minor sites and invariably ignoring them. So were somewhat shocked by the publicity and forced on to the back foot.

One newspaper recorded the comments of Dr Rick McGovern, one of New Zealand's senior Government archaeologists, who stated that our theory of pre Maori occupation of New Zealand to be so ridiculous that it was not even worth commenting on, but he did. He was sent a copy of the photograph of the upturned crushed Chinese junk at Wakanui, but he did not acknowledge it's receipt. Even when confronted with the undeniable evidence, Dr McGovern was both totally unable and unwilling, to explain how a Chinese

junk could have been in a Chinese built canal in New Zealand and was slowly emerging from a 15th cent Tsunami formed cliff. Dr Smith of Otago University said that in many years of surveying had never found any pottery evidence of pre Maori occupation. He of course was basing his comments on not finding any Chinese pottery. I have this problem in the UK with archaeologists who view pottery as the Holy Grail, ie no pottery, no site, yet totally ignore the adjacent 200m (650ft) long obvious fort ramparts. As an engineer, I follow the Chinese, or Roman engineering trail, not a transient art trail.

As we have now proved that the dating archaeologists have been using as a start date of 1,400AD for blue and white Chinese pottery is out by 500 years, ie it should be at least 900AD. Eg Shag River site, My experience to date is that even if a New Zealand archaeologist had found any Chinese pottery, it would be dismissed as being either brought in by recent immigrants, or 19th Cent Chinese miners. Professor Charles Higham of Otago University, called me A Cracked Bell, A Pyramidiot and other terms of endearment for even daring to suggest that there had been pre Maori life on New Zealand. My answer to Professor Higham that possibly if archaeologists raised on Maori fortified Pa, who had not been exposed to European or Chinese site experience, or even trained in magnetic anomaly surveying, would be ill equipped for recognising rammed earth walls and the Chinese (and Roman) unique navigation techniques, smelter operations, aqueducts etc. I felt the raised temperature in Britain, as he heatedly stated that he had (in his youth) excavated under Frere, one of Britain's well known archaeologists. Sadly there is no record of Frere having excavated on Chinese sites, or of even being aware of Roman navigational techniques. (Canal or river navigation). In fact it was much later that Ray Selkirk's pioneering work (The Piercebridge Theory), highlighted the use Romans had made of water transportation, not roads for heavy goods. I worked and studied with Ray Selkirk for six years. I did send Prof Higham a copy of my prized photograph of the inverted Chinese junk entombed in the Wakanui Tsunami formed cliff, which to my surprise, he acknowledged. But I have doubts if it is hung in pride of place on his study wall. Wakanui means big ship, so it was clear that this wreck site of Chinese junks was well known at some period in the past. Following all this verbiage I found it somewhat strange that when the NZTV producer attempted to arrange for just one of New Zealand's leading historians to discuss my findings at an open forum on the prime time Holmes Show, all the nine approached refused. Nor did any ask to see our evidence. Obviously none wished to be associated "With a Life before Maori" Pyramidiot. Sad, I would have enjoyed the exchange.

Hearing of our New Zealand and Nova Scotian surveys, The Singapore Tourist board invited my wife and I to exhibit and lecture at their 600th anniversary of Chinese Admiral Zheng he's first voyage in 1405. I accepted with alacrity, as I had not been to Singapore for 50 years and my wife had never been. The city, so beautifully clean, and the exhibition, where both extremely impressive, thousands visited and admired the exhibits. The two most admired photographs of our New Zealand surveys, were the Super junk arced over a cliff, blasted there by a Tsunami and the overturned carbonised and junk, crushed and entombed in a Tsunami formed cliff. We also exhibited photographs and survey information of our Chinese site on Cape Breton Island, Nova Scotia.

When New Zealand is prepared to recognise it's full history, it would be fitting if a plaque was erected at Moeraki where it would be seen by the many visitors. The plaque would commemorate the deaths of the sailors and the indigenous population who died that day in appalling conditions, both by fire and drowning. The plaque would also be of great interest to the many visiting Chinese who have a great respect for their national hero, Admiral Zheng he and his crews.

Back to the trail of the canal. A visit was made to Temuka Huts, the canal was visible near the camp site. Next came the large harbour town of Timaru situated between Ashburton and Oamaru. The town is somewhat devoid of attractions, other than the lovely amenity area, sadly, the railway prevents access to the shore. Such a large green site in Britain would have been speedily sold off for housing, I noticed that a supermarket had already made it's presence felt. We noted the large ramparts by the Waimataitai Kindergarten and the depression flanking the railway which outlined the line of the canal, even a drain had been run down it's length. These constructions meant only one thing, a large Chinese site. A scan quickly confirmed our thoughts, it was an ancient Chinese city site. It covered 3.6ha (c 240m x 140m). The inhabitants were housed in the standard 30m x 10m units, each with three rooms. One prominent mound held a bath house identical to Romano Celtic temple design ie the foundations of the walls of a rectangular building, with internally a corresponding building with one metre between. At the centre was a c 2m x 0.75 immersion bath fed via an aqueduct. Adjacent was a small toilet block fed from the discharge from the immersion chamber's overflow. A similar but smaller bathhouse was located in what appeared to be the senior officials quarters, this was situated at the centre of the site. The city's aqueducts of unique design where located discharging into the canal, for make up, common practice on Chinese and Roman sites.

Due to time and access restrictions, our last canal survey was south of Timaru, by St Andrews, the open canal was located at 171d,11',36.1 – 44d,31',44.8. running towards the River Waitaki. From my experience with Roman surveys, mountainous choke points always dictated the ancient's routes and generated evidence of their occupation. So we decided to take the lovely scenic route alongside the River Waitaki to Omarama situated at the foot of the Lindis Pass. We noted sections of canals by passing the main river. this was also the route taken by the 19th cent hopeful gold miners, before they tackled the Lindis Pass. In 1856 John Chapman, minister and farmer and his wife travelled from Christchurch by bullock wagon, averaging 16km day over the 320km route ie 20 days. John Chapman established a farm at Omarama and sold mutton to the miners. This is ex Marion Aubrey's "History of Omarama", a fascinating picture of early settlers life in New Zealand, sadly now out of print. The booklet made no mention of local "modern" Chinese miners, nor of gold recovery plants.

We camped at Omarama alongside the River Ahuriri, a tributary of the Waitaki. Wandering down the bank of the fast flowing 10m wide River Ahuriri, we noted evidence of navigation. At the entrance to the golf club, we could see that a c6m wide x 200m long canal, fed from the river, had been constructed running in an arc around a 40m x 20m raised platform. The platform had housed a barracks, and an ore crusher,

the double wheels driven from the river via two existing aqueducts. A 20m x 10m weed infilled harbour was visible down stream of the platform. Alongside the canal where five smelter ramps each containing the remains of furnaces. At the centre of the arc of the canal, five chambers each c 6m long, had been constructed, each originally fed via a controllable duct. These chambers formed multi ore washing stations, ore would be introduced down wooden wash channels, the lighter dross would flow down stream, leaving the heavier gold behind. The poor Fossicker used a riddle, the ancients multi, wet chambers, the modern miner, reciprocating inclined wifley tables, they all worked. I had experience of ore recovery, from ball mills, wifley tables to vacuum sludge filters, whilst the Works Engineer at Delta Metal, Birmingham, so easily recognised the design of an ancient's recovery plant. We also have many similar examples on Roman sites near my own home in the Lake District.

We also carried out detailed surveys around the Catlins, the southern most end of mainland New Zealand, a lovely area of vast empty beaches, with a few walrus basking by the sea, the beaches backed by large wooded areas. The nearest and largest town is Balcluthra, situated on the River Clutha, the Latin name for Scotland's River Clyde, indicating the inhabitant's Scottish background. This was also the birthplace of Shackleton's brilliant navigator. As usual, the local private museum is a credit to the town and well worth a visit, hopefully their plans for a larger museum reach fruition. A visit to Dunedin's interesting Botanical Gardens and Long Beach, 14km north of Dunedin, past Port Chalmers, an ore exploitation site were equally successful. Altogether we located a great number of fascinating ancient sites, including ore exploitation sites and on the beaches, evidence of many wrecks, their size and their unique anchors identified themselves as Chinese junks. However, this book is not purely concerned with a fascinating chapter of New Zealand's ancient past, nor is there is insufficient space in this book to record everything we have located, so we will just highlight some of our finds at Papatowai and in the Cathedral caves.

Besides Catlin's wonderful beaches, one of the major tourist attractions are the three Cathedral Caves. Their name is somewhat of an exaggeration, but they are certainly large. As the mouths of the caves flood at high tide, it is preferable to check the tides before you visit and to take a torch with you. My interest in the possibilities in ancient caves commenced with a visit to the caves in the Dordogne, France. This visit to France was primarily to view the totally amazing, nearly life size animal paintings of a very high artistic standard, in one cave there are over a hundred paintings. Examining the Cathedral cave entrances, our local guide informed us that the sand at the entrance to the caves was still rapidly building up. So whilst the rest of the party viewed the man made chambers at the back of the first two larger caves, obviously occupied at some period, I scanned the walls with my head torch. I found one area roughly a metre wide and half a metre high at head height which had been smoothed off. Within this area was carved a beautiful petroglyph, a c 300mm long representation of what I considered to be a flying fish, such precision work could only be accomplished with a metal tool, so it was pre Maori. I have seen many flying fish whilst traversing the Indian Ocean. Our guide had not appreciated

the existence of the petroglyph, nor had the owners of the site, which is operated on their behalf by a Maori Trust. I also scanned the sandy floor of the three caves, the larger two, each contained a c18m x 7m sampans, both had two anchors out, such sampans had drop masts. The third smaller cave, (the extreme right hand one facing), was unusually accessible as the mouth is the first to flood. We did not go to the rear as a sick penguin was sheltering there. A scan over the floor confirmed that it also held a sampan c 12m x 4m, with one anchor out. One wonders why the fishermen were reduced to hiding their craft in the caves and living alongside them. Sadly, we will never know their ultimate fate, whether heat from the meteorite, Tsunami or hostiles.

Papatowai in the Catlins, South Island, is a small coastal community at the mouth of the River Tahakopa. Pre the construction of a bridge, horse drawn coaches and other vehicles forded the river at the shallowest point near the river bar, then via a track flanking the river, through the bush for a kilometre back to the northern abutment of the modern bridge, then on to Maclellan. Whilst staying in the area we also forded the river at low tide in lovely warm water, to follow the same track.

Papatowai and excavations of the Maori midden at Bay Point are frequently mentioned by archaeologists and historians as a Maori base. In the 1980's, a Mr Bateman excavated this midden, human bones being found, the remainder of the midden analysis was bird 10%, dog 4.3%, fish 11.7%, Seal 40.6%, Moa 33.8%, no shell fish being located. One wonders if the mid 15th cent Tsunami had destroyed the shell breeding grounds, so when well after the Tsunami, the Maori arrived in the area, no shells were available and little else to eat. (B.G.McFadgen, J.R.Goff, *Sedimentary Geology* 200. 2007 p.267, 271). The human bones in the Maori midden suggests that some locals, or shipwrecked sailors had ended up as the main course. (An adjacent bay is called Cannibal Bay).

During our surveys we noted at Bay Point, that at recent break up of the sand dunes had exposed tens of thousands of shells, all neatly stacked in a standard Chinese manner. This proved that at one period, pre the Tsunami, which destroyed the habitat of the shellfish by smothering the beds with debris, they were plentiful in the area. This form of midden is typical of Chinese sites. We carbon dated one shell to c1420AD pre the Tsunami from the Bay Point midden. (Carbon dating is very expensive for totally self funded folk.) We fully surveyed the Papatowai wooded rectangular shaped river side site. Highly visible multi dykes enclosed an area c1000m x 70m. The opposite side from the river was defended by an external ditch, and two Chinese designed rammed earth dykes, both with stone cores, between these dykes ran a 6m wide canal, this was fed from a dammed section of the River Tahakopa. The canal had five functions, it supplied the water to the site, served as a defence, was an internal supply route for sampans and flushed the toilets situated near the shore and finally flushed the sand out of the shore side harbour keel slots. (169d,28',03 – 46d,33',40). The harbour was the standard finger type harbour, designed for a 47m x 11m junk). It was as little wonder that the "modern" horse drawn coaches etc using the river bar could safely negotiate the river bank, they had used the settlement's internal road which flanked the river side defences of the site. A survey

Untitled Map

Write a description for your map.

Legend



Google Earth

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Image © 2019 Maxar Technologies

PAPATOWAI, CATLINS, NEW ZEALAND.

Thousands of metres of Chinese Agricultural Terraces East of Papatowai.

Proof of long term occupancy by very skilled agriculturists.

T.C.Bell



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Google Earth

Image © 2018 DigitalGlobe

PAPATOWAI, CATLINS, SOUTH ISLAND, NEW ZEALAND
Thousands of metres of Chinese Agricultural Terraces, East of Papatowai.
Proof of long term occupancy by very skilled agriculturists.

T.C.Bell

70 m

of the site located the foundations of 10 rows of barracks deep parallel to the river. Each barrack contained eight rooms c 4m square, unpaved and one paved room. If one assumes an occupation of 8 persons per room, ie 64 per barrack, plus a senior, 11 lines of barrack foundations along the river x 5 deep, then the site population could have been roughly 3,500. We consider that this could well have been a reception site, used to house a labour force prior to their transfer to work sites.

It is extremely strange that New Zealand archaeologists could frequently refer to Papatowai, yet, if they had visited it, why did they not mention the highly visible dykes and canal only 80 m from the river bank?. Interestingly that the archaeologists who surveyed Papatowai mentioned the massive blackening in the barrack block area, but had not appreciated this was due to the carbonisation of the Chinese barracks caused by the falling meteorite. A visit to the Chinese super junk arced over the cliffs at Moeraki, will note that the cliffs are also still blackened after the junk was carbonised after being exposed to the massive heat of the falling meteorite c1436. Near my own home, within a Roman town, an excavation to enlarge a cottage based on a Roman granary exposed a massive line of carbon where the rest of the (Previously unknown) Roman granary compound had been fired by the Romans when they left, to deny the building and contents to the locals.

Nor is there any mention of the thousands of metres of Chinese irrigated cultivation terraces east of Papatowai. Further proof of the Chinese occupation. The handiwork of a long term occupation by highly skilled agriculturists. These terraces are clearly visible on New Zealand Government war time aerial photos and more modern Google Earth. As are the Chinese harbour stone slots for the fishing boats. Similar Chinese agricultural Terraces are also clearly visible on Chinese sites on the Rhins of Galloway, SE Scotland.

As a professional surveyor and a follower of the Roman trail, I had noticed the stone lined dykes and canal on our first visit to Papatowai, I wondered how such visible evidence could be missed by the large number of archaeologists claiming to have visited Papatowai. I wondered if it was because they had their mind set on Maori sites, clearly the canal, dykes and ditches were not Maori so should be ignored, hardly the sign of an open mind. The local guide to the area also refers to the "Loop Path" through the woods from near the road bridge, to the beach. My suggestion is do not try it unless you like picking your way through thick mud and navigating with a compass through trees.

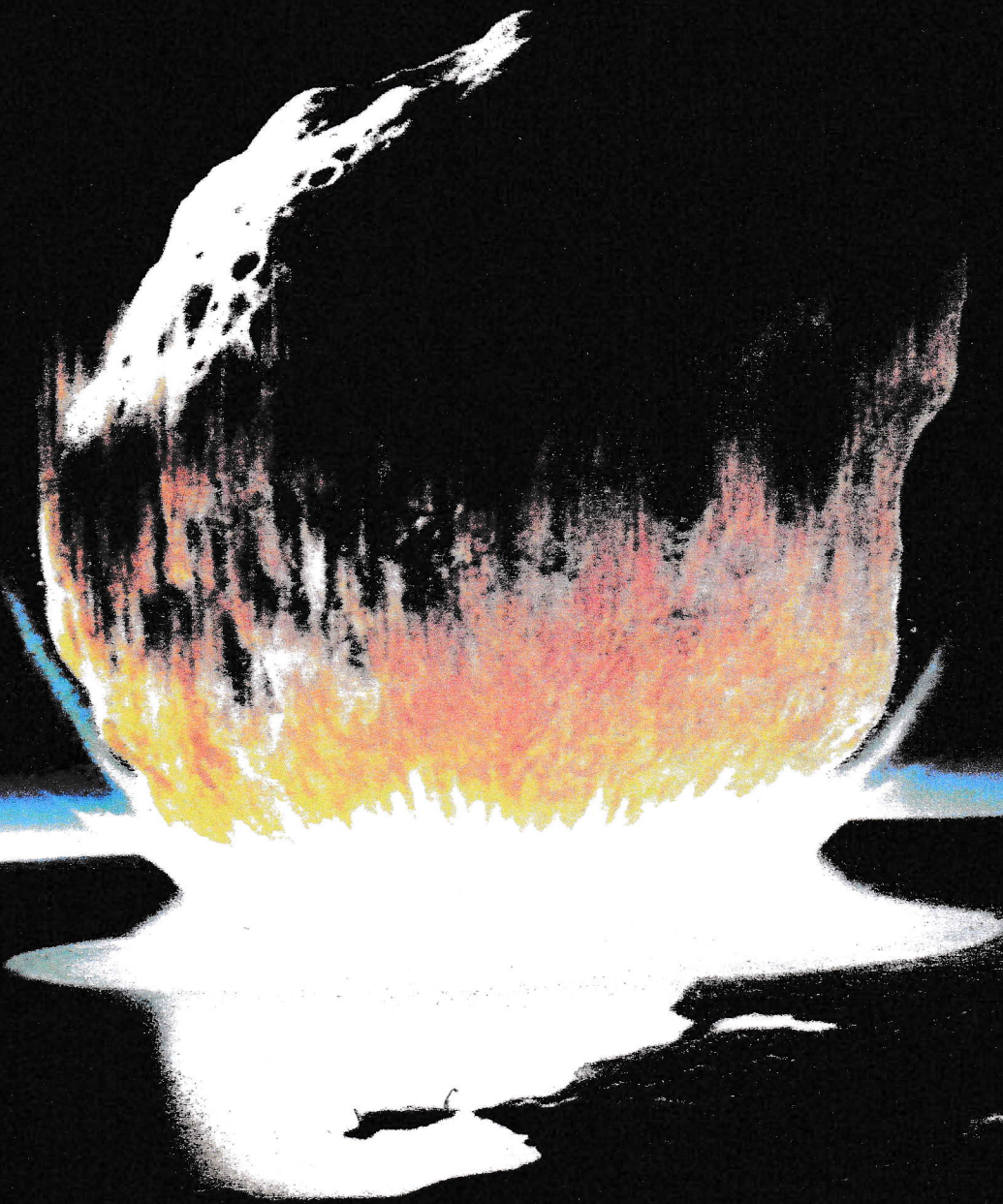
We do not have space in this chapter to list all the Chinese sites we located in this area, nor the shore side wrecks, which included 100m /120m x 48m outlines of Chinese Super Junks, their identity confirmed by both the sheer size and their unique anchors. But the investigations into one wreck we located in Tahakopa Bay, generated a totally unexpected result and yet another mystery. Noticing a 150mm square spar protruding from the side of a sandhill, a scan was run over the site, this method is accurate to 50mm, it showed that a c 47m x 11m hull lay below complete with one anchor out of a unique design, twin large (stone) flukes c 3m apart, which identified it as Chinese. The wood was sampled, it carbon dated to 225BP 1,725AD, plus or minus 34 years. A timber expert

identified the timber as Miro Thespesea, ex the Henderson Islands. The dating was roughly 110 years pre the European occupation of New Zealand, the vessels had either been constructed on Henderson Island, or been repaired there. We can only assume at some period the vessel, possibly a Pacific trader, had been driven ashore and wrecked. If only timber could talk, maybe it was this crew who provided lunch for the local Maori and their bones which ended up in the Maori midden.

When available, Google Earth pro was used to scan the coastline East of and around Tahokopa Bay, it was fascinating to see thousands of metres of Chinese agricultural terraces cut into the hillsides for rice growing. I remember telling my Papatowai guide of my Chinese finds in the area, he said I wonder what they ate. The answer is of course rice and fish, as they ate at home.

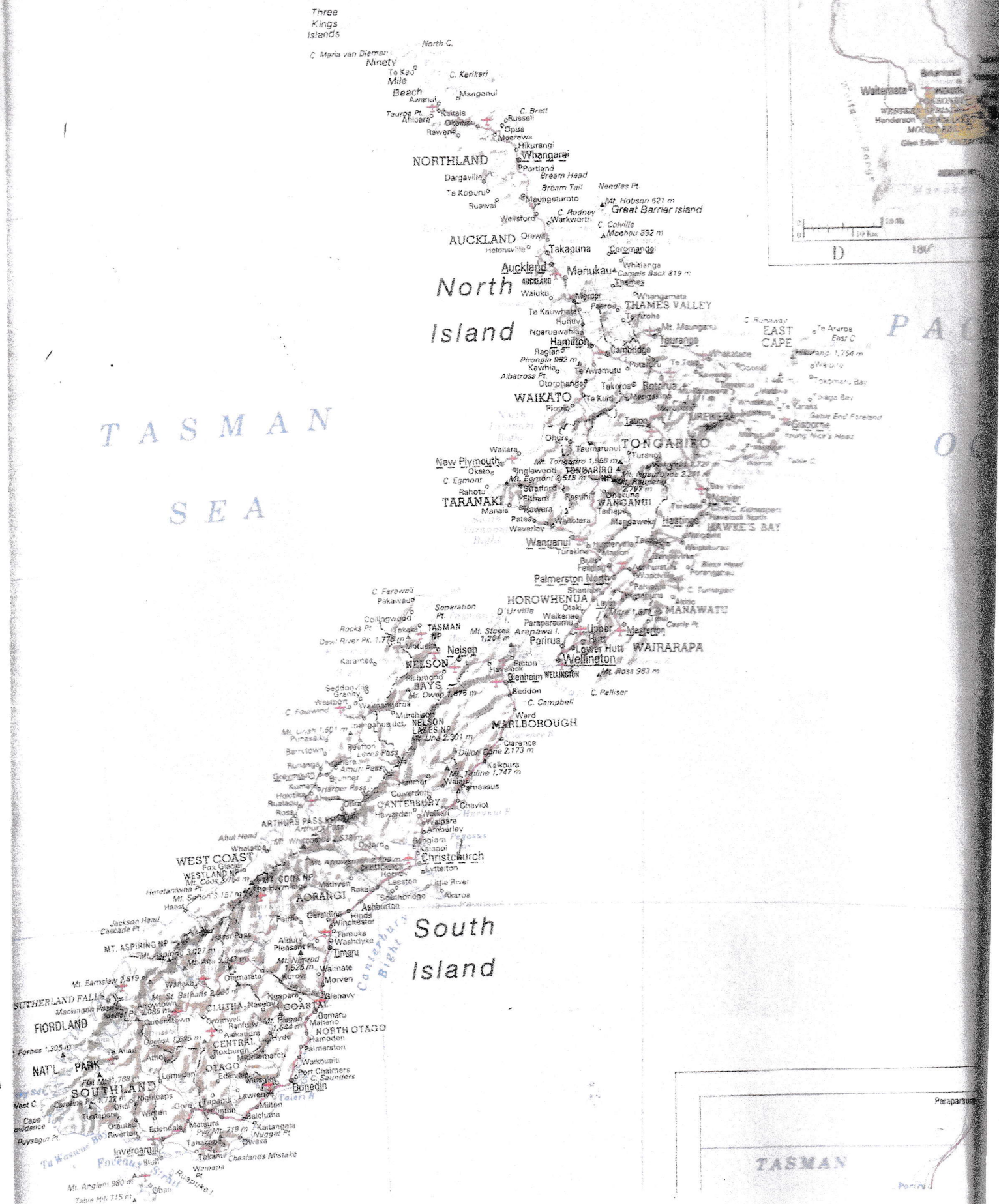
Google Earth survey also highlights the large walls of the Chinese fishing boat harbours. This harbour is adjacent to the Papatowai campsite which contained the raised outline of the fishermen's barrack block platform.

Christchurch Museum contains a number of the Chinese fishing boats sail's mast runners made from bone, located at Paptowai, sadly the Museum call them Maori Beads. Yet again, all totally oblivious of a previous experienced marine occupants.



NASA'S INTERPRETATION OF THE METEORITE
WHICH FIRED NEW ZEALAND'S FORESTS AND CARBONISED
ALL THE INHABITANTS c 1435, CREATING A MASSIVE TSUNAMI WHICH
DESTROYED THE CHINESE COASTAL TOWNS, VILLAGES AND FLEETS.

Publication approved by Investigate Magazine.



A ballast free future?

AN IMPORTANT milestone has been reached in a long-term project aimed at solving the ballast water problem by eliminating completely or substantially reducing the size of ballast tanks, reports *MER from Japan*. Recent trial results suggest that the concept of a 'non-ballast water ship' (NOBS), which has been worked on by the Shipbuilding Research Centre (SRC) in Japan for the last five years, is workable.

The concept features a special hull design with a 'raked' bottom to maintain the necessary draught for safe operation without the need for ballasting. The decrease in displacement is countered by widening the vessel's breadth and a fatter body around the bow and stern areas.

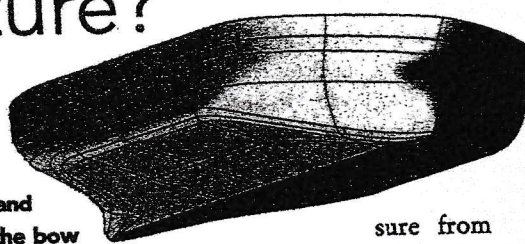
One of the main challenges was to avoid forward bottom slamming and propeller racing when a ship is in an empty condition. To that end, the SRC set a number of key development criteria, including:

- 1) In an unladen state in normal sea conditions with 3m draught and propeller fully submersed, a NOBS

The concept no-ballast vessel has a special hull design with a 'raked' bottom and a fatter body around the bow and stern areas

- should perform as a conventional vessel;
- 2) A NOBS should perform as a conventional vessel in rough conditions with one-quarter of the ballast water quantity normally needed; and
- 3) A NOBS should be at least 5% more energy efficient than a conventional vessel of same DWT.

The recent trials measured the performance of a model NOBS against a conventionally designed vessel, with particular focus on propulsion efficiency in still water and resistance, loads and dynamic motion in waves. According to the SRC, these tests confirmed that the concept vessel fulfilled the above criteria and therefore could meet the same level of safe operation as a conventional ship with ballast water at 30-40% displacement. The frequency and impact of pres-



sure from forward bottom slamming and propeller racing was found to be similar to that experienced by a normal ballasted vessel.

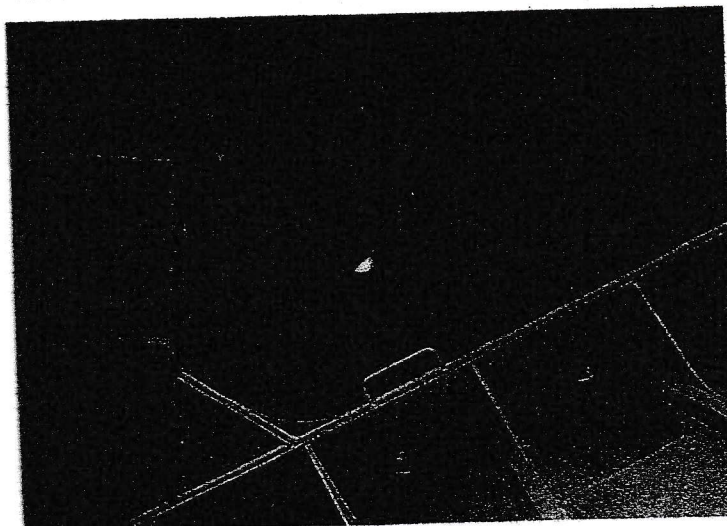
Significantly, the propulsion efficiency of the NOBS in empty state was measured to be 6.4% better than that achieved for a normal vessel design. However, the savings this offers are likely to be balanced by the heavier hull structure resulting from extra reinforcements needed to protect against higher longitudinal bending moments brought about by the wider hull breadth.

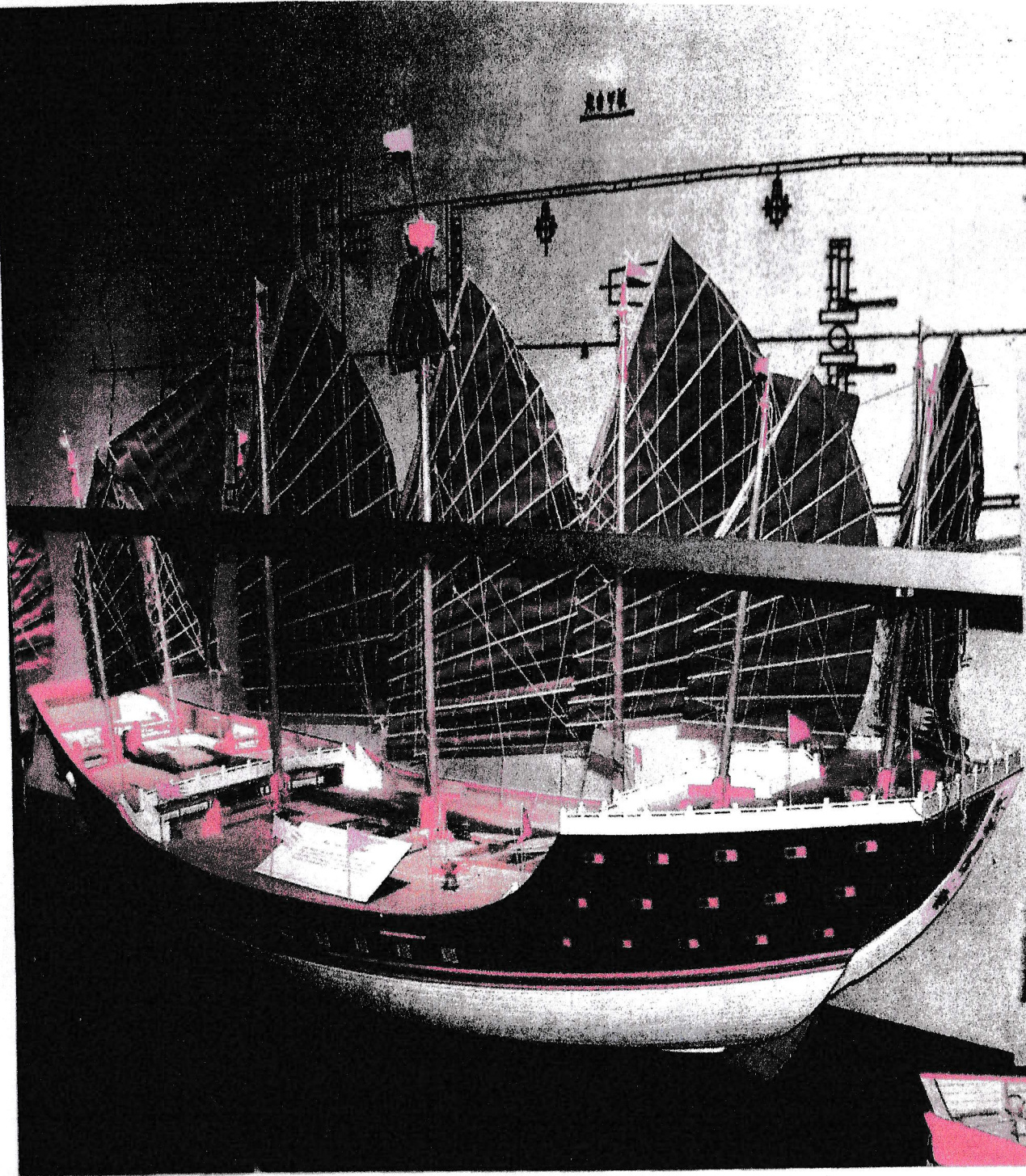
While the research so far has centred on the proof of concept for a non-ballast large oil tanker, work is being done to apply the findings to other ship types, such as bulk carriers, container ships and smaller tankers. The possibility of using the 'raked' bottom design on ships with deeper draughts (rather than wider breadth) is also being investigated.

However should the concept become a reality, apart from the obvious environmental benefits, the SRC believes that maintenance could be reduced by around 5%, as less coating work would be needed for ballast tanks.

This is not the first time a ballast-free vessel has been looked at. Regular readers will recall that Wallenius Wilhelmsen approached the problem in their future concept vessel, the *Orcelle* (see *MER*, April 2005, p27). Their proposed solution involved employing a pentamaran hull design to provide adequate stability.

Eliminating the need for ballast tanks (pictured) would solve the environmental problems associated with ballast water exchange at a stroke



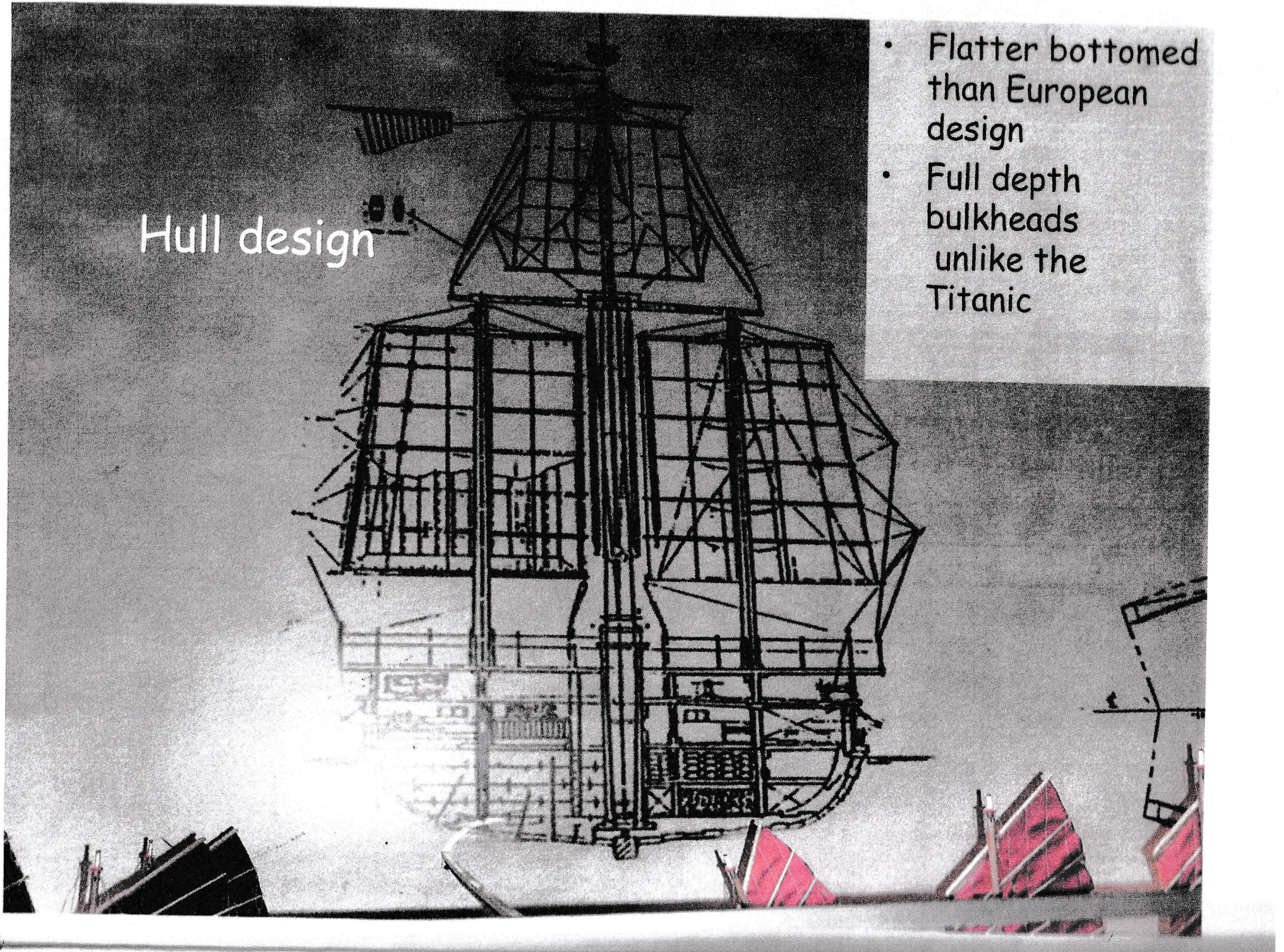


Sail design

- Standing lug rig
- Battened sail, attached to mast at each batten
- Masts unstayed
- Sails very heavy, needing counterbalance

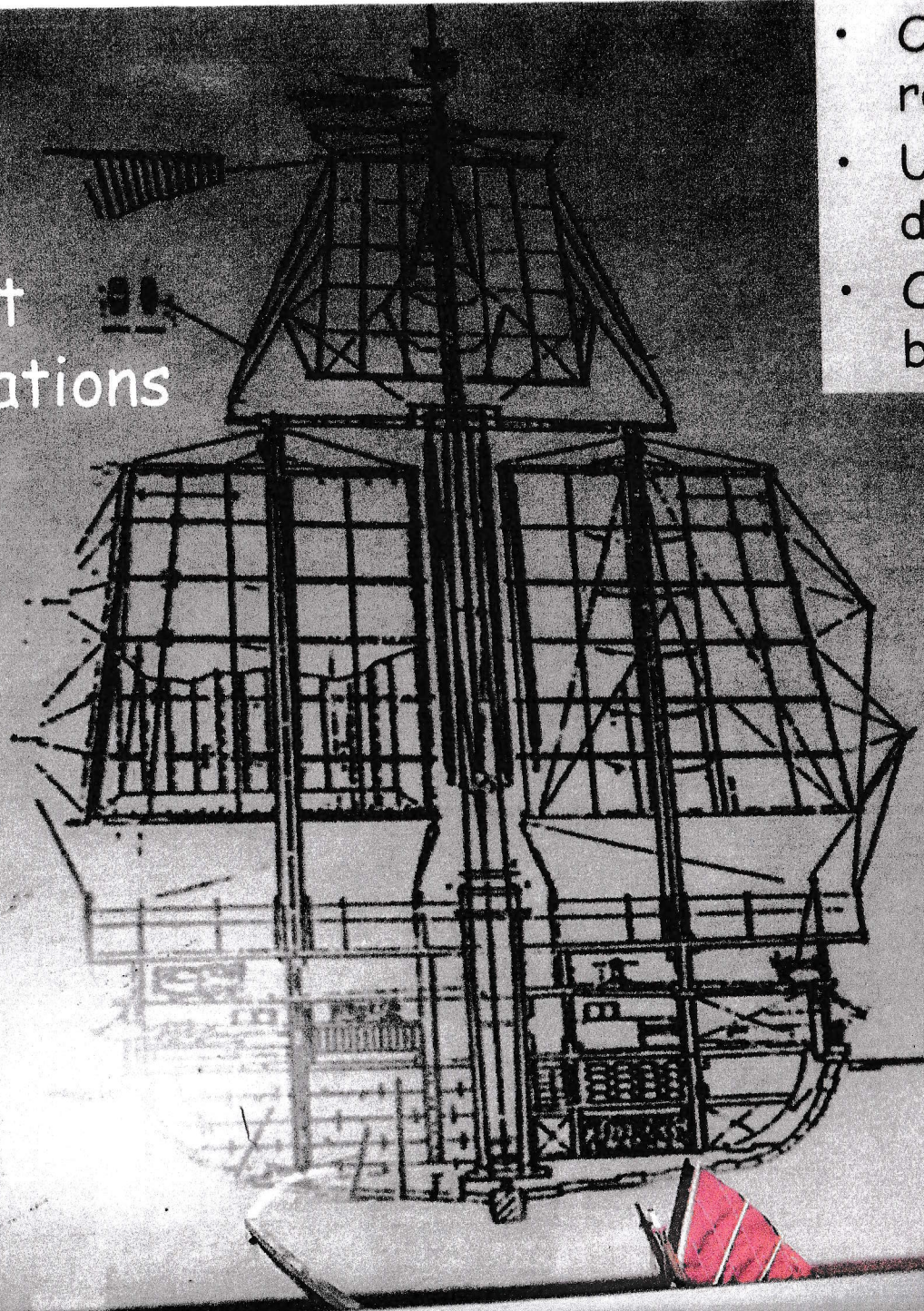
Hull design

- Flatter bottomed than European design
- Full depth bulkheads unlike the Titanic



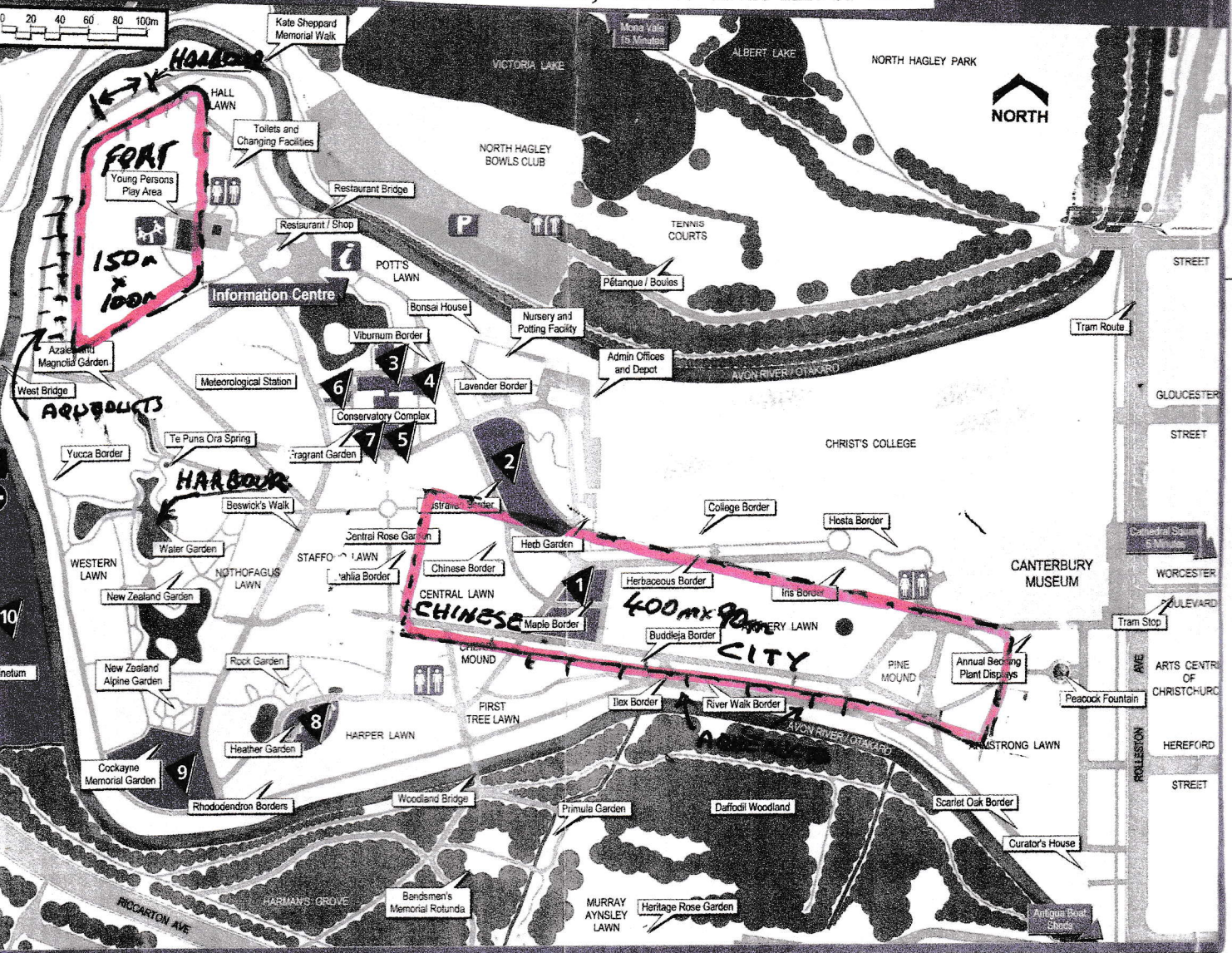
Mast configurations

- Offset in three rows
- Unlike European design
- One sail doesn't blank others



Botanic Gardens

CHRISTCHURCH, NEW ZEALAND.



CHRISTCHURCH, SOUTH ISLAND, NEW ZEALAND.
 BOTANIC GARDENS.
 SHOWING RELATIONSHIP OF THE CHINESE FORT, HARBOURS
 &
 THE CHINESE CITY OF CHRISTCHURCH.
 To the major items of interest in these beautiful gardens.
 T.C.Bell



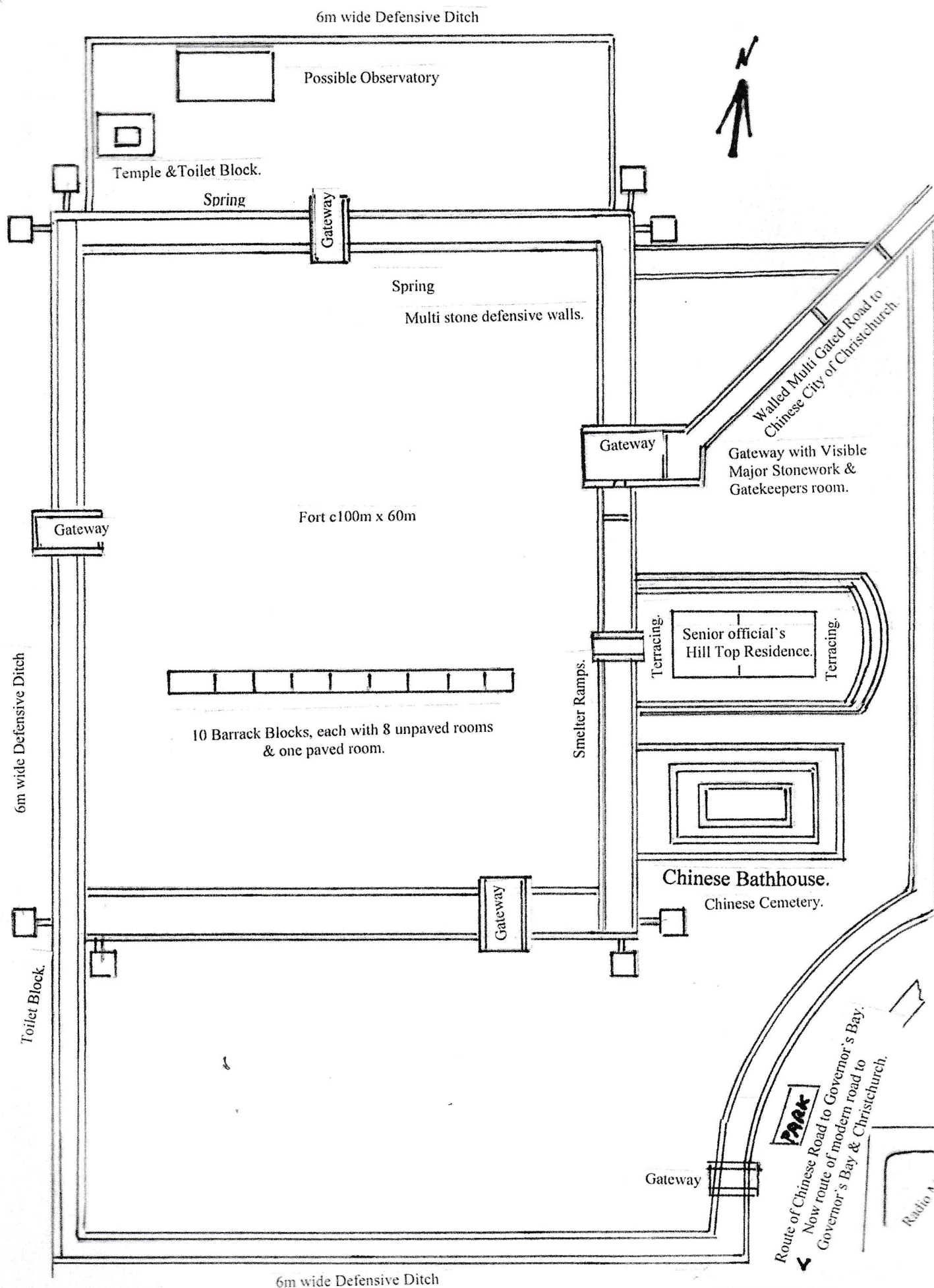
CHRISTCHURCH, SOUTH ISLAND, NEW ZEALAND.

Adjacent to Children's play area.

BOTANIC GARDENS.

The REMAINS OF THE STONE WALLED RAMPARTS OF THE CHINESE
FORT c 150m x100m THIS FORT GUARDED THEIR ADJACENT
WALLED CITY. 172d, 37', 05 East. 43d, 31', 39 South. T.C.Bell



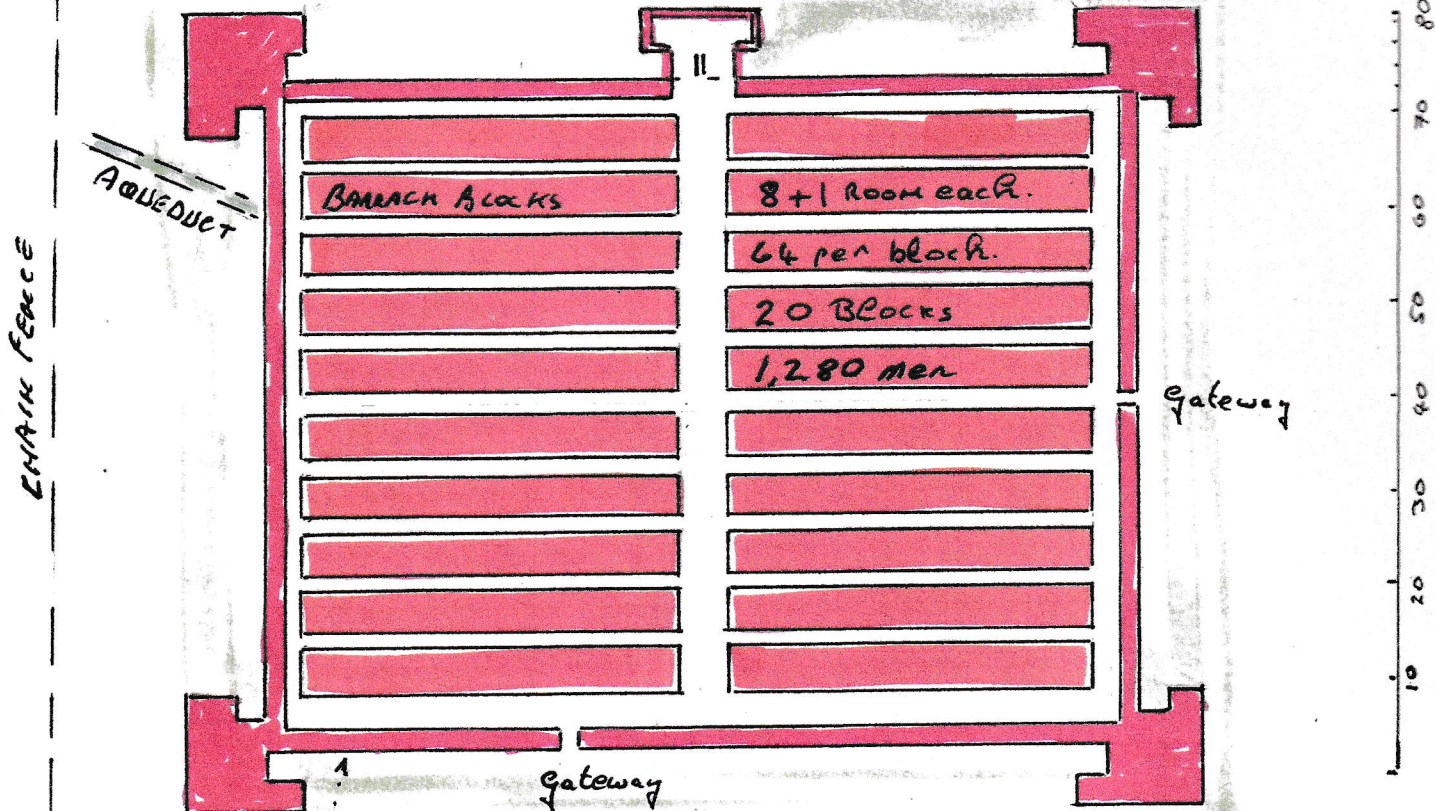


CHRISTCHURCH . SOUTH ISLAND, NEW ZEALAND
 Port Hills Chinese fort, Senior Officials Residence, Major Temple site &
 Possible Observatory. (43d, 35', 47.1-172d, 38', 34.4).
 T.C.Bell Nov 2006

CHRISTCHURCH

AKAROA

MAIN GATWAY DOUBLE GATES



AQUEDUCT

CHINESE TOILET BLOCK
6m x 6m

PUBLIC
TOILETS

PAVILION

CAR PARK

CHINESE
HARBOUR
70m x 40m

CAR PARK

CHINESE FORT
&
HARBOUR

SITED UNDER CRICKET GROUND
AKAROA, BANKS PENINSULA
NEW ZEALAND

Dimensions 90m x 70m

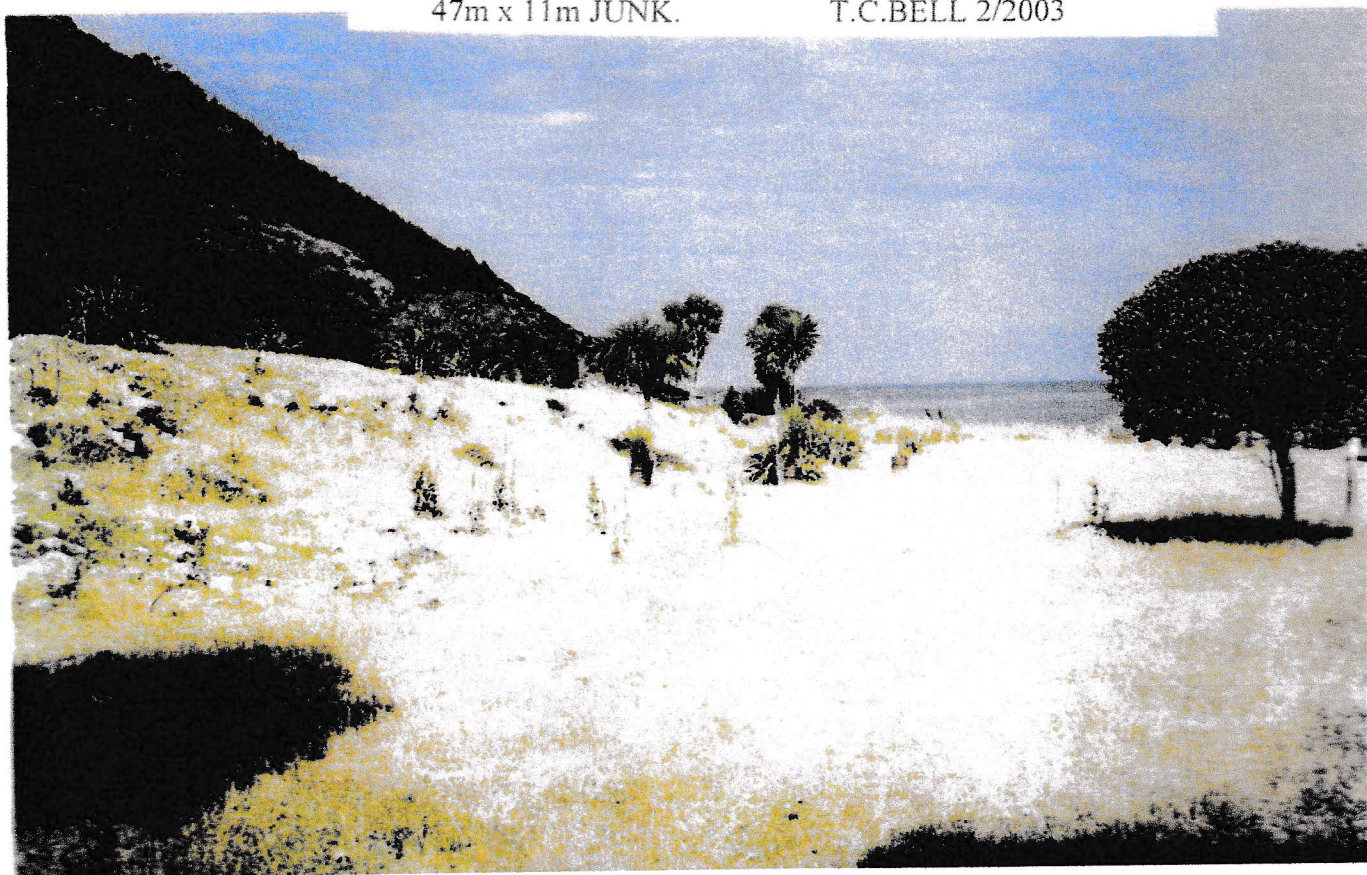
Area 0.63ha

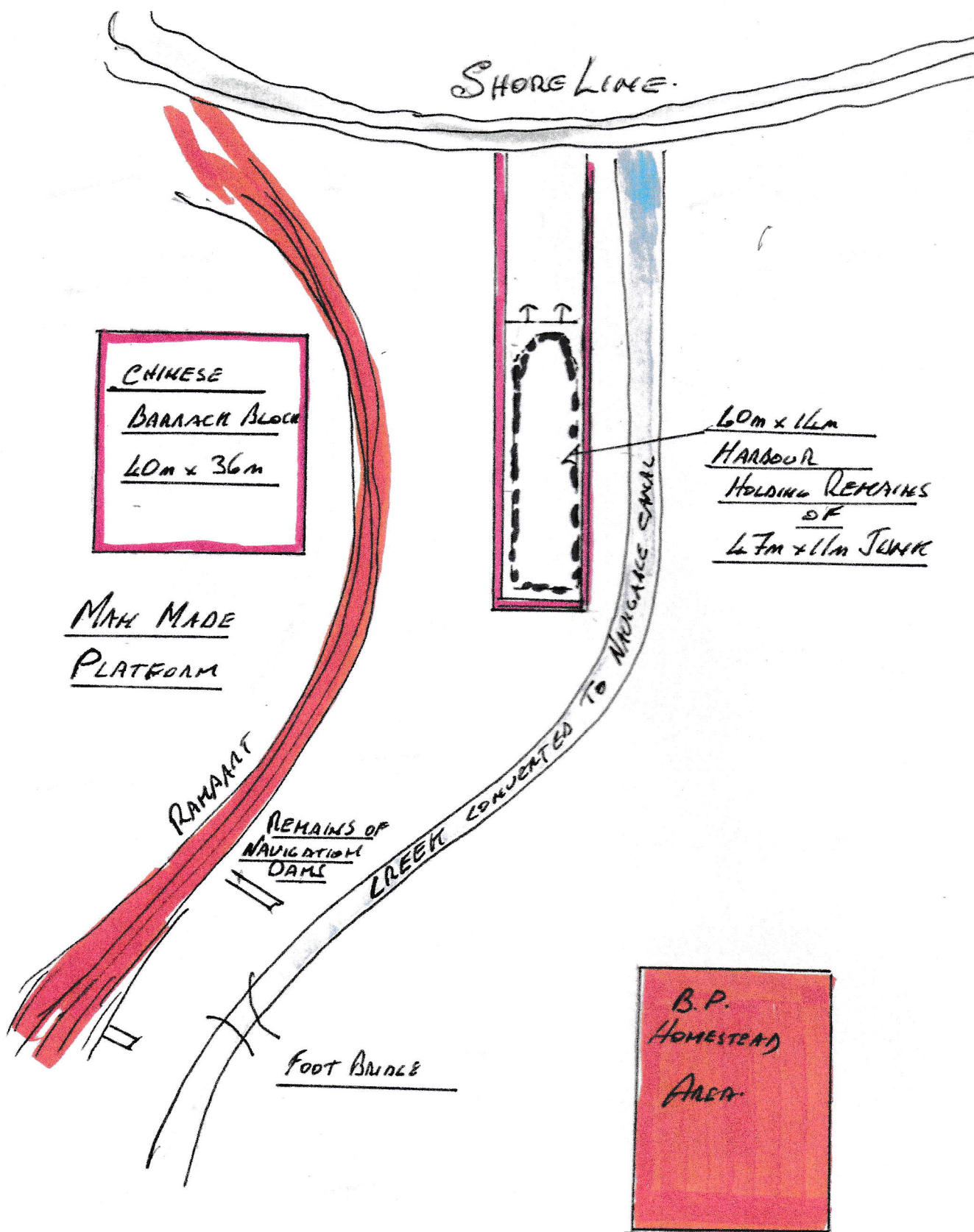
(43d,48',13S-172d,58',06E)

T.C.Bell (UK) 3/2003



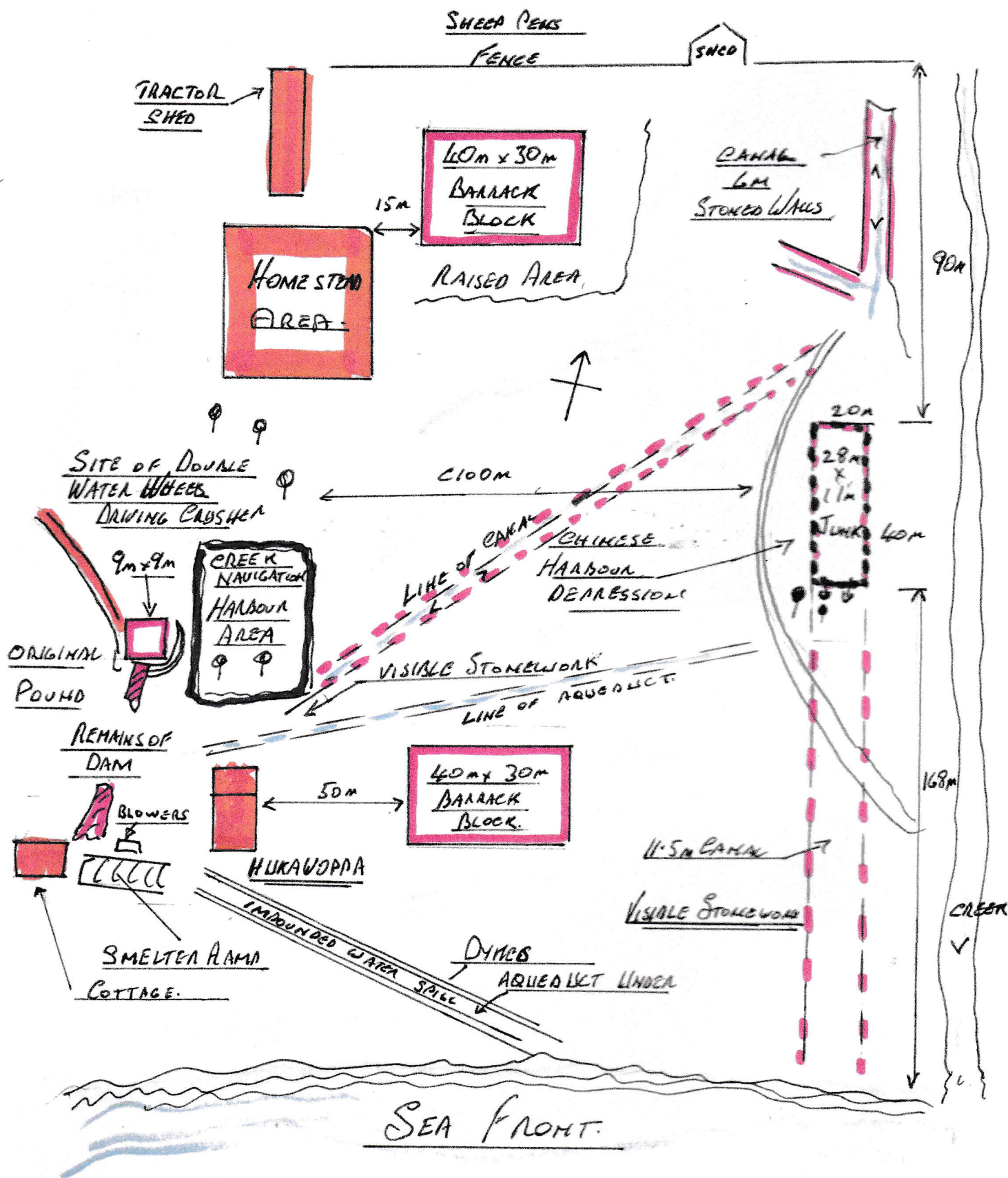
STONY BAY, BANKS PENINSULA.
 SOUTH ISLAND, NEW ZEALAND.
 VIEW OF 3m high. MAN MADE PLATFORM.
 SITE OF CHINESE WALLED BARRACK BLOCK.
 FLAT AREA BELOW PLATFORM IS SITE OF HARBOUR
 CONNECTED TO BAY by a 11.5m WIDE CANAL.
 HARBOUR CONTAINS THE REMAINS OF A
 47m x 11m JUNK. T.C.BELL 2/2003





STONY BAY, OKAROA, BANKS PENINSULA.
 (43d, 51', 20S, - 173d, 02', 30E)
 LOCATIONS OF CHINESE BARRACK BLOCK
 &
 HARBOUR, HOLDING REMAINS OF A 47m x 11m JUNK.
 T.C.Bell UK, 3/ 2003





OTANERITO BAY, AKAROA, BANKS PENINSULA.
 (43d, 50', 30S, 173d, 03', 30E)
 DETAIL OF CHINESE BARRACKS, HARBOURS,
 REMAINS OF 28m x 11m JUNK, CANALS & SMELTERS.
 T.C.BELL UK, 3/ 2003



OKAINS BAY, BANKS PENINSULA, SOUTH ISLAND.

NEW ZEALAND. (173d, 03', 43E. 43d, 41', 42S) T.C.Bell

Upper photo. VIEW OF SITE OF CHINESE SMELTER RAMPS.

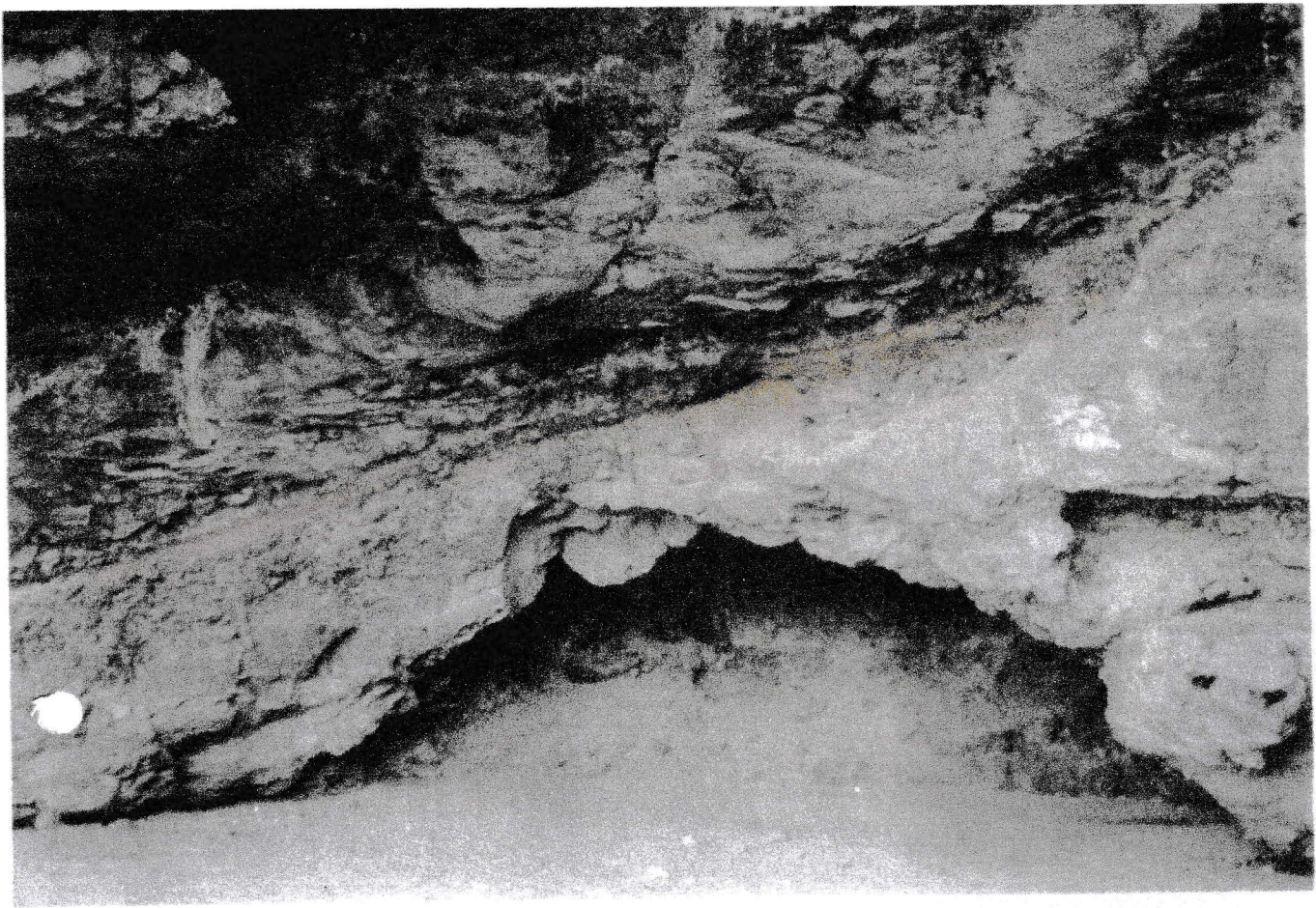
Lower photo. RAMPARTS TO FORTIFIED AREA, THESE RAMPARTS
STILL RETAIN THE FOUNDATIONS OF A 1.8m WIDE STONE WALL.



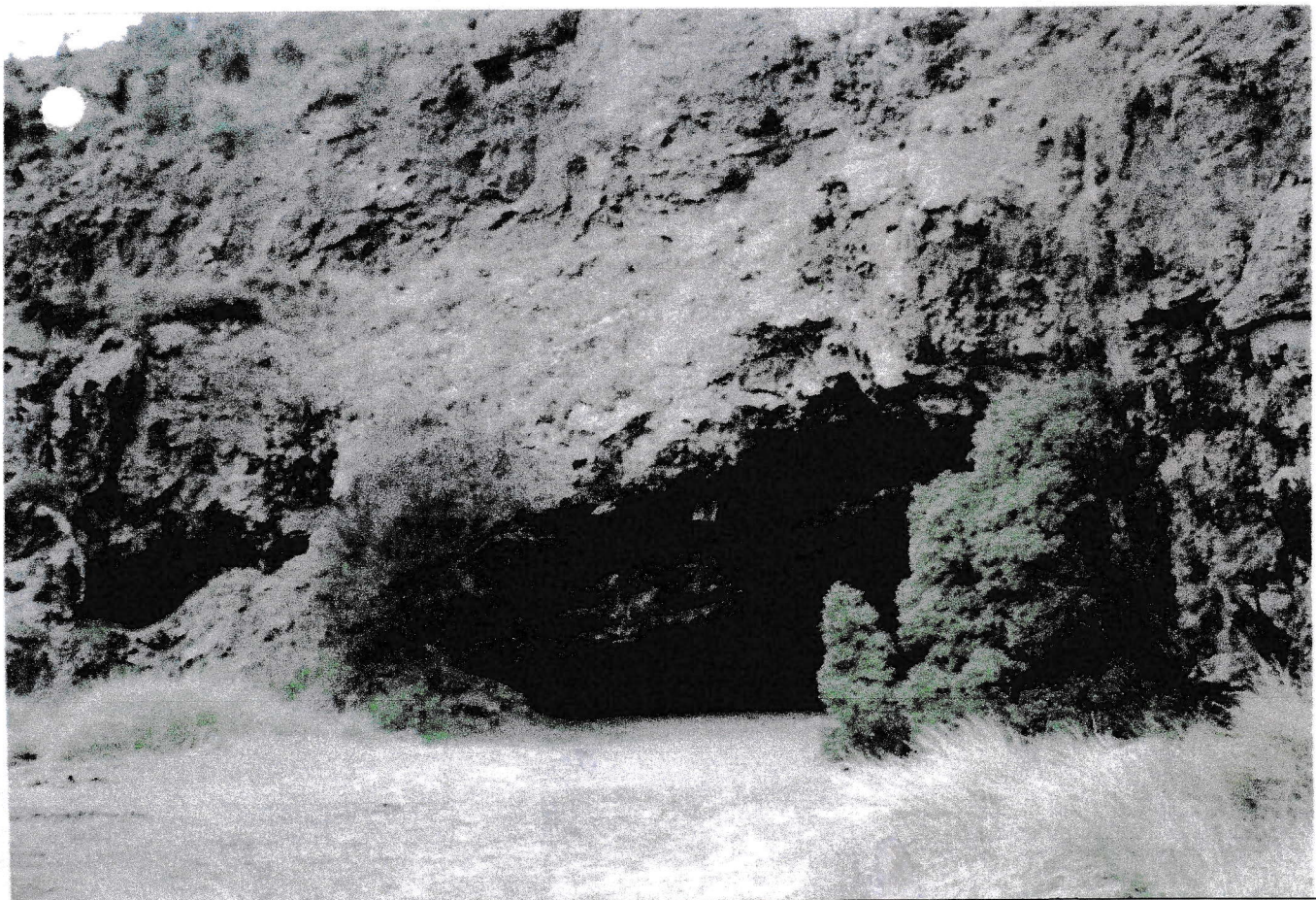


OKAINS BAY, BANKS PENINSULA, SOUTH ISLAND.
 NEW ZEALAND. (173d, 03', 43E. 43d, 41', 42S)
 RAMPARTS TO THE OCEAN SIDE OF THE FORTIFIED AREA.
 THESE RAMPARTS STILL RETAIN THE FOUNDATIONS OF A 1.8m
 WIDE STONE WALL. T.C.Bell





OKAINS BAY, BANKS PENINSULA, SOUTH ISLAND.
NEW ZEALAND.
(173d, 03', 43E. 43d, 41', 42S)
CHINESE IRON ORE MINING SITE.
THE SMELTERS ARE ADJACENT.
T.C.Bell





LE BON BAY, BANKS PENINSULA, SOUTH ISLAND
NEW ZEALAND.

RETAINING WALL FOR WALLED SINGLE BARRACK BLOCK.
AREA BELOW WAS ORIGINALLY PROVIDED WITH A DEFENCE
WALL TO ENCLOSE SMALL SMELTER HOUSE.

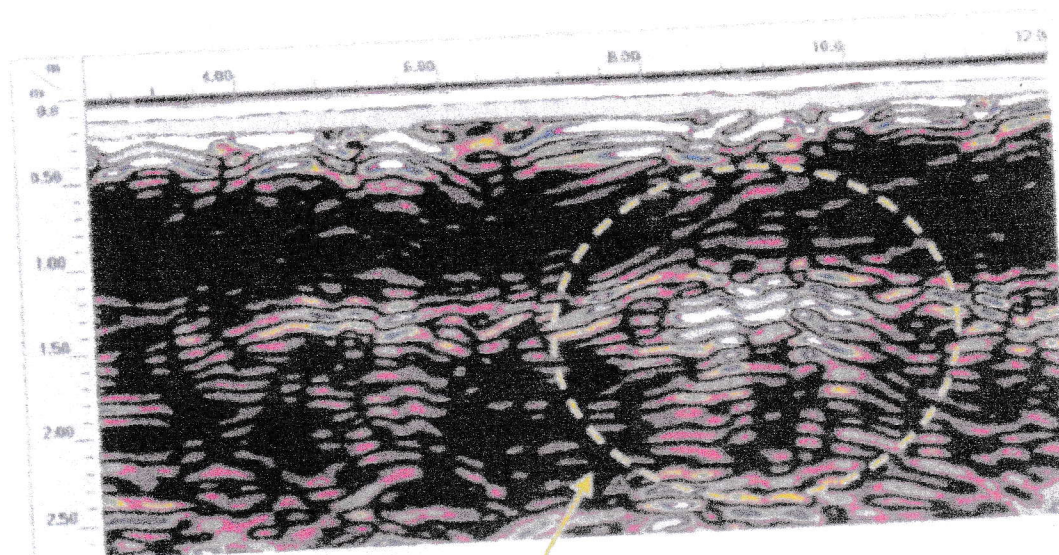
Lower photo.

SMELTER SLAG EX ADJACENT SMELTER.

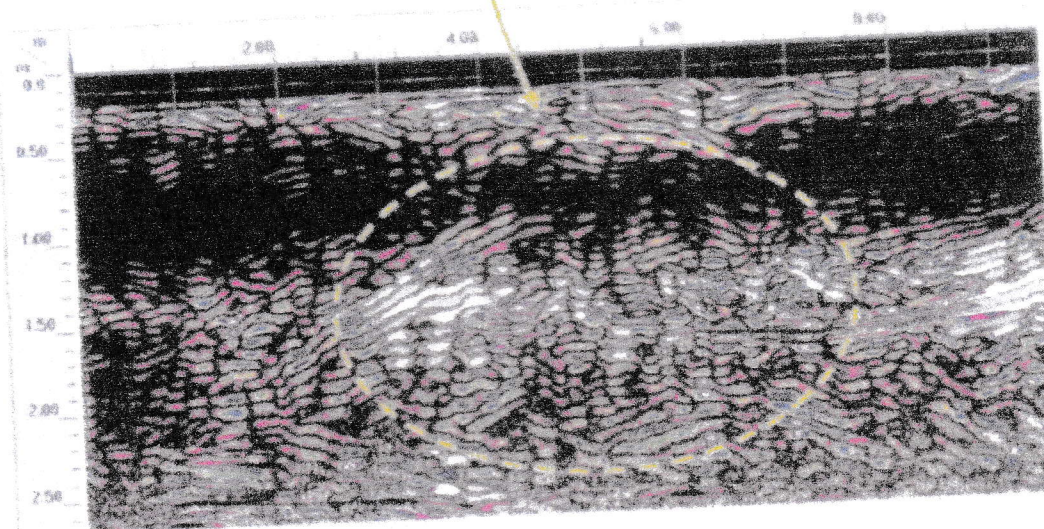
T.C.BELL 2/2003



GROUND PENETRATING RADAR SURVEY
LE BONS BAY - BANKS PENINSULAR.
Jun-03



Radar anomalies seen in suspected harbour wall location.
Harbour wall location initially determined by Dowsing method.



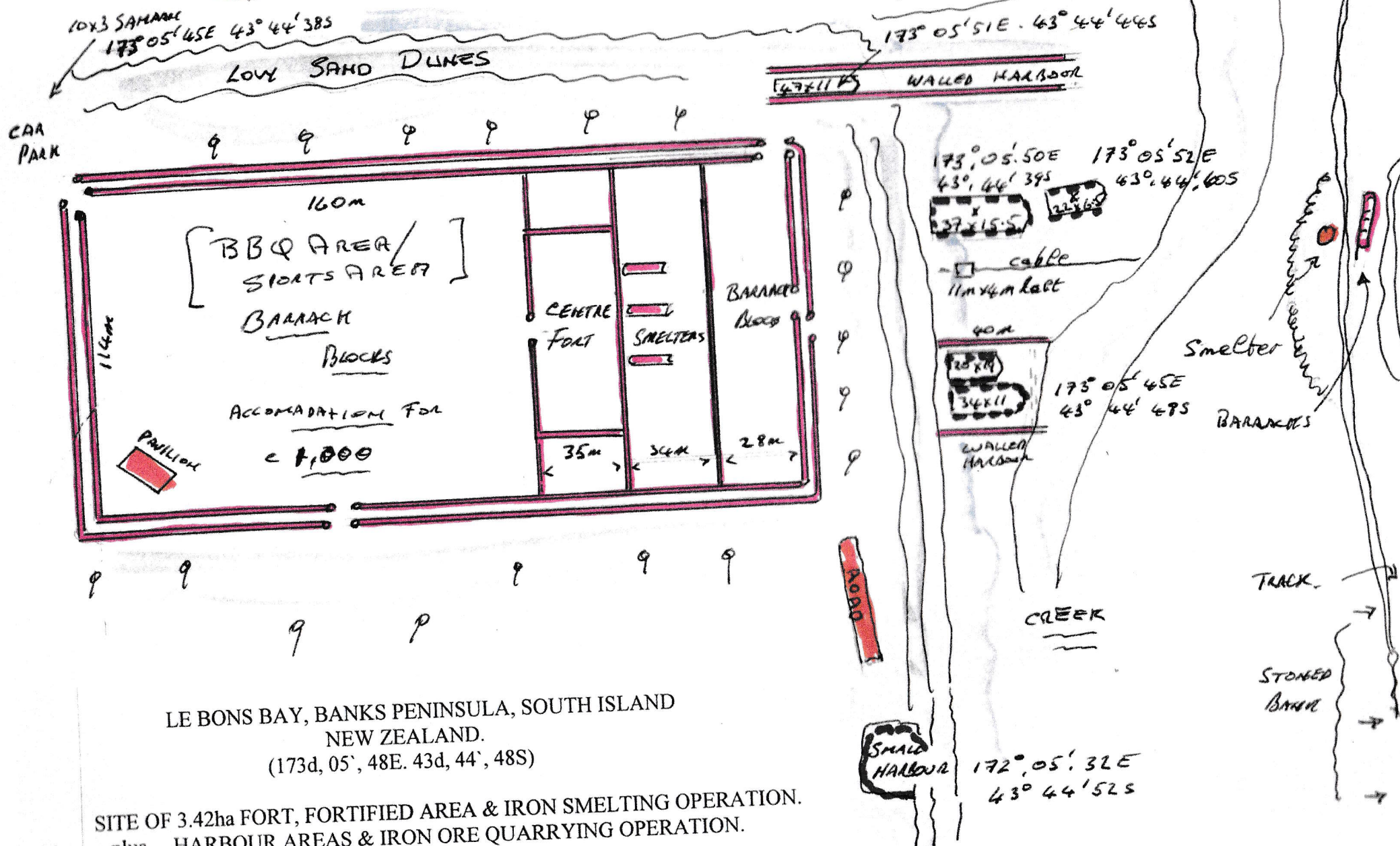
APPENDIX C



LE BONS BAY, BANKS PENINSULA, SOUTH ISLAND.
 NEW ZEALAND. T.C.Bell (173d, 05', 45E, 43d, 44d, 48S).
 VIEW ONTO RAMPART OF MAIN CHINESE FORT.
 Lower photo. VIEW ONTO IRON SMELTER RAMP.



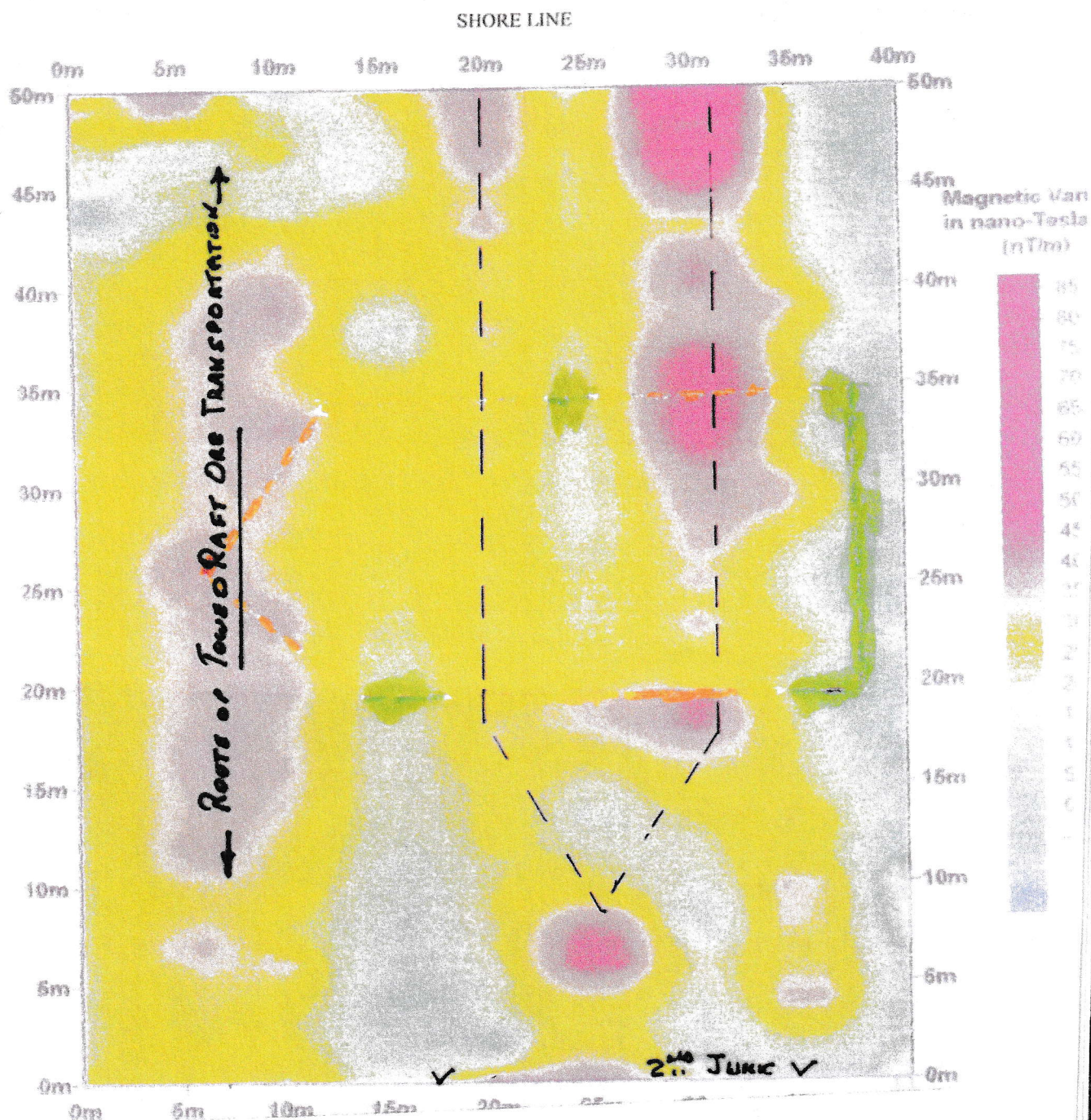
Le Bons Bay.



LE BONS BAY, BANKS PENINSULA, SOUTH ISLAND
NEW ZEALAND.
(173d, 05', 48E. 43d, 44', 48S)

SITE OF 3.42ha FORT, FORTIFIED AREA & IRON SMELTING OPERATION.
plus HARBOUR AREAS & IRON ORE QUARRYING OPERATION.
T.C.Bell 2003.

GRADIENT MAGNETOMETER SURVEY LE BON BAY EASTSIDE BEACH - AKAROA JUNE 2003



NOTE

The geophysics operator when preparing the survey report has "Incorrectly", marked the shore and creek, ie had turned the scan through 90degrees. The rectangular plot was set with a 40m shore line. The 50m line was across the creek, ie 90degrees to creek's flow, to ensure the plot encompassed the length of the junk which is lying across the creek..

This plot shows the correct attribution of the 40m base line, to the shore.
The ore transport raft was towed across on a fixed rope.
The rope and raft are still in position.



LE BON BAY, BANKS PENINSULA, SOUTH ISLAND
NEW ZEALAND.

DEFENSIVE RAMPARTS OF CHINESE FORTIFIED CAMP, ADJACENT
TO MOUTH OF LE BON STREAM. RAMPARTS ORIGINALLY CAPPED
WITH STONE WALLS, FOUNDATION STONEMWORK IS IN POSITION.
Lower Photo. VIEW THROUGH STAGGERED GATEWAYS OF INNER &
OUTER RAMPARTS.

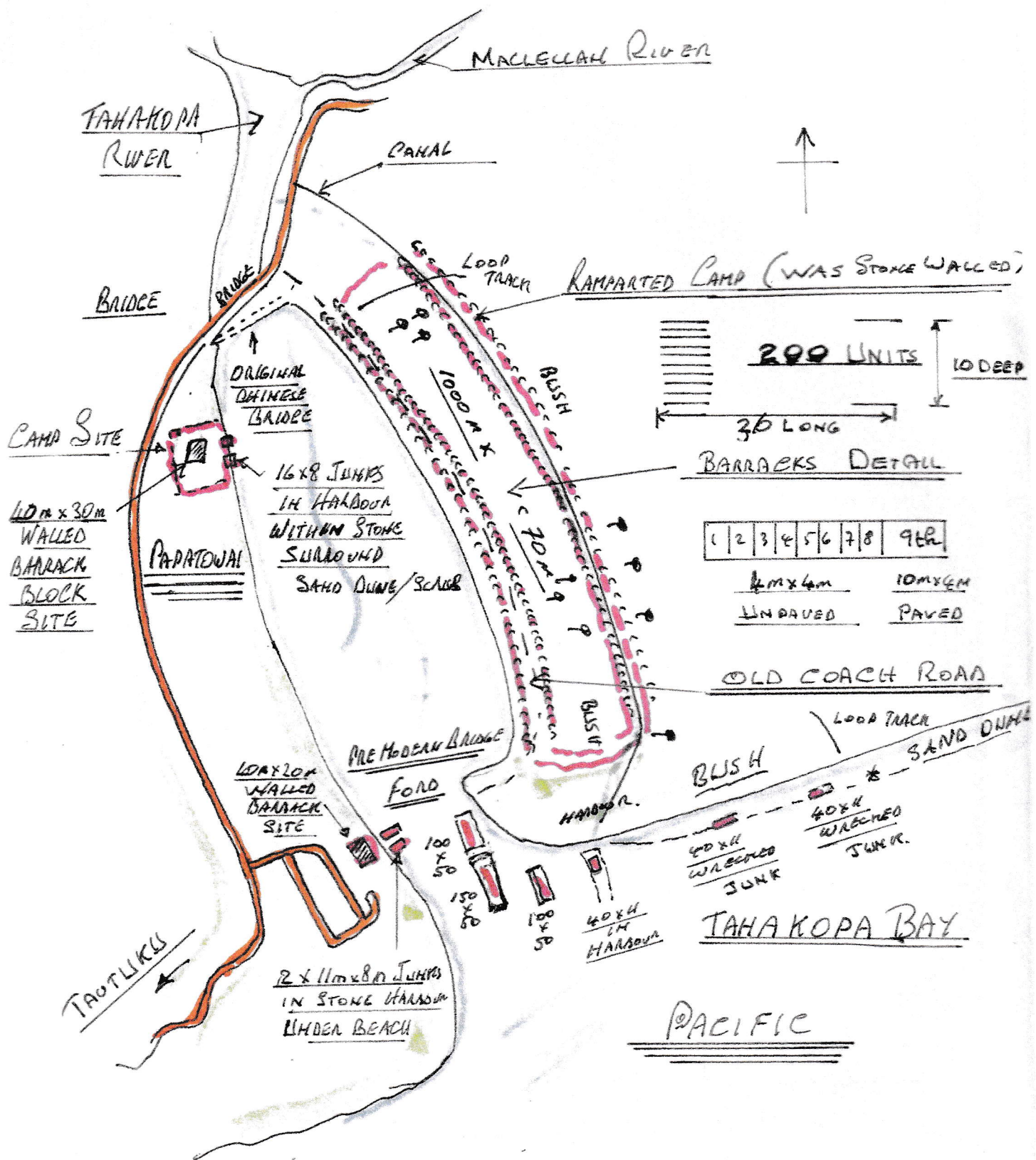
T.C.BELL 2/2003





TAHAKAPO BAY, PAPATOWAI CATLINS.
SOUTH ISLAND, NEW ZEALAND.
TIMBERS OF 47m X 11m CHINESE JUNK.
Timber ex Pitcairn or Henderson Island.
Miro, *Thespesia populnea*. Carbon Date
Earliest possible date. 1690.

T.C.Bell



PAPATOWAI. THE CATLINS, SE, SOUTH ISLAND
NEW ZEALAND.

DETAIL OF TWO WALLED BARRACK BLOCKS,
A RAMPARTED CAMP, FIVE STONE WALLED HARBOURS
CONTAINING REMAINS OF JUNKS & WRECKS OF FIVE JUNKS,
IN RIVER ESTUARY AND BAY, NOT CONTAINED IN HARBOURS.

T.C.BELL UK 2/2003.

PATH

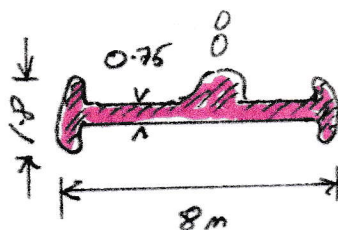
RECEDED HARBOUR
 SITE ACCESS
 TO LOCAL RIVER.

40M x 30M

WALLED
 BARRACK
 BLOCK

REBUILT AS
 MAIN SITE?

BY MAS
 ANCHOR DETAIL
 100 x 50 JUNK



NOT RECORDED

CANNIBAL BAY

46° 28' 29S
 169° 45' 07E



JUNK

46° 28' 40S
 169° 44' 33E

JUNK

46° 28' 41S
 169° 44' 24E

JUNK

46° 28' 42S
 169° 44' 15E
 NO HARBOUR
 WRECKED

JUNK

46° 28' 45S
 169° 43' 49E
 PART

PART HARBOUR ONLY

JUNK

46° 28' 47S
 169° 43' 48E

JUNK

46° 28' 49S
 169° 43' 27E
 NO HARBOUR
 WRECKED

100 x 50

46° 28' 51S
 169° 43' 00E

SEE ANCHOR DETAIL

SURAT BAY

CATLIN
 RIVER

CANNIBAL AND SURAT BAYS.
 CATLINS, SE OF SOUTH ISLAND, NEW ZEALAND.

DETAIL OF WRECKED JUNKS AND REMAINS OF JUNKS
 IN STONE WALLED HARBOURS & STONE WALLED
 BARRACK BLOCK AT CANNIBAL BAY.

T.C.BELL UK. 2/2003

CHAPTER EIGHT

Papatowai, a later survey using satellite enhanced photography of Tapakahoa Bay, located the bows of two of the Chinese junks, first located by magnetic anomaly. Presumably large number of stones covered the rest of the junks, satellite photography will not penetrate stones.

Google Earth, at a later date, was also applied to the Clutha River to check if it had been navigated by the Chinese, as would be shown by linear navigation islands. The presence of linear navigation islands proved that the Chinese had navigated to, and past, Balclutha. To my surprise the Google Earth scans highlighted the presence of a complete Chinese Ship Yard capable of building the c 120m long "Super" junks (Boachuan). The "Super Junk" Shipyard in Nanking China was also situated several miles up the river, presumably to ensure it was free from coastal Typhoons. It was reported that the vessels where sailed down river as light vessels, then loaded nearer the river mouth. An ancient mid 19th cent New Zealand newspaper commented on the masses of Flax plants at Balclutha around the area, as around the Nanking site, all used to supply the Flax for the sails.

THE CHINESE HARBOURS AND INFRASTRUCTURE AT MOERAKI.

MOERAKI. Everybody who visits New Zealand's South Island invariably has, "Must see the Moeraki Balls" on their itinerary. I quote from "The Search of Ancient New Zealand" by H.Campbell and Gerard Hutching Pg 157/8. The official explanation for these boulders is that they are natural concretions eroding out of a natural mudstone called the Abbotsford Formation. Usually some organic fragment serves as a nucleation point, the process runs, the presence of carbonate may be a constraining factor to the final size. These concretions formed on the sea bed under mud, with uplift and erosion, they have come to the surface. It also quoted that these boulders are quite common and found on the east coast of New Zealand's North Island, and even alongside State Highway 1, between Bulls and Waiouru.

The authors mention that and I quote their comment, "Some would have us believe that these objects are man made and relate to a mighty exploration fleet of Chinese junks, but that is pure fantasy". Sadly at the time, this statement was deliberately misconstrued, what was said and I should know, because I made the statement to the NZTV team. That we considered the Chinese had used some of these concretions in their junks for some purpose, possibly sail balance weights. I even demonstrated a simple model of a weight lifting the sail for the camera. We were well aware that concretions existed in nature and even that at nearby Shag Point a concretion had been located encasing a 7m plesiosaur, this was of the same species as the Monster reputed to live in Scotland's Loch Ness. My statement was based on the fact that at the adjacent Moeraki beach, we had located and identified, the wreck of a Chinese junk, arced over the cliff, driven there by the 15th cent Tsunami created by a meteorite striking the ocean. Within and by the concrete lined hull, clearly visible are three Moeraki balls, one can be seen smashing it's way through the concrete lining, segments of which had been distorted outwards by the ball's passage by the impact when the huge vessel hit the cliff face. One ball can be seen inside the hull,

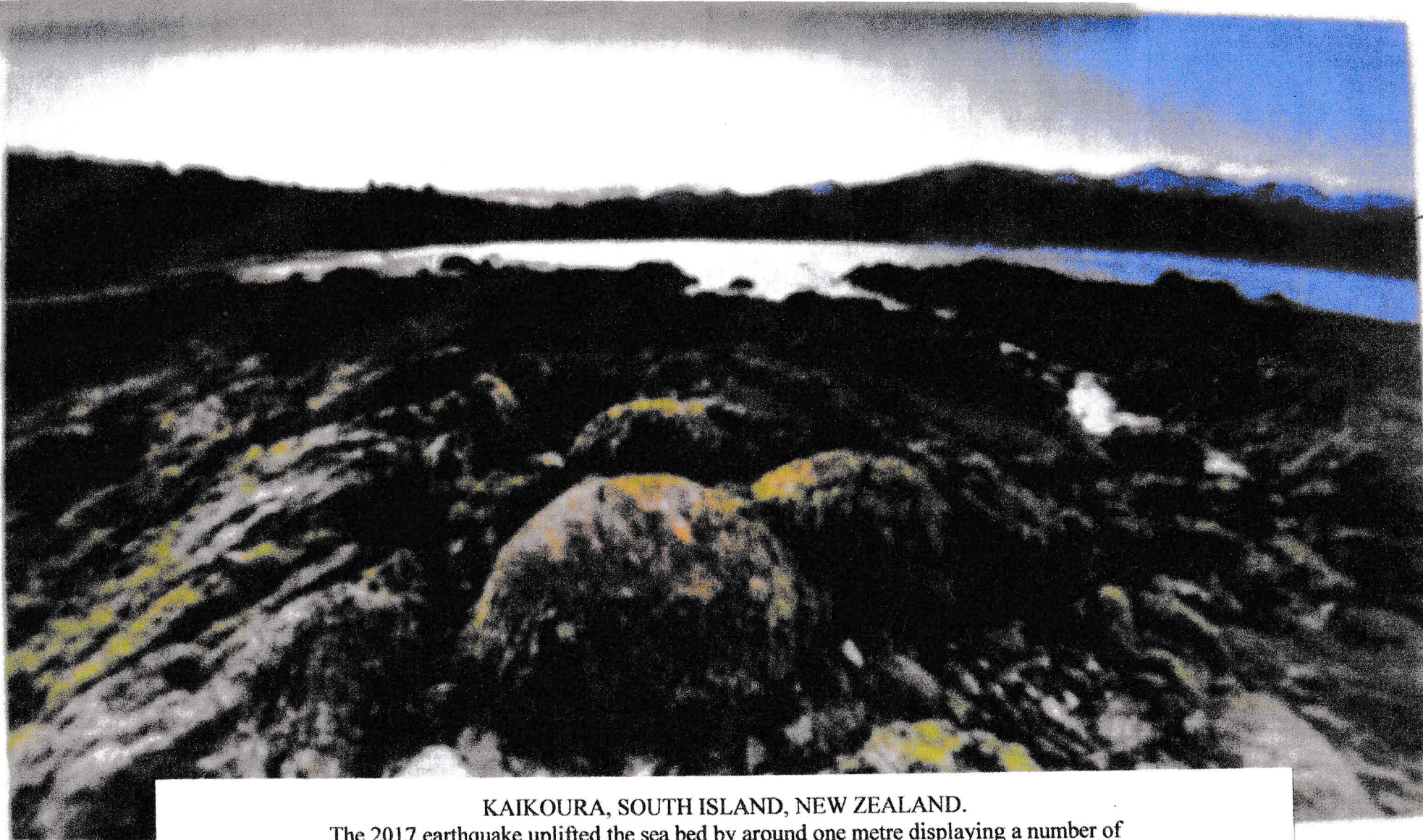
another has just dropped out of the hull. BUT, these are not plain concretions, they have been coated by man to form a spherical shape, their outer casings can be plainly seen. These disintegrating casings can be seen on other concretions breaking out from Moeraki's cliffs.

Strange that the presence of these coatings is ignored by Government geologists, who can take time to lampoon dedicated researchers, but are somewhat reticent about what is clearly visible to none geologists. When filming at Moraki with the New Zealand Television team, one local geologist, told the NZTV producer, in my hearing, that he would "eat his cap" if I was correct that Chinese Super junks had utilised Moeraki balls for any purpose and even denied the visible hull lining was concrete, claiming it was an igneous dyke. (The only concrete dyke in the World) (There are no igneous dykes recorded on the local geological map.). Sadly, this expert in his rush to discredit me, had ignored the student's very basic test for concrete (and lime stone), ie add a drop of hydrochloric acid, (HcL) if it fizzes it is concrete, or contains calcium carbonate. No other rocks fizz with HcL and certainly not the mud rocks of the adjacent cliffs, nor do igneous rocks contain carbonate, not that any are present. More recently at UK's Lancaster University Roman Forum one of UK's Vindolanda's Directors, yet another who claimed that the Roman (master canal builders) canals could not go up hill via ladder locks. He also stated that he would "eat his shirt", if my statement was true, that Vindolanda, one of UK's most visited sites alongside Hadrian's Wall was supplied by canal and ladder locks, (as all Roman (and Chinese) sites were, as present day supermarkets are supplied via wagons.). So I surveyed Vindolanda, and supplied photographs of the canal and harbours. Sadly, my survey was not acknowledged, nor the shirt eaten. I do find it sad that such folks will not honour their promises when proved wrong.

The 2017 earthquake at Kaikoura, South Island, New Zealand, lifted to the ocean floor, by c one metre, exposing the massive cut stone slabs of the keel slot of a Chinese harbour. Also exposing several coated Moeraki Boulders and some stone Mortar balls. Yet further evidence of the Chinese occupation of New Zealand.

BAOCHUANS (SUPER JUNKS) AND MOERAKI

The use of giant wooden junks by the Chinese Admiral Zheng He for his seven voyages is well recorded. However many folk had expressed doubt that wooden vessels, c 120m x 48m (c390ft x c162ft) could be built without the use of iron frames for stiffening. As none of these Super junks had been located, until I identified the one at Moeraki, doubt still existed in some circles. Many arm chair experts claimed that these vessels, described in Gavin Menzies "1421 The Year That the Chinese Discovered the World", were a figment of his vivid imagination. However descriptions of these amazing junks can also be found in dozens of books, including Louse Levanthes's "When China Ruled the Sea", Prof Edward L Dreyer's "Zheng he" and Gang Deng's "Chinese Maritime Activities and Socioeconomic Development 2100BC to 1900AD".



KAIKOURA, SOUTH ISLAND, NEW ZEALAND.

The 2017 earthquake uplifted the sea bed by around one metre displaying a number of spherical stone balls and the base of the Chinese harbour. These balls are identical to those located in several parts of New Zealand adjacent to the wreck sites of Chinese vessels carbonised in 1435 by a passing meteorite. A Tsunami formed by the meteorite striking the ocean south of New Zealand, then drove the carbonised hulls out of their harbours, spilling their contents. The stone balls ranged from cannon to mortar balls, the largest balls being concretions, used for voidage, then coated to form a perfect ball for use within the Chinese vessels. This external coating eventually disintegrates on the beach. The slot right, was for the keel of a large Chinese vessel, the inline flat stones left, formed part of the harbour's hull support system. Photo by Kyle Mulinder. Description T.C.Bell



KAIKOURA, SOUTH ISLAND, NEW ZEALAND.

The 2017 Earthquake uncovered this carved head of what appears to be a bear, buried in the cliff. The Maori did not carve stone, as they did not possess metal forming skills. There are no records of bears in New Zealand. The carving would appear to be pre Maori, suggestive of a Chinese origin.

Photograph by Police Constable Chris McCracken, Jan 20th 2017

Published by the Marlborough Express.

My attention was firstly drawn to the site of the "Super" junk wreck site, as in the distance north from the Moeraki restaurant I could see a section of the pristine beach, covered in small stones, and the cliff was discoloured, and wondered why. So walked along to the site, then noted an arc of white blocks across the cliff, some c 1m x 0.5m (3' - 3" x 1' - 8") several had fallen onto the beach, together with stone Cannon Balls and one massive partially buried mortar ball. The line of the timber frames of the flat bottomed hull of a vessel could be clearly seen arced over the cliff, as could several of the timbers. I was totally amazed at the size of the hull which was c 120m (390ft) long, the beam could not be ascertained as it was still partly buried under the beach. The sheer size of the Moeraki wreck identified it as a Chinese "Super" junk (Baochuan, or as it is sometimes called Treasure Ship). Nobody else in the world had constructed such immense vessels in wood. Over time more of the timbers of the huge hull become visible as the cliff disintegrates. Carbon dating of a timber sample at SUERC (Scottish Joint University Laboratories) was attempted, but sadly not possible due to the exposure suffered on the wet cliff. However samples of the hull's lining were identified by a UK expert as concrete and a New Zealand Laboratory carried out an analysis, the materials composition was identical to Roman waterproof concrete, based on volcanic ash (silica). The concrete was bonded to the hull by rice adhesive, another well known use of rice based mortar was to bond the bricks of The Great Wall of China. Those that saw the NZTV documentary at Moeraki will remember the picture of me pointing out the fragments of the hull timbers adhering to pieces of the concrete which had fallen out of the cliff. The concrete lining, bonded to the timber hull, was a major factor in enabling the Chinese to construct such huge vessels, one that had not been appreciated until we discovered and reported the discovery worldwide. In the same cliff was one of the c300mm (12") diam mortar balls formed from solid stone, another ball was noticed and unearthed on the beach in front of the NZTV team just by application of a boot. One slab was specially cast into a curved section of the hull, one wondered if the curve was part of a mast, this section contained a piece of iron which had been dropped into the concrete when it was wet. A somewhat worn 200mm diam (8") solid sandstone cannon ball was also noted alongside the wreck. A ship borne artist had scratched animals in the concrete.

One of the Chinese dry docks in which these "Super" junks was constructed, together with a replica junk, is now a visitor centre alongside the Yangtze. During the Singapore exhibition dedicated to then 600th year anniversary of the first voyage in 1405 of Chinese Admiral Zheng He's voyages, Gavin Menzies and I were approached by a Chinese business man, he said that he was planning to construct a scale version of Admiral Zheng he's enormous junk ready for the Olympic Games in Beijing and sought our advice. Some will remember the opening ceremony of the oars with a Zheng He sails motif. We gave some basic suggestions and I said that as a marine engineer, I was well aware that teredo worm borers were a very serious problem to wooden hulls, so why not construct the hull in steel and coat it to look like wood, it would be cheaper, stronger and totally resistant to marine borers. They were not too impressed with my comments re the hull construction. To assist their venture, I supplied a copy of D & L Chidell's book, "Cutting the Dragon's Tail" This is an interesting account of the construction of a steel hulled junk, which the British couple built, sailed and lived in. David as a construction engineer

appreciated the values of steel over wood. I also supplied them with some of Tim Severin's books on replica vessels, he too suffered from marine borers who can eat a wooden hull for breakfast. Tim Severin is an Irish historian with a lovely sense of humour, if he is speaking near you, go, you will not be disappointed.

Whilst at Moeraki during the NZTV filming of the wrecked junk, noting a cliff mud slide by the wreck, my colleague, Sarah Thornton, the publicist for Random House and I saw some exposed rusty coloured items which appeared to be metallic, we put these in a plastic bag and carried on filming. On examination one c50mm diam (2") item appeared to have Chinese markings on it, this was taken to the Professor of Chinese at the Canterbury University who identified it a superimposed Chinese letter for mountain, it appeared to have come into contact with a an object that bore the name. The other items, one of which appeared to be in the form of a stirrup and another, a multi segmented section, which at first we thought may be part of a multi layered built up sword, but neither were magnetic, my first standard test. So we took them to Canterbury Museum (our base was Christchurch) for identification, they in turn sent them to a geologist at Otago University. The report stated these were multi layers of limonite which had leached out of sandstone into the mudstone below and formed the odd shapes. Nobody could provide an explanation of why one deposit had ended up in the shape of a rough stirrup. I took the items to the British Armoury at Leeds, this recently constructed museum was designed to replace the Tower of London and contains a host of superb examples of ancient armour from throughout the world. The extremely helpful metallurgist Dr Starley, viewed the items and agreed with the Otago report, but could not offer any explanation, for the shape. Clutching at straws, we were even permitted to check the museum's superb collection of Japanese swords held in the vaults, to check if any were none magnetic, without success. (Certain high tensile steels are none magnetic). We even put photographs of the items on the 1421 web site, visited by thousands sadly nobody could offer an explanation other than the liquid limonite had formed within a wooden stirrup ex the junk in the cliff as it had rotted, so forming a stirrup shaped section in limonite.

Following our first South Island surveys, we realised that our first thoughts re the Chinese fleet were incorrect, ie that a large visiting fleet had been carbonised by a meteorite and then been driven out of their harbours and ashore by the following Tsunami as the meteorite hit the ocean. We began to realise that the major element of the fleet, the "Super" Junks, Baochuans, must have been actually in New Zealand on a regular visit and berthed in custom made harbours, then been blasted out of them by the Tsunami.. But nobody had ever reported having found such harbours, so no information existed, even Prof Dryer, an expert on the Chinese fleet, had thought these huge junks had to return to China to dock,

As a marine engineer I doubted that a badly damaged vessel would have to sail a few thousand mil back to China to be repaired.

So we returned to the UK and decided to try and learn as much about Roman harbours in

Britain as possible, this took two years of fascinating surveys. The idea being that as the Chinese and Romans had exchanged engineering designs since 170 BC, there must be some linking features. There was NO written information re Roman harbours in Britain. For two years we surveyed around major Roman shore sites from Cumbria up the Scottish coasts and found several large Roman deep sea harbours capable of serving their 30m x 6m vessels. The largest harbour we located was at Skinburness, west Cumbria, this had served the western end of Hadrian's Wall and NE Cumbria's huge ore exploitation operations. The harbour was 1,600m long and 200m from shore to sea, with several sections, all accessed by sea locks. The harbour stonework was in place, covered in sand. A dam had been constructed across the local river and from the backed up river, a huge aqueduct was led along the back of the harbour walls with connections to each harbour section to keep them flooded. It was the depression created by the settlement of sand into this broken aqueduct which led us to the harbour, this is also how we were led to the Roman harbour at Cramond, Near Edinburgh. So at last we knew the design of Roman deep sea harbours and where they had been sited ie always near a river mouth.

During one of these surveys for harbours on the Scottish Isle of Arran, alongside the shores of Brodick Bay, we noted two c 40m square platforms with different coloured grass. A scan confirmed to our complete surprise that the discolouration was caused by the foundations of a walled barracks of Chinese design. ie The space inside the walls was completely taken up with nine roomed barracks. Unlike a Roman fortlet of that size, which would have only contained two 11 roomed barracks, an internal officer's room and a small granary. Our interest aroused, we ran a scan along the beach using magnetic anomaly, we soon located two harbour stone arms each c 2m wide and c 53m apart, each over 70m long, the tide level stopped us going out further. Leading into this harbour, fed from the adjacent river was an aqueduct. We carbon dated the peat bed which ran across the harbour, this was over a thousand years old, so we knew that the harbour was ancient. The sheer size of the harbour eliminated it as having been designed for any Scottish or English ships of that era and also Roman vessels. So having found out our information re Chinese Super junk harbours from a totally unsuspected source, the Scottish Isle of Arran, we then returned to New Zealand, knowing where to look and what to look for.

Whilst Moeraki is famed world wide for the concretions, but the existence of a complex immense Chinese stone harbour, specifically designed to hold ten "Super" junks buried under the foreshore sand was never suspected, until we commenced our surveys. Our first surveys along Moeraki's beach near the restaurant had located a number of linear anomalies between the cliffs and the waterline over a c500m length of the beach. We firstly thought they were wrecks. Though I'm sure the Otago geologist will never admit it, I do wonder if his comments during the interviews for the NZTV production of my surveys, that the concrete hull of the Junk was an igneous dyke, had originated from a survey along the same shore. It is feasible that they had encountered the same anomalies we had located and presumed that they must be igneous dykes or reefs. What else could folks raised on Maori folk lore and canoes possibly think. In reality the local Geology

map Sheet 23, clearly shows the nearest igneous outcrops are Moeraki Point well south of the beach and Cape Wanbrow, northwards by Oamaru.

Following two years of research into the design and siting of Roman and to our surprise Chinese harbours in North Britain, we returned to re survey along Moeraki beach. This survey established that the magnetic linear anomalies were the lines of the stone walls of harbours specifically designed for the c120m x 50m "Super" junks, Baochuans or sometimes called Treasure Ships. Ten harbour slots were located under the beach. One c 120m long wreck lay parallel to the cliffs across one end of the harbour. Each of the harbour's was really a walled slot for the junk to slide in with only a few metre spare on each side of the junk's hull, with a 2m wide stone water flushed lined slot at the base of the harbour to take the large keel of the junk. From our surveys in Britain over Roman harbours we knew that local rivers / creeks were blocked by dams and the backed up water fed via huge aqueducts progressively reducing in size as it fed each harbours. The Roman aqueducts fed into normal wet harbours and maintained their level, these harbours being accessed via locks. In the Chinese harbours the aqueducts fed directly into the keel slots and kept the 2m wide keel slot clear of sand. Three rows of c 2m sq pads ran down the length of the harbour on either side of the keel slot, to support the huge hull. At Moeraki the crumbling cliffs enabled us to access by scan the aqueduct flanking the cliffs and follow each smaller aqueduct as it fed each harbour keel slot. The low tide did not go down far enough for the complete harbour to be measured. We were fortunate to locate another set of similar harbours on Bayly's Beach, on the west coast of North Island, here the low water mark was beyond the length of the harbour, so we were able to scan the total beach and the full length of the harbours and the flanking piers. Here we had the good fortune to meet a local, who was deeply involved with searching for wrecks, he had also scanned the beach and told us that reefs existed. Again there are none on the geological map of the area. We were able to show him by the shape and design, that in fact these were harbour walls.

The amazing finds at North Island's Bayly's Beach provided further details of the design of the Chinese Super Junk Harbours. At the end of the side walls of the strip harbour was a large stone anchor block c 6m square. The c 120m x 50m junk would come alongside the pier stern first, drop it's anchors and be towed into the harbour at half to full tide, as the tide ran out, the keel would enter the slot, and the huge hull would be safely supported on the rows of stone pads. Exiting the harbour the anchors were used to kedge the junk out to sea. We think the Chinese had multi oared sampans which functioned as tugs, these assisted the docking and undocking. At Bayly's Beach, North Island, we were told that many years go, shifting sand hills exposed a long hull with round holes through it's sides. This description would fit a man powered rowing tug. To confirm our magnetic anomaly surveys of the Moeraki beach harbours, we then arranged for a satellite scan of the area to be enhanced by Tim Akers, a marine historian, this produced an amazing image of the huge stone arms of the harbours and totally confirmed our own magnetic anomaly scans. The satellite photographs of the area also highlighted the "Super" junk wreck arced over the cliff.

Surveys alongside smaller harbours designed for 47m x 11m, (152' x 45') had shown that the crews of Chinese junks slept ashore in designated barracks. The surveys at Moeraki had located the outlines of major ramparts, these are best viewed by crossing the railway line south of the restaurant site, and taking the shore road. Clearly visible are the outlines of the ramparts of large fortifications on both sides of the road. The northern site is c300m x 200m (parallel to the beach), the southern site c 300m x 500m (parallel to the beach). The ramparts enclosed an area c 21ha (50acres), scans inside the ramparts located the foundations of the barrack blocks. Presumably these housed the Junk's crews when in port and the onshore harbour workers and guards. The crews of these large junks are c 700 men, so housing for at least 7,000 plus would be required, assuming that the fleet would travel as a convoy whilst they serviced the Chinese Pacific sites and all be in port at the same time. My UK surveys have located Roman sites c 7ha, (16acres) (designed to provide winter quarters for a legion c 5,300men in 66 barracks, on this basis the Moeraki site would easily hold the crews of ten Baochuans (Super Junks) and the dock workers. Maintaining super junks engaged on world wide voyaging, must have been an immense task and required large repair facilities. Presumably that there were other fleets of Bachuans on the same routes who also used New Zealand as their South Pacific base. Little wonder that the poor Moa was virtually wiped out to provide food for the crews. Provisioning such a large number of men must have been quite a head ache. Remaining in this area there must also be some evidence of the original agriculture used to provide food for the fleets.

Whilst at Moeraki, the café is well worth a visit, and there is a well stocked souvenir shop alongside. A few metres north of the adjacent souvenir shop is a mound with a stone foundation, this was the site of the Pharos (lighthouse) which guided the Chinese vessels safely to port. Other smaller ramparted sites were also noted along the cliff top above the Moeraki Boulder beach, right up to the creek at the north end. At the mouth of the creek the outline of a c 28m x 14m (91' x 45'') craft was located, the size indicates a Chinese catamaran or raft, presumably used for servicing Baochuans (Super Junks) at anchor outside the harbour. As mentioned previously one cannot blindly accept that all catamarans in the Pacific were Polynesian. I locate one 120m x 38m Chinese catamaran in a massive harbour in Loch Ryan, Scotland. Loch Ryan's sea loch, now a ferry port for Ireland, was probably the Roman major port for Scotland. (See Bell's Scotland's Roman Heritage. Free download via Ullswater Steamers web site)

.As one who had spent over 26 years (2019) following the Roman trail in Britain virtually full time and actually living on a Roman town surveying Roman, I find it unbelievable that no one in New Zealand has neither investigated, nor reported the immense visible ramparts at Moeraki. Or is it that they have and decided that such a report would bring a sudden end to their future career prospects. Presumably this is why only those with independent means, or those from outside New Zealand, such as I dare report on such evidence of pre Maori occupation.

A visit was paid to the Moeraki Kaike (village) at the south end of the beach. This was once the site of a whaling station and is now the site of several holiday homes and a

somewhat neglected Maori cemetery. The holiday homes partially overlay the foundations of barrack blocks, presumably these housed worker who worked the nearby igneous outcrop for iron ore. The smelter ramps, mainly covered by wind blown sand, are still in place. Interestingly another legacy of the Chinese occupation is the depression of a highly visible c12m wide canal which runs from the seashore through the holiday home site into a small, now infilled harbour, on the land side of the holiday homes. A scan over the harbour revealed the remains of a small sampan c 10m x 4m still in place.

THE SHAG RIVER SITE. Site Survey Edited by Athol Anderson (1996)
Time prevented a visit to the Shag River mouth, however the Moeraki Bay and the coal mine are immediately south of the Shag River. It is somewhat surprising that there is no mention in Athol Anderson's report of extending the survey over the sand dune to the coal mine area. In the adjacent bay, by the coal mine, we located the sand covered wrecks of two Chinese junks, c 120m x 48m, complete with several visible stone mortar balls. The wrecked junks had bow and stern anchors out, suggestive that the vessels had been wrecked in a storm and the stern anchors laid out to secure the vessels head to the sea. Sadly the vessels could never be refloated. On the edge of the rising cliff at the shores edge, we located the foundations of a Chinese barrack block, suggestive of sailors housed and engaged in remove usable material. My guide informed me that many years previously many cannon balls had been visible, on the beach. I was shown two that had been rescued many years previously. The coal mine has a very clear canal flanking the shore (Chinese design) with a sunken sampan in it) and adjacent harbour cut out of the rock. The modern mine is adjacent to the walled harbour adjacent.

I do find it strange that archaeologists ignore what is around them to concentrate on the holes they are excavating. In my home town in the Lake District, archaeologists excavated alongside a massive Roman harbour, the only flat site known to be wet in the very hilly area. Towering over the harbour to the North, are the ramparts of a massive Roman fort. Towering over the harbour to the East is a massive man made platform. The barracks of the fort and the barracks of the adjacent slave site are clearly visible on an aerial photograph. The archaeologists failed to recognise the adjacent fort and massive barrack block, and the harbour's flat site, walls and the dam fed from the local river, (stone visible in river), both visible on an aerial survey, (plus the visible locks) and the adjacent fort and walled barracks. Then when questioned, denied the existence of the massive Roman structures. Needless to say, the playing fields laid on the site flooded in the rainy season. My offer as the only Marine Engineer in the area with an understanding of Roman Harbour design, to design the drainage system (For Free) was rejected as was my surveys of fort, barracks and harbour. The County archaeologist was later sacked, but his ignorance cost the local football club thousands of pounds trying to defeat the water.

One can only assume that the folk rescued from the two wrecks had formed the population of the village. Maori folk lore, claimed that a Maori canoe had been wrecked at this point, founding the Araiteuru Tribe. As usual the Chinese vessels being changed to Maori canoes in the telling of the tale over the years.

NORTH ISLAND, NEW ZEALAND.

Our prime objective of visiting the North Island was in an attempt to obtain and evaluate any evidence of the mid 15th cent Tsunami which had devastated the South Island's Chinese coastal settlements and fleet. Debris from this Tsunami has also buried many of New Zealand's archaeological sites beyond normal access and the range of most geophysical equipment. This was our second visit to the North Island, previously we had visited the interesting tourist's high lights, so our objective was to follow the even more interesting Chinese trail. We had been told us that there was a display of Moeraki type balls in Auckland, so with the aid of a local we found them, displayed without provenance on a grass verge in Grafton Street. The balls are virtually spherical, in two sizes around 1m – 1.2m diam, unlike normal concretions which tend to be sausage shaped to oval, so again it appears that these are modified, coated concretions.

Our first planned visit was to Dargaville, a small west coast town, situated on the Wairoa River, North of Auckland, the museum was the first stop. The museum site dominates the town and the river, not unsurprisingly it turned out to be the site of a Chinese fort.

As with many private New Zealand museums, it is run by volunteers and dedicated to the sea, most of the exhibits had been located on the local beaches. The exhibits even include the masts of the Greenpeace ship, blown up by the French Secret Service to prevent interference with the French Atom Bomb trials, sadly killing one of the crew. The latest exhibit is a French carronade found buried on the beach north of Kaipara Harbour, to date the ship wreck has not been found. In this area the sand movement can vary up to several metres, one such movement exposed a complete wrecked yacht which was recovered and has now been re furbished. When examined, the carronade, cast in 1821, even had a cannon ball wedged in the gun barrel. Noel Hilliam (the force behind the Museum) who found the cannon and preserved it, whilst clearing the touchhole was splattered with smelly whale oil, left in the barrel as an anti rust preservative, and held in place by a cannonball. Whale oil was the finest oil available for the manufacture of cutting oils and high temperature casting release coatings. When whale hunting was abolished by the world, except sadly the Japanese, who continue to slaughter them, the lubricants industry struggled to find an alternative product with the same qualities.

It took two years of research carried out in the UK, to finally understand the designs and positioning of Roman and Chinese harbours for their major deep sea vessels. So on this survey we were aware that the harbours for "Super" junks c 120m x 50m where built on the coast alongside the mouths of rivers or creeks. As most river mouths have sand or gravel bars deposited across them, especially in New Zealand, only small, shallow draught vessels were capable of crossing them safely. We stayed at the Baylys Beach Camp site, a walk around the site soon located the remains of the raised ramparts surrounding an area, c180m x 80m, scorched grass over one raised section indicated stonework of a gatehouse. The site contained the foundations of sufficient barracks to house two "Super" junk crews. This meant there had to be at least two "Super" junk

harbours on the nearby beach. We had met up with Gary and Vi Cook, fellow "Seekers of the Truth", so we combined our resources. Fortuitously the tide was out, exposing an immense area of sand, so we were able to carry out a through scan. Between us we soon located the unique signals of the stonework of a double bayed harbour. By this time a local called Gordon, came to join us, he said there are several reefs here. We were able to prove to him that the reefs were actually harbour walls. The walls of the double bays extended out along the beach towards the sea for c 120m, (393ft), each bay was c 53m (173ft) wide. From the centre wall of the harbour a single pier went out for c 120m, this had a stone block at it's end to anchor the pier.. The junk was able to come alongside the pier, then be held steady against the wind and tide, as it was hauled into the harbour at full tide. The harbour was fed via an aqueduct (still in place) from the nearby creek. The water was fed into a 2m wide stone walled keel slot which ran the length of the harbour, this continually flushed out any debris. On either side of the keel slot ran three rows of 2m square stone blocks, these supported the hull of the "Super" junks at low tide, exactly as in a modern ship dry dock.

Thanks to our local guide, Gordon, who knew the sites of the magnetic anomalies on the beach, which had locally thought to be reefs, we located two more sets of double harbours, a total of three sets of double harbours, all fed from adjacent creeks. That meant there had to be two more barracks to locate, sadly due to time limitations we did not have time to survey for them. But our surveys located one sand covered junk wreck in one of the harbours and five more buried in a line along the beach, all with their distinctive anchors still out. We also located two other smaller vessels, not junks, on the same beach. As the sand cover is probably 4m-5m, on a tidal beach it is virtually impossible to access the remains of the junk's hulls. Their position alongside their harbours indicated that the immense Tsunami whose destruction we had witnessed on the South Island, had also lifted the junks out of their North Island harbours and deposited them on the beach. Presumably the junks would be so badly damaged that they would not be capable of repair, even if their crews had survived, which is very doubtful. One can only hope that one day the sand will release it's hold on the hulls and they will be exposed. Our previous equipment trials over the sites of wrecks buried by tidal sands on the Banks Peninsula had confirmed that they could only be located by magnetic anomaly as used at Baylys Beach, or a combination of gradient magnetometry and magnetic anomaly, as we used at Le Bon Bay. We dined and wineed, very well, that night at the Funky Fish Restaurant, very pleased with our finds. Next day Gary Cook took us to visit Mangani Bluff, just north of Baylys Beach. This site is renowned for the huge carved face towering over the beach below, presumably a navigational marker for the Chinese fleets, indicating the proximity of their harbour. Several similar faces have been recorded in New Zealand. Interestingly someone had been excavating and exposing the stone ramparts of the Chinese fort adjacent to the Bluff. The fort was 100m x 50m and contained eight standard Chinese 36m x 4m barracks. The 10m x 6m toilet block was located at the landward side of the fort, the cemetery with the inhumations orientated N_S, lay alongside the track to the actual Bluff. There are oral records of ever burning fires around the coast, presumably Chinese lighthouses, lit by beacons. Adjacent to the track to the Bluff, lies a small

outcrop, originally defended by a 6m wide ditch and a wall, quantities of cut stone are still visible. The foundations of a small barrack block, presumably for the beacon operators, lie within the walls, at the base of the outcrop. The foundation block on the outcrop suggests it was the base for a signal tower or beacon. Whilst the sea cannot be seen directly from the west, it can be seen from north and south of the bluff, thus providing two accurate fixes for passing junks, akin to a modern Radio Transmitter.

WAIPOUA FOREST. Nearby Dargaville is the famous, or some may say notorious, Waipoua Forest. Famous for the large number of pre Maori stone dwellings found. (the Maori constructed wooden, not stone dwellings). Notorious for the attempts of the Government to conceal the evidence that the area was heavily occupied prior to the arrival of the Maori. Available documentation shows that the carbon dating and excavation reports were lodged in the Wellington Archives in 1988, with unbelievably, access restricted until 2063. Hardly the actions one expects in a transparent democracy. Lengthy legal efforts finally prised the reports from the clutches of the government, after the area had been gifted to the Maori. Prior to this there had been a so called enquiry into the area. The evidence that the Maori were not the first to occupy the site, was not allowed to be presented, presumably as it would merely prolong the enquiry, whose outcome had been previously decided. The term whitewash comes to mind. Perusal of our copy of the 50mm (2") thick set of the Waipoua archaeological reports was illuminating. It was also clear that the vital numbers of carbon dating described on the Archive acceptance form, did not match what was released. Once a Government adopts such concealment procedures, one can never trust any of their statements and their motives are always suspect. In my own county of Cumbria, a recent poll of 5,000 folk were asked, Do you trust politicians?, Sadly the answer from 80% was resounding, "NO". I wonder what the results of such a poll would be in New Zealand. A government spokesman admitted that New Zealand still has over a 100 more embargoed archaeological sites, presumably all have evidence of early pre Maori occupation, otherwise why embargo the surveys. One wonders which will be released first, the embargoed archaeology surveys, or the news that the sites have been donated to a specific group of recent Polynesian immigrants. (Maori).

HOKIANGA HARBOUR. Is named after a Chinese Province. We did not have time to survey the famed harbour entrance markers, nor the harbour. We only stopped for a lovely fish lunch at an interesting café built over the harbour, so the water lapped under us. However at the head of Hokianga, on the eastern side of Highway One, two very clear ramparted structures were noted, when scanned both contained the foundations of Chinese barracks. A 6m wide canal was noted, from the eastwards direction, it suggested a link to the east coast, as probably was constructed at Auckland to link Manukau harbour with the east coast. Our local contacts highlighted the finding of Chinese pottery within Hokianga Harbour, one tourist guide highlighted visits to the animal sculptures marking the entrance to the harbour, another the large number of Moeraki type balls, locally called Kouta Balls, along Opononi Beach indicative of wrecked Chinese vessels. (See photos). However Google Earth, highlighted the existence

of two wrecks within the harbour, now forming islands with silt deposits, their dimensions suggested Chinese vessels. (see photos). The Tsunami created by the falling meteorite would have swept up the harbour mouth and lifted any vessels out of their harbours, or moorings and driven them ashore and wrecked them. Low lying buildings and their occupants would have been destroyed and the occupants drowned. Chaos would have ensued. Also located by Google Earth, North of Opononi, alongside a terraced headland, was a large number of sunken Fishing Boat harbours and quays, presumably the adjacent terraces housed the crews of the fishing boats. (See photos).

Further into the harbour just north east of Pakanae is a hill, the sides of the hill are covered in cultivation terraces and the hill top contains a rectangular structure surrounded by defensive ditches. (See photo). Nearby another hill's core has been totally excavated, presumably for metallic ore.

WHANGAPE.

Our next stop was Whangape Harbour. This harbour is famous for its ancient carved head which marks the entrance to the harbour. Another claim to fame is that it is also the home of another Moeraki ball. We located this 1m diameter ball, now graffiti covered, near the mangrove swamps alongside the shore. As with the Auckland balls, the ball at Whangape is completely spherical, yet another one modified by man. A walk up to the northern bank to view the end of the narrow access to the harbour was fruitful. The hillside had been terraced for agriculture, at its base a water pond had been constructed, this collected surplus water running off the irrigated terraces. The pond provided the supply for the adjacent smelter ramps. All Chinese and Roman smelter ramps had adjacent water wheels which drove blowers, these provided the combustion air for the smelters. The adjacent flat area held the foundations of the smelter operators barracks and their toilet. The Maori did not work metals.

AHIPARA, 90 MILE BEACH.

Our final stop on the west coast was at Ahipara, at a motel overlooking the end of 90 mile beach. Amusingly, the motel had been built on the platform of a Chinese fort, the ramparts and ditches of the small fort being very clear when viewed from the beach. As a fortified site equalled a nearby supply harbour. So the survey began, fortuitously with the tide out. Nearby, at the south end of the beach is a plaque which records the wrecking of the paddle steamer Favourite in 1820. A few sections of the wreck, including one steam pump are still visible, so we scanned around the site to see what else was present and located several other sections. Nearby at the mouth of the creek we located, also by magnetic anomaly, the two standard 120m long arms of a Chinese "super" junk harbour, 52m apart, the creek fed the harbour's keel slot. North of the wreck of the Favourite, we located the unique signal of the remains of the "Super" junk and its anchor. So again we have another junk washed out of its harbour by the Tsunami. Presumably the junk was busy loading metallic ores exploited from the nearby hills. We were deterred from looking for the barrack blocks of the junk's crew by a somewhat large and very unfriendly dog.

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Legend

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HOKIANGA HARBOUR, NEW ZEALAND.

"2 nd Bay NE from Opononi.

adland Terraced by Man. Note Adjacent complete sunken harbour.
rbour walls in echelon. Presumably for Chinese fishing Fleet.

WAITANGI.

Our next visit was to the Bay of Islands, on the east coast, on our previous visit we had spent a few lovely days camping on the beach, south of Russell, but had not visited Waitangi. Waitangi besides being a popular holiday resort, is best known for being the site where two groups of immigrants, the Maori and the British, separated by a few hundred years of occupation, signed a treaty. A treaty which appears to have generated considerable controversy in how it is now interpreted. One wonders at the legality of a treaty which failed to take into account the rights of probably the first immigrants, the Chinese, who have left the evidence of their presence all over the two islands.

Driving from Waitangi town and leaving the bridge, northwards over the River Waitangi, we immediately noticed the large earthworks (one of our specialities) flanking the road and the river, needless to say, they are not listed on the local guide sheets.

This riverside site c 350m x 150m (5.25ha) is bounded by the river, the golf course to the north and the highway to the east, and was once planned to be the site of a 19th cent Town, but never built. Our surveys indicated that the Chinese had anticipated the plans by probably a few thousand years and built a well laid out city on it. The foundations of the city showed a well laid out double walled site, with an external defensive ditch, with the inhabitants housed in the standard houses of the Shang Period, each c 30m x 10m, with three rooms two unpaved and one paved. We located the foundations of two hundred and eighty houses using a magnetic anomaly scan. Twenty rows set east west and fourteen rows set north south. Occupancy per dwelling is not known, but if only a low figure of ten per dwelling is taken, this would be a population of 2,800. The senior official's walled residence was situated at the centre of the site 174d,14',45.7 - 35d,16',09.4 and covered an area c34m x 20m, the site is now marked by a clump of trees, a depression marks the site of the well. The compound contained the foundations of a 14m x 10m house, a 6m x 4m toilet block and a 10m x 6m aqueduct fed bath house. The senior official's compound design was identical to the one located at the Chinese City of Timaru, South Island. Service areas existed at the NE and SW of the site, those at the NE contained a bath house 14m x 12m, a 40m x 20m toilet block and a 20m x 10m wash house. All built to standard designs, such as we have been surveying for over a decade. The riverside defences were strongest at the city's most vulnerable point, one wonders who they were defending against. The defences here consisted of three walls, everywhere else they were the traditional Chinese double walls. Set back from the first wall, (by the car park) is a man made platform, this held a 50m x 25m guardhouse with the foundations of three barrack blocks, presumably for the crews of the missile operators. Adjacent is a very clear bastion, with an inset missile base. These bases are c 6m square and formed from stone blocks set in puddled clay and designed to absorb the recoil from missile launchers. These are very common in Roman fort sites in the UK and often sited at the corners of the forts and alongside the major gateways. A line of these highly visible missile platforms flanked the river with another bastion flanking the SW corner adjacent to the service area. Alongside the river bank, a scan located the foundations of the finger harbours designed to house 47m x 11m junks. The wall of the city was extended down to the river to protect the harbours. The remains of the NE gatehouse alongside the modern

road, still has the very clear outline of the c 25m wide traditional Chinese half round enclosure forming a courtyard with an outer and inner gate. The design is called a Weng Cheng. Many Chinese cities and frontier walls had this form of gateway. From this gateway the remains of an ancient walled road ran westwards through the woods, down to the creek. The canalised creek, presumably was used to supply the city, the stonework of locks are still visible. Within the woods and outside the ancient wall, lies a cemetery, the inhumations are orientated N-S, so it is not a European cemetery, the average length of the inhumed is c 1.4m – 1.5m, the size probably also excludes taller Maori.

Fittingly, the site of the canoe house by Hobson Beach, is over the foundations of a c 120m x 50m harbour designed specifically for a Chinese "Super" junk. The creek was directed into the harbour's keel slot to flush it. Alongside the Hobson Beach canoe house is a prominent man made platform c 70m x 60m, this contained the foundations of six barrack blocks, each c 36m x 4m, presumably these housed the crew of the junk when in port.

A brief survey of the area between the Residency flag pole and the shore showed that it had contained the foundations of a defensive wall and a large number of barrack blocks. An interesting feature of the area was the corrugated slope down to the shore from by the flag pole. These corrugations each contain a dwarf stone wall and are designed to act as water shedders, usually as in this case, to a small harbour. Those without experience of Roman, or Chinese marine engineering techniques often mistake such corrugations as Rig and Furrow ploughing. One wonder is if this site with it's basic barracks, all safely situated outside the city walls, was a reception area for labour, prior to it being allocated a work site in the local metallic ore exploitation operations. Waitangi certainly proved to be a very interesting site, and as our survey has shown, one with a far longer and fascinating history than just the site where New Zealand's Founding Treaty was signed.

It was very difficult to understand how so much highly visible features of ancient fortifications, obviously not of Maori design, had been ignored by New Zealand's archaeologists, little wonder that they had also missed the evidence we had noticed all over New Zealand.

WHANGERIEI

was next on our tour. The town has a small harbour on the River Hatea and also an airfield. As we stayed at the local hotel by the William Fraser Memorial Park we had a wander around it. The site alongside the River Hatea had at one time been a large Chinese fortified settlement. The foundations of five finger type harbours were located alongside the river, these were designed to handle 47m x 11m junks. The park appeared to have been a recovered rubbish dump which overlay the Chinese site, with parts of the original defensive dykes (earth walls) in place.

COROMANDEL.

We now headed south to one of our favourite areas, The Coromandel Peninsula, staying at the very pleasant Thames Coastal Motel. The remains of a defensive dyke around the

Motel grounds, indicated an interesting small site, a scan located the buried barrack foundations and an ore preparation area. I wondered if an addit (tunnel) had been driven into the vertical cliff immediately behind the motel sadly access was barred by the buildings..

Thames is a lovely small town, at one time the centre of the gold mining operations, hence the Chinese interest, the town also had a mining school, now a fascinating museum, well worth a visit. Paddy was fascinated by the local blind folk singer in the main street, complete with guide dog sitting on a trolley, as she has spent several years raising / walking guide dog puppies, so she had to have a talk with the singer and the dog.

TAIRUA HARBOUR.

Our next planned visit was to Tairua Harbour, a small holiday resort on the opposite side of the Coromandel Peninsula to Thames, as the bay looked interesting. Walking between the bay and town's waterside property, we noted a long dyke flanking the shore, a scan showed it had a stone foundation. Intrigued, and as the tide was out, we wandered along the foreshore, scanning the shallow waters, starting by the bridge at the mouth of the Pepe Stream, the standard site for a Chinese harbour. We soon located the buried foundations of four walls containing three harbours, sufficient was accessible in shallow water to confirm the standard Chinese design and width. A scan alongside the bridge quickly located the end of the dam across the Pepe Stream and the unique design of the aqueduct which ran from upstream of the dam to the harbour, this was designed to flush the keel slots of sand etc.. As the harbours were empty, this meant either the junks had been at sea when the Tsunami struck and devastated the area, or their remains still lay buried under many metres of sand in the bay.

Sadly our worst fears were soon realised, we quickly located the outlines of the three junks, all in a line, parallel to and c 40m from dyke we had first noticed. The sheer size of the junks, each with two of their unique anchors on the end of 40m long cables, made them easily identifiable. We can only surmise that three "Super" junks, part of a vast Chinese fleet based on New Zealand, had been supplying the gold exploitation sites and possibly loading cargo, when they were overwhelmed by the Tsunami. A scan along the shore side of the dyke showed that area had contained the barracks of the crews of the junks, presumably most would have been drowned. We later arranged for a satellite photograph of the harbour to be enhanced by infra red by a specialist archaeologist. The faint outlines of the three buried junks could be seen.

Heading south on Highway Two near the Ohirai Stream on the north side of the road, we noted a perfect example of a man made fort platform, leading to it was a still visible canal, a scan along it's banks located the 18m long feeder aqueducts sited at every 18m, the hall mark of a Chinese canal. Passing thorough the busy port of Tauranga, we stopped at Maketu, we had heard that it had a monument commemorating the landing of the Arawa Canoe in 1340AD. Such records interested us. The shore side stone monument has a plaque commemorating the canoes landing and also one dedicated to a wrecked European ship and an adjacent small cannon. A scan along the beach revealed the standard signal of the outline of a c 100m x 48m junk on the shore and part under the adjacent road. The

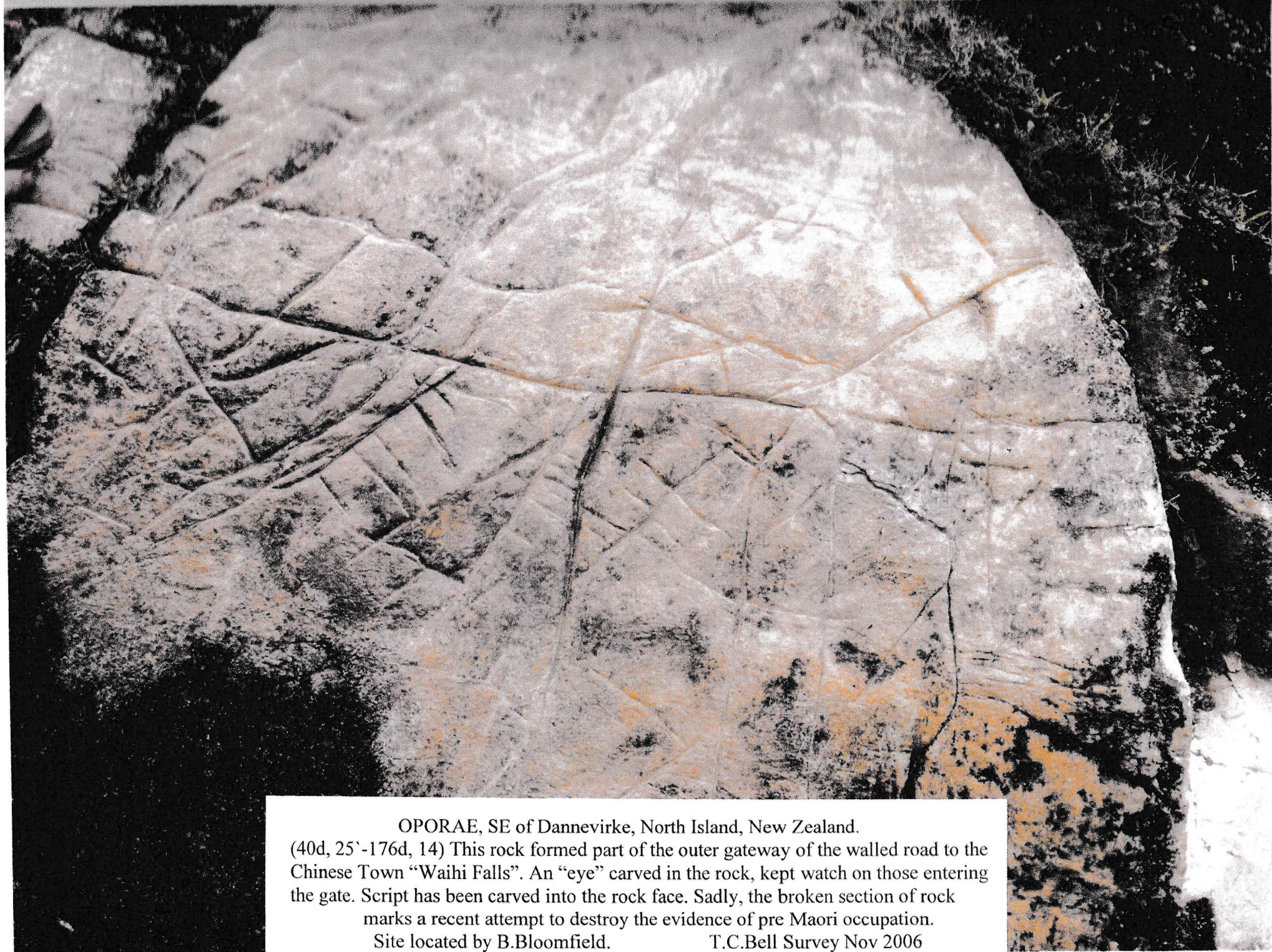
outline of one of the enormous double fluked anchors unique to these junks, was also located. This is not the first time a "Founding Canoe" has emerged via oral tradition from a wrecked junk site. Possibly the junk was of Japanese registration in partnership with the Chinese, ferrying Maori workers to New Zealand, and the passengers took the name of the Junk for their tribal name. Ara Kawa is a river in Japan. We also arranged for an enhanced infra red satellite photograph of this area, again the faint outline of a sand covered junk could be seen. Still heading south between Gisborn and Napier, we stopped at Titura Station, a popular picnic spot with some fascinating archaeological features, obviously once the home of some busy miners exploiting the local minerals.

DANNEVIRKE

Our next visit was to Dannevirke to meet up with our local expert guide and his son, both experienced surveyors with an amazing knowledge of the many and fascinating local sites. The first site we visited was Oporae accessed from Dannevirke, via the Puketoi mountain range. Here Badger had located a c 4m diameter concretion on the pass, this had formed part of a gateway, complete with an adjacent eye carved in the rock to watch folk entering the city. The c 4m diameter boulder was covered with a linear script. Photographs of the script were sent to Miss Ying Fang Weng of China's National Library, she kindly arranged for one of the library's staff to examine the script. The expert calligraphist stated that it was possible that the letters of the script were special signs as these were often used before true characters, similar signs to the ones in New Zealand, were used in the Chinese Erlitou culture, between 3,500 and 3,800 years ago ie 1,800BC to 1,500BC. The examples sent to us matched with several on the gateway stone. An outline of an Elephant was also engraved on the gateway, none have been found in New Zealand, but still exist in China.

As further proof of ocean voyaging Profs Sorenson and Johannessen commented on the presence of peanuts originating in America yet found in Chinese Neolithic sites, some carbon dated to 2,800BC, other peanuts where found in a Western Han Emperor's tomb c200BC. If the Chinese could voyage to America and return safely, then voyaging to New Zealand was well within their capabilities.

Interestingly a not dissimilar script to the Shang / Erlitou, called Ogham is found in Ireland and I have also located examples on Roman sites near my home, this suggests that Irish slaves ex the Roman occupation of Ireland, where used as builders. We eventually found that the Oporae outer gateway was one of three, the middle gateway was also based on two c 3m diameter concretions, one had a metre high crude face carved on it. Adjacent, a falling earth bank had exposed two stone carvings, a pig c 100mm long and a duck c 150mm high and long. The third and inner defence was formed from a triple line of blocks with staggered gateways. One of the gateposts had a triple line carved on it, a script similar to Shang. A geologist confirmed that the marks were man made. Only the gateways of the town walls were visible above ground, although the outlines of the walls could be observed from an elevated viewpoint, they enclosed an area roughly one kilometre square on a plateau alongside the Waihi Falls. The towns inhabitants were housed in the standard 30m x 10m three roomed buildings, this design dates back to the



OPORAE, SE of Dannevirke, North Island, New Zealand.
(40d, 25'-176d, 14) This rock formed part of the outer gateway of the walled road to the Chinese Town "Waihi Falls". An "eye" carved in the rock, kept watch on those entering the gate. Script has been carved into the rock face. Sadly, the broken section of rock marks a recent attempt to destroy the evidence of pre Maori occupation.
Site located by B.Bloomfield. T.C.Bell Survey Nov 2006



OPORAE, SE of Dannevirke, North Island, New Zealand.
(40d, 25'-176d, 14) This rock formed part of the outer gateway of the walled road to the Chinese Town "Waihi Falls". An "eye" carved in the rock, kept watch on those entering the gate. Script has been carved into the rock face. Sadly, the broken section of rock marks a recent attempt to destroy the evidence of pre Maori occupation.
Site located by B.Bloomfield. T.C.Bell Survey Nov 2006

Shang dynasty. Presumably the town's economy was based on metallic ore extraction, copper is reported in the area. From the car park alongside the Waihi Falls, two carvings could be viewed on the vertical face of the fall, a large square and also a face, this somewhat ugly face is similar in design to the one at the entrance to Whangape Harbour. The Waihi Stream was navigable, the Waihi Falls were bypassed by a canal and sets of ladder locks, the depression of the canal is still visible..

The script on the gateway walls, combined with the carved heads and the two carved animals located and the design of the buildings within the walled site, all combine to date the site to the Erlitou, or Shang Dynasties ie 1,900-1350BC. The c3,500 year old dating suggests that this is one of the founder sites of New Zealand's first immigrants..

HERBERTVILLE

Our next visit, still led by our local expert guide, was the sea side, the only named site is Herbertville, south of Cape Turnagain, blink and you miss it. Wandering along the shore, at the mouth of the Papuka Stream, we noticed the stonework of parallel harbour walls, c 50m apart, yet another Chinese "Super" junk harbour. Immediately alongside was a 20mm x 10m man made platform. This held the foundations of a large toilet, presumably for the crew of the junk when in port. The nearby sand covered area was not accessible, presumably the foundations of the crew's barracks still lie under the sand. A little further north along the beach, we visited a totally amazing midden, recently exposed by shifting sand. This midden was of the same order, ie immense, as the one reported earlier at Ozette on the Pacific Coast of Oregon, USA. As far as the eye could see where mounds of shells and bones, bird, not human. It was fascinating to find an arrow head, beautifully made from obsidian, with a broken tang, presumably it had fallen out of one of the archer's victims. A fireplace had also been exposed by the shifting sand, carbon dating of the fireplace gave a date of 325BP plus- minus 35years, indicating that the site had last been occupied c 1635. Roughly two hundred years prior to the Europeans arrival. A scan showed that the foundations of standard 30m x 10m Chinese dwellings still lay under the sand hills. The presence of both the buildings and the arrow head confirmed that the site's origin was pre Maori, they neither built in stone, nor used bows and arrows.

POURERE BEACH.

Still led by our guide, we visited Pourere Beach, a tiny holiday home site, the nearest town is Dannevirke. The cut stonework of a Chinese harbour was still visible, rising seas mean that only the first few metres were accessible. The beach does not back onto a cliff, only 2m rise to the shore side. Alongside was a wonderful collection of concretions, possibly 16 in all, many of the standard concretions 2m x 1m the usual sausage shape.

One perfectly symmetrical half ball had obviously been cast around a small rough concretion used to provide voidage. The segment of the cast now more akin to the segments of an orange. Or to those with experience of boiler furnace brickwork, the sections of cast concrete quarls. Presumably cast in halves, then to each other. Some of the concretions had been worked on by man c 100mm square holes had been cut into their ends. We can only surmise that the holes held wooden axles used to roll the concretions from their find site to the coast, ready for transportation to a central shipyard

and modification to pure spheres, for use possibly as balance weights in a semi automated junk. The geology map of the area shows concretions as occurring naturally in the nearby Oporae region. One of the holiday homes had an interesting selection of stone cannon balls on the frontage, presumably the c 50msq man made platform for the Chinese sailors barracks formed an attractive base for the holiday homes, hence their choice of site and the availability of the cannon balls. Our last sea side visit was to the deserted Mangakuri Beach, a fortified Chinese site overlooked the T of the crossroads and the road to the beach. An adjacent depression marked the remains of the site's supply canal. The beach contained a number of Moeraki type balls, and a scan located the outline of yet another "Super" junk.

NETHERTON FARM PARK.

Nearby Netherton Farm Park had four Moeraki type balls outside the gate, it is thought that these balls had originated from Mangakauri Beach, also the site of a Chinese junk wreck. The balls were spherical, c 1.2m diameter, and appeared to owe their uniformity to man, not nature. One ball had a circumferential groove which indicated either a constraint, or mark where it had been rolling on a sharp edge.

PALMERSTON NORTH and ANZAC PARK.

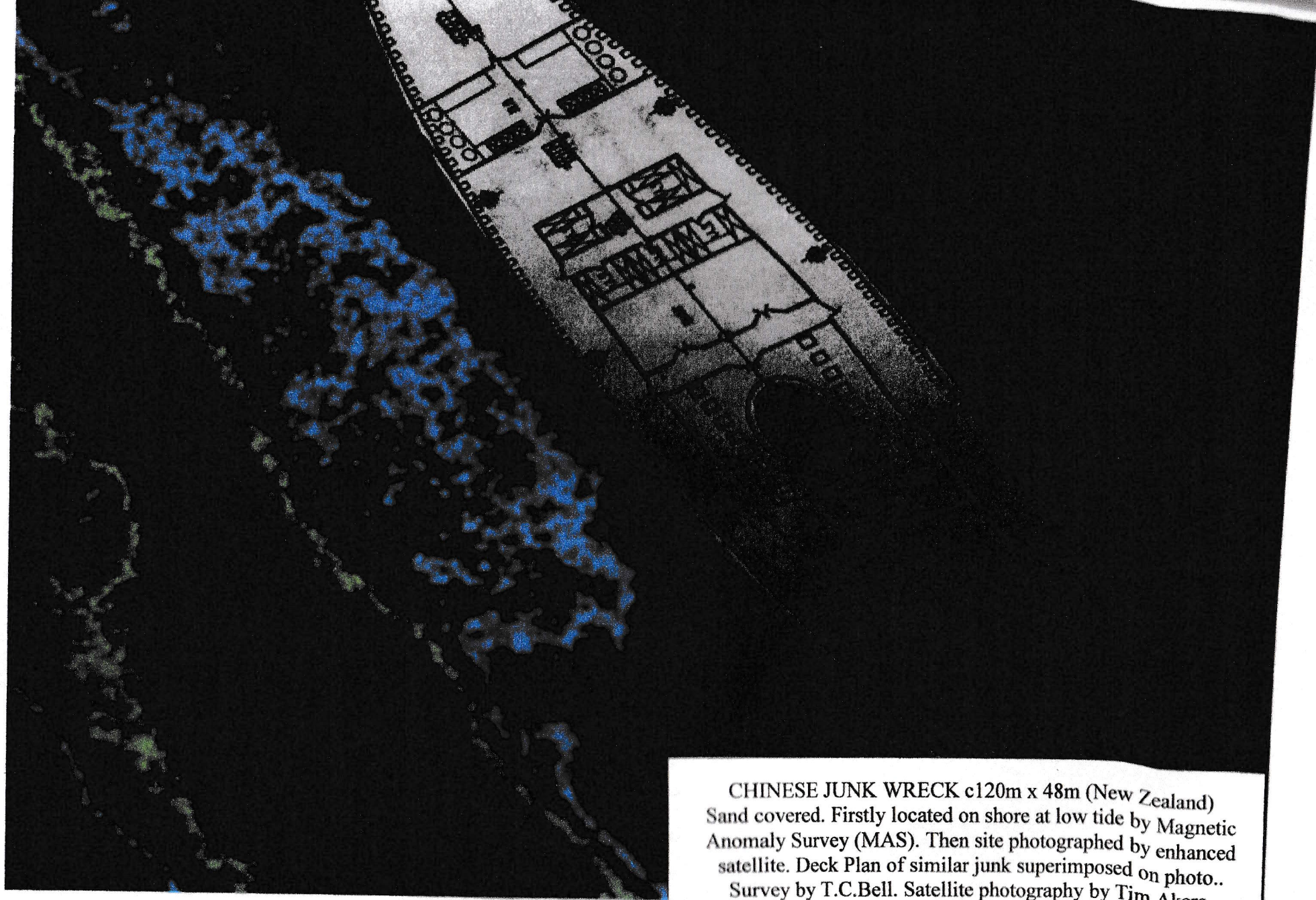
For our Dannevirke surveys we had based ourselves in a motel in Palmerston North, a pleasant town, with some impressive restaurants, also home to Massey University. Our first visit was to Anzac Park, an impressive memorial to those New Zealanders who fell at Gallipoli in the 1914-18 war. Also in the 1939-45 war New Zealanders made the largest sacrifice, pro rata of population, of any in the Commonwealth forces. One of my uncles whom I am named after, was only 23 when he was killed whilst serving with the Cheshire Regiment at Gallipoli, so the visit was especially poignant. Driving up to the hill top site, I was very aware of the ladder locked canal flanking the road. A walk down the bed of the canal confirmed the existence of the foundations of the ladder locks. This canal, fed from the nearby River Manawatu was the supply route to the three Chinese hilltop sites, the smaller one was a building site when we visited, had held two sites, an 80m x 40m and one 100m x 40m sites. It was interesting that surface water was obviously problem to the builders and temporary pipes had been laid to dispose of it, down to the canal. Guessing the source, I scanned the edge of the hill, there was a still flowing aqueduct, indicating that the Chinese siphon which fed the hill top sites was still functioning. The major Chinese site is now occupied by Anzac Park and it's car park.

The riverside field immediately south of Anzac Park contains the foundations of a harbour designed for the use of 47m x 11m junks, the canal alongside the road to the upper car park connected the harbour to the hill top sites via a series of ladder locks.. We noted a ancient linear navigation island was marked on the local map, upstream of the road bridge, confirming navigation. So we had a wander along the western bank of the river accessed from Fitzherbert Drive. Noting the serious settlement alongside the river bank, I ran a scan over the area. To my complete surprise I found that the Chinese had constructed a set of canal locks capable of holding a 47m x 11m junk. The major depression at right angles to the river was the failure of a large aqueduct which had



Fire Carbon dated to 1600AD-1660AD
Massive midden suggests last remnants of
Chinese after Meteorite disaster
existing on shellfish etc
hoping for the return of a rescuing vessel.
T.C.Bell

HERBERTVILLE, East Coast, North Island, New Zealand.
MIDDEN,(Coastal) exposed by shifting sands. (40d, 30', 19.2 - 176d, 31', 43.3)
Fire place, stone base containing remnants of cooked moa bone and charcoal.
Located by scan, adjacent under the sand, are the foundations of 30m x 10m buildings.
These are standard Chinese design Two outer rooms unpaved, central room paved. Pre
Maori obsidian arrow head located. Maori did not use bows. Site located by
β.Bloomfield.
T.C Bell Survey May 2006



CHINESE JUNK WRECK c120m x 48m (New Zealand)
Sand covered. Firstly located on shore at low tide by Magnetic
Anomaly Survey (MAS). Then site photographed by enhanced
satellite. Deck Plan of similar junk superimposed on photo..
Survey by T.C.Bell. Satellite photography by Tim Akers.

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Write a description for your map.

Legend

Untitled Placemark



HOKIANGA HARBOUR, NEW ZEALAND.

"2 nd Bay NE from Opononi.

Headland Terraced by Man. Note Adjacent complete sunken harbour. Harbour walls in echelon. Presumably for Chinese fishing Fleet. Same site North, suspected large wrecks under field. Presumably site destroyed by Tsunami. T.C.Bell

supplied make up water to the canal locks, presumably from further up stream. Viewing across the river, at the base of Anzac Hill, the outline of rocks suggested the end of a dam. It was interesting that the Chinese had decided to invest in a large engineering operation to take such large vessels up the river, instead of the usual smaller sampan, this suggests that further upstream they had a very important site, presumably a base for ore exploitation or maybe a logging site, possibly why a larger vessels was required. Sadly, as usual, time was running out and time to head for Christchurch.

Previously we had taken the car ferry across the Cook Strait to Picton, a pleasant four hour cruise, a catamaran did the same trip in an hour in the summer period. The north of South Island is a lovely part of New Zealand, during a previous stay in Picton we had taken the Queen Charlotte Sound catamaran to the Captain Cook memorial by Repulse Bay, where he had careened his ship, then walked back on the trail, for several ferry points, swimming in the bays on the way, then by ferry back to Picton and we were told, the best Fish and Chips in New Zealand, we did not disagree. On that visit we had also overnighted at a motel in Canvas Town, a gold mining site named after home of the optimistic miners who lived there in tents. A pair of Fossickers, one a Chinese lady, were busy panning, it must be in the blood. They told us that they could find gold to the value of \$100 dollars a day, enough for their holiday expenses. We had previously tried our luck Fossicking for gold at Reefton, SE of west coast Westport, there is certainly a sense of excitement as the first and few, flecks of gold appeared in the pan, however we ended up with more insect bites than specks of gold. We also had very happy memories of Motueka, Tasman Bay and taking the ferry to one of the ferry points on the Tasman Trail and walking back. We even took a kayak as far as Split Apple rock in Tasman Bay, sadly we did not have our camera available to photograph the carved face on it, identical to the one on the face of Waihi Falls and the middle gateway at Oporae. Some might ask have we surveyed in the areas we have just described, whilst it is a certainty that the Chinese exploited the same gold fields, but the 19th cent miners following will have obliterated any trace of their operations. As we fund our own surveys and where operating a long way from our home base, we had to concentrate on the areas which give the best value, ie provide the maximum access and the most likely evidence of ancient occupation.

WAIPOUA FOREST.

The site is notorious in New Zealand's archaeological history as the survey results were immediately impounded and restricted under "The Archives Act" and withheld from public access from 15.7.1988 until 2063. Due to the efforts of Dr Gary Cook, who took legal action claiming that the restriction was illegal, the restriction was finally removed. (2.10.2008). Unbelievably the Government office manager denied there was a restriction on access to the documents, (A copy of the restriction order is enclosed). However, it was noted that two of the site's earliest Carbon Dates had been omitted from the released survey passed to Dr Cook. 1086 = 900years BP and 1083= 950 years BP. Presumably these dates being removed for the records as they clearly show the site was occupied well before the arrival of the Maori in New Zealand. Fortuitously the carbon dating survey report had been seen by a local historian , prior to it being hidden by the Government.

Sadly, time prevented us from visiting the Waipoura site, however I was given a copy of the complete survey by a New Zealand based colleague.

Analysis of the survey report and site map, highlighted the construction of a linear navigation island in the River Waipoua which runs through the site. The Maori did not construct river navigation aids. The Chinese were masters of river navigational aids.

One, on site, excavation recorded locating a failed/or broken obsidian arrow head. The tang had broken off. Maori did not use Bows and Arrows, The Chinese did.

Sadly, the excavation team appeared not to have the skill to carry out simple magnetic anomaly surveys, so failed to record the existence of aqueducts for water supply, or drainage of the pits.

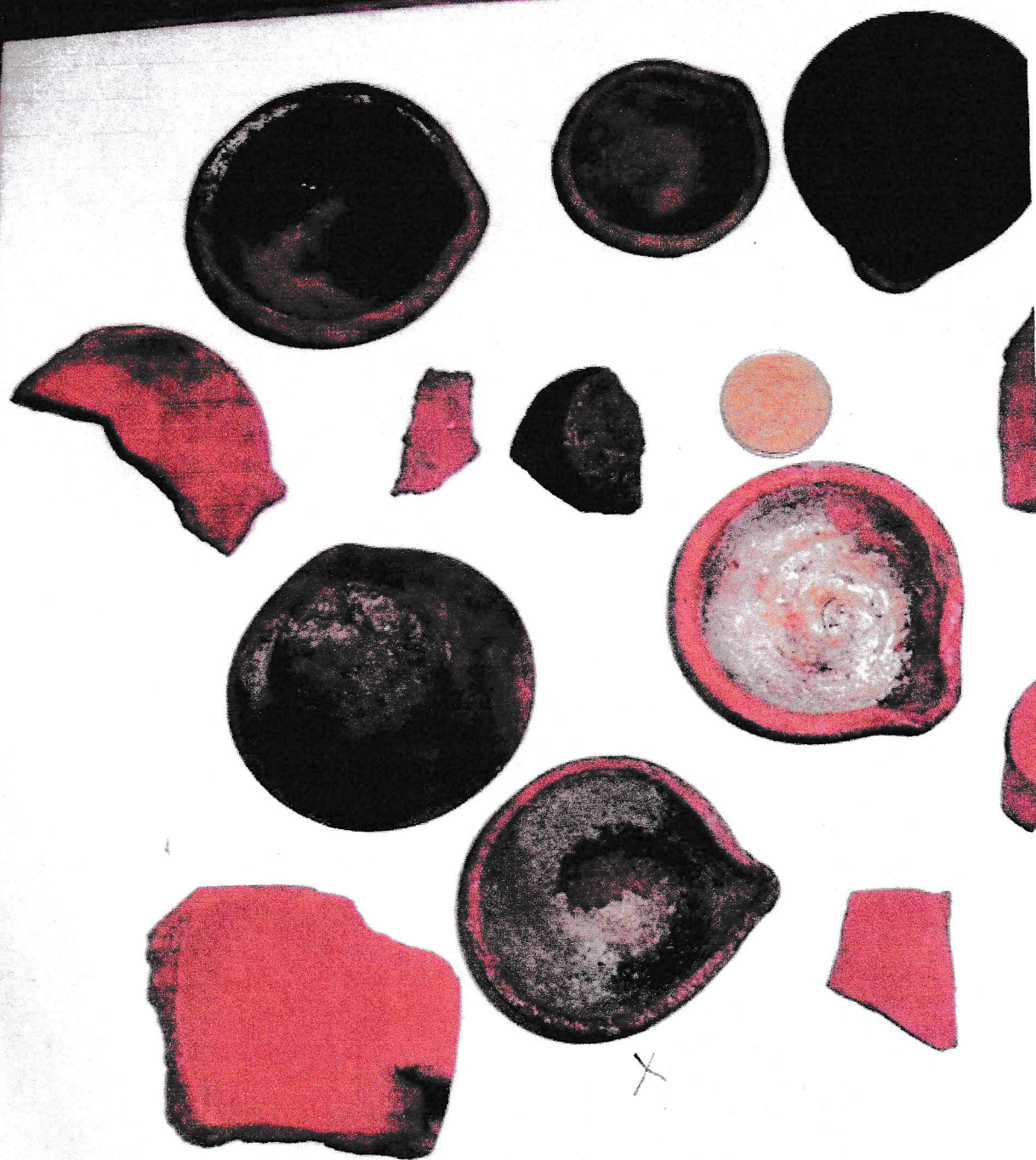
Pits, the use of pit dwellings is a standard Chinese practice, but not a Maori practice. On the west coast of Ireland many pit dwellings have been located. I explained to the archaeologist concerned their use by the Chinese. We know early Chinese occupied parts of Ireland and Scotland. One Canadian report highlighted finding a number of housing pits of a Japanese fishing community, called Ozette on the Pacific Coast of Oregon, Alaska. The pits were buried by a landslide and preserved for over 1,000 years. Probably one of the best known and tourist attractions in the Orkneys are the Pit Dwellings in the northern coast of the Orkneys.

Water flushed pits (by aqueducts) are also used in sequence for metallic ore washing. In my own area of Cumbria (UK) I have located several pit dwellings, one was 400m long. The survey report mentions local trees had been coppiced, this practice is used in conjunction with the manufacture of charcoal. The charcoal being used to maximise heating of metallic ore smelters. Sadly, every New Zealand archaeological survey report I have viewed fails to differentiate between manufactured charcoal and burnt wood ex an open fire. The manufacture of charcoal is a sophisticated art and associated with coppicing of trees. The manufacture of charcoal also entailed the provision of an elevated platform. Several of which are mentioned in the survey reports.

SUMMARY of NEW ZEALAND'S SURVEYS.

In New Zealand we located the wreck sites of 78 buried junks of various dimensions. This included a total of 24 of the Super Junk Class (Baochuan or Treasure ships as they are sometimes called). We also located the sites of 23 dedicated harbour bays for the "Super" junks. The major base was at Moeraki, this could accommodate 10 Super Junks. We also located 57 sites with the unique foundations of Chinese buildings, 39 in South Island and 18 in North Island, we have only described either the most interesting, or the largest ie the cities of Timaru, Christchurch and Waitangi.

There is always a point in a survey when you have to say, let us move on and see where else they have been and also the point when one has to stop and write down what you



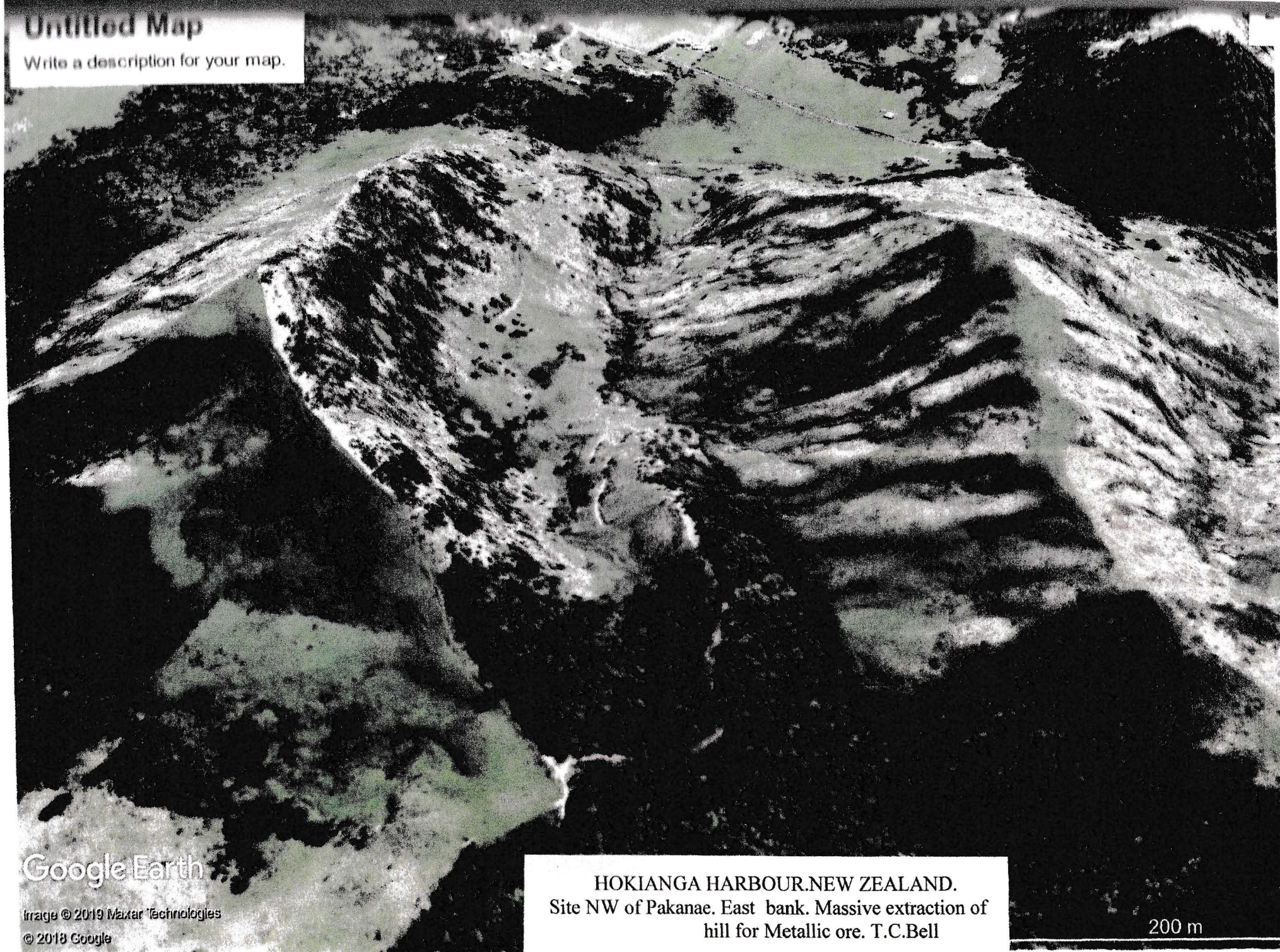
CHINESE POTTERY, LOCATED EX WRECKED JUNK IN NORTH ISLAND, NEW ZEALAND. (OIL LAMPS,
NICK NAME, DUCK LAMPS) ADD OIL TO RESERVOIR AND ASBESTOS WICK TO SPOUT)

BLACKENING INDICATES WRECK FIRED, PRESUMABLY EX THE FALLING METEORITE WHICH
DESTROYED THE CHINESE FLEET c 1435.

T.C.Bell

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Write a description for your map.



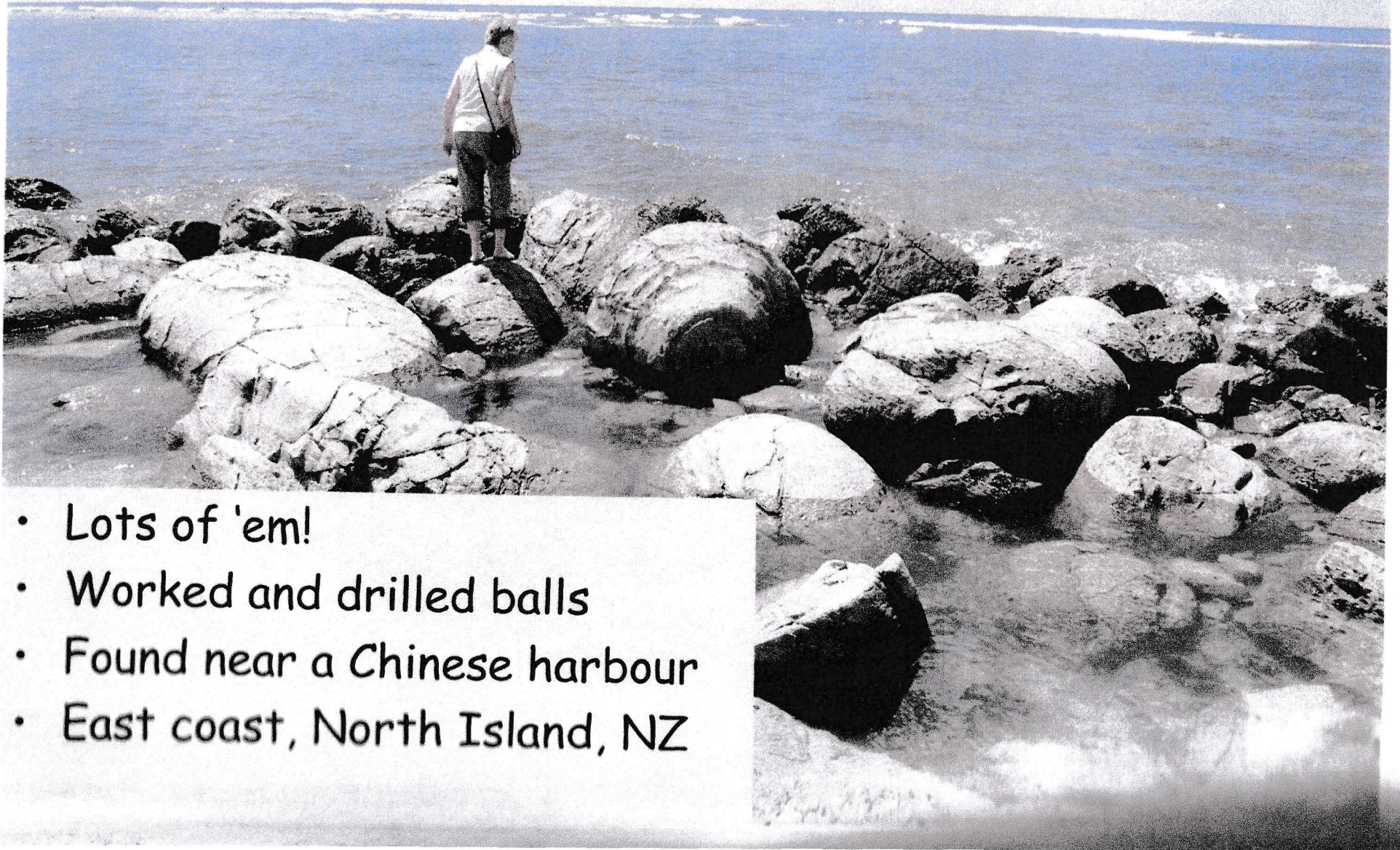
Google Earth

Image © 2019 Maxar Technologies
© 2018 Google

HOKIANGA HARBOUR, NEW ZEALAND.
Site NW of Pakanae. East bank. Massive extraction of
hill for Metallic ore. T.C.Bell

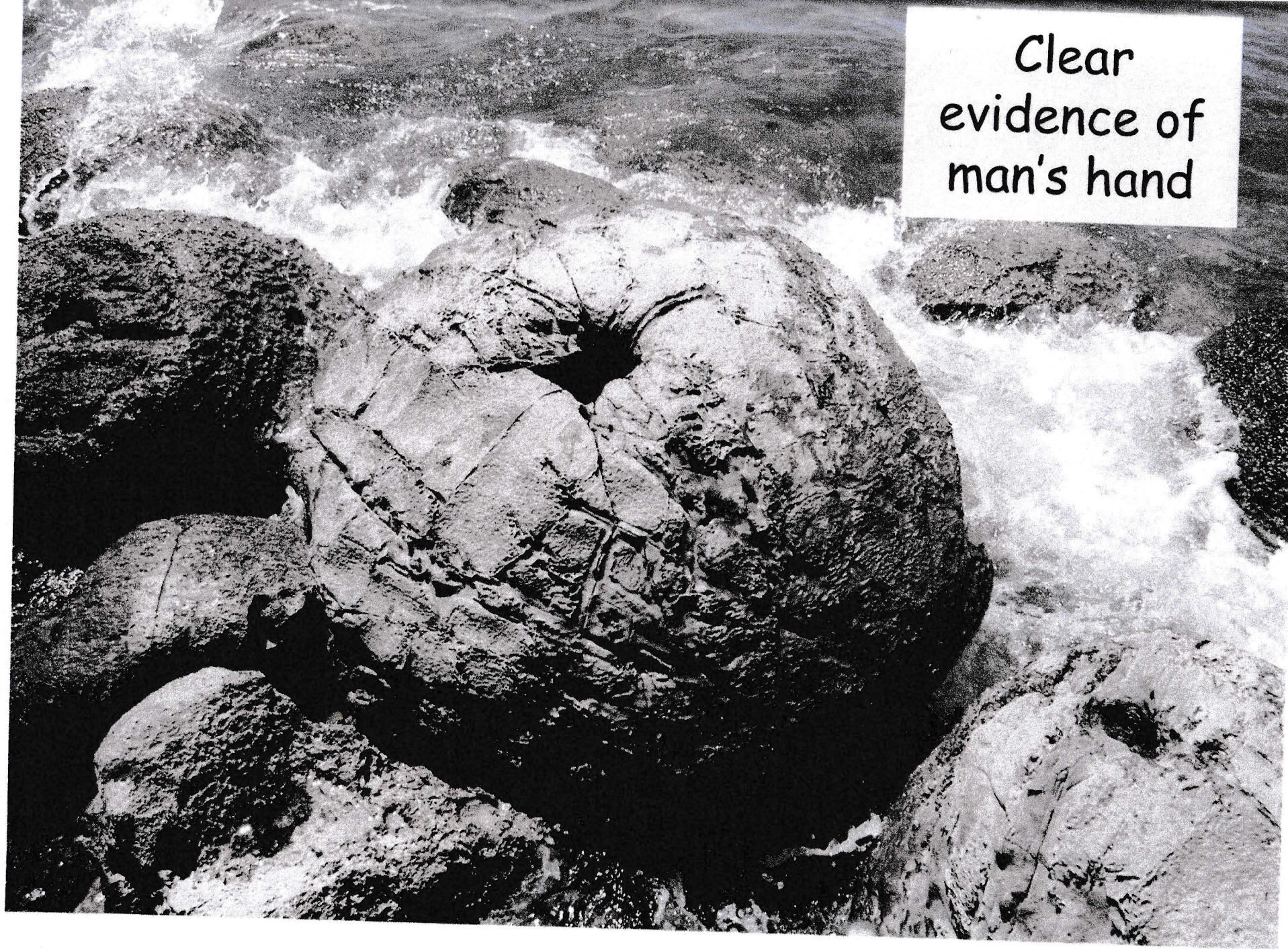
200 m

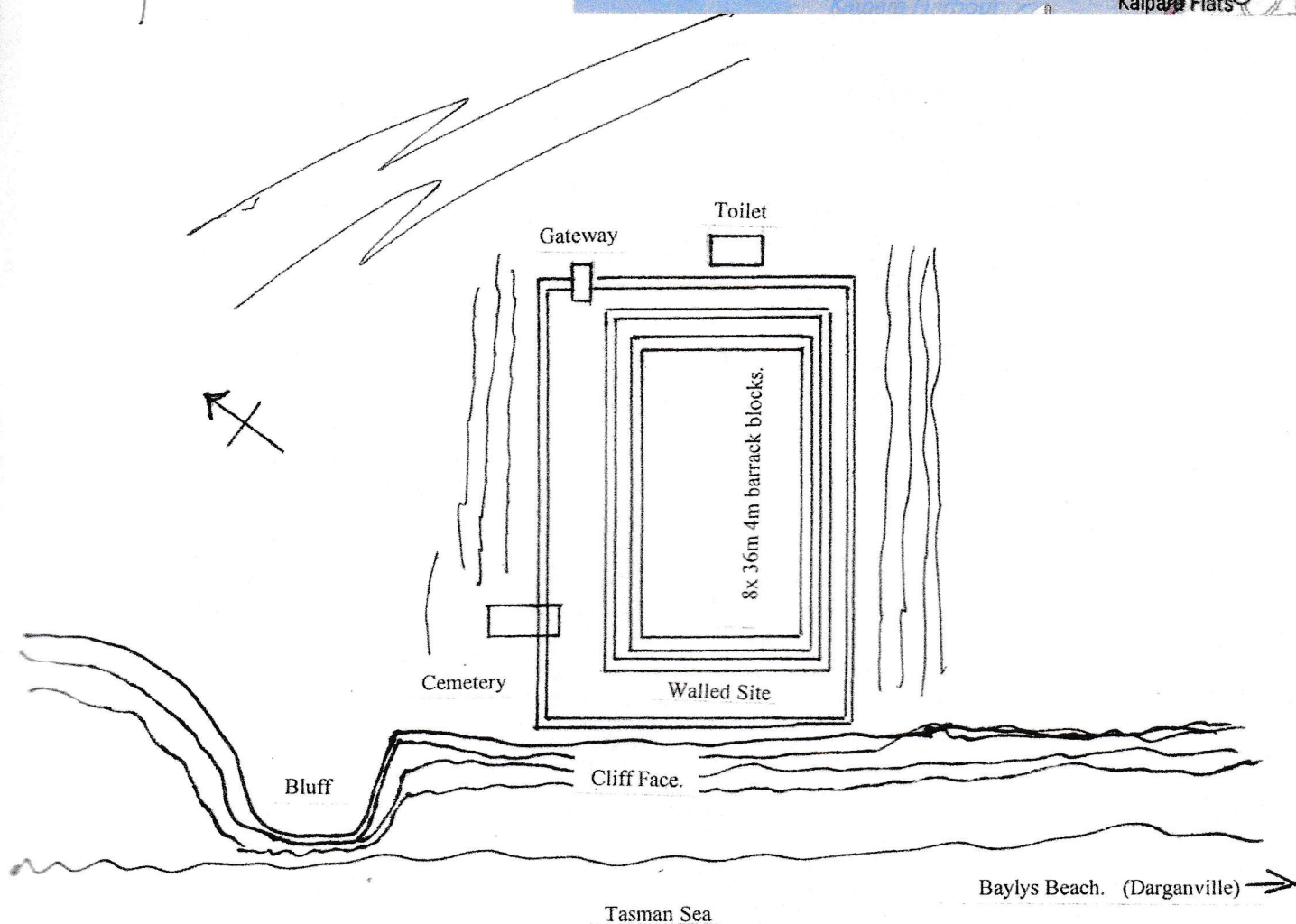
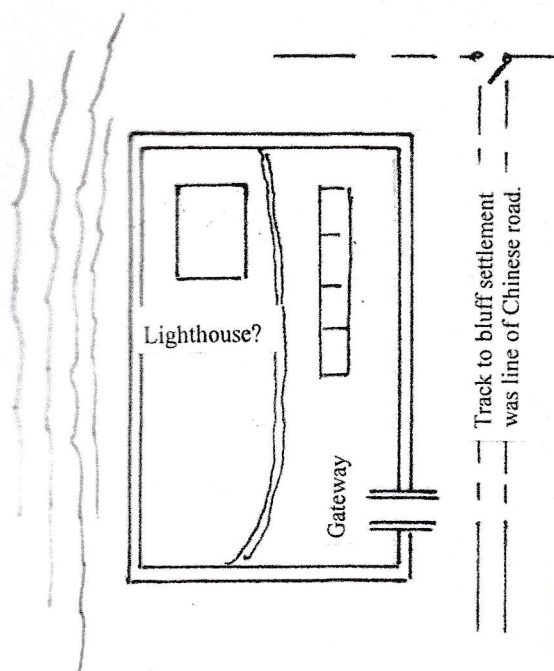
Not all concretions are at Moeraki



- Lots of 'em!
- Worked and drilled balls
- Found near a Chinese harbour
- East coast, North Island, NZ

Clear
evidence of
man's hand





MANGANUI BLUFF. West Coast, North Island, New Zealand
(35d,45',29.7-1173d,33'43.6). North of Baylys Beach, Dargaville.

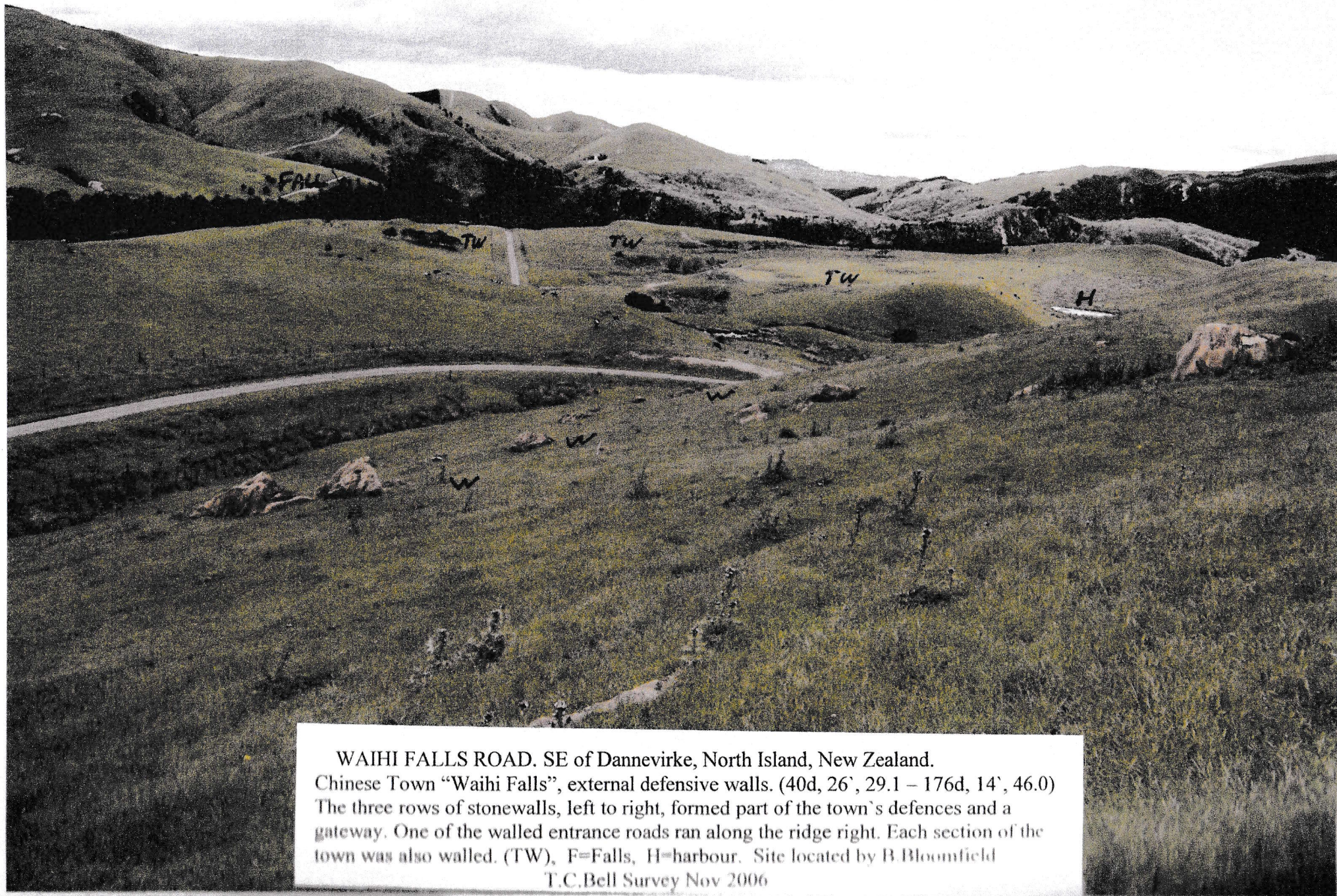
Alongside the bluff, the Chinese constructed a triple walled (recently exposed) settlement, with an external 6m ditch. Internally are the foundations of eight, 36m x 4m barrack blocks and a spring fed spill well.. The 10m x 56m toilet block was situated at the eastern side of the settlement. The cemetery is on the cliff side of the path to the Head. The prominent bluff has a face carved on it, one of several such faces on prominent bluffs around the North Island. It is thought that these have been carved by the Chinese as

MANGANUI BLUFF, WEST COAST, NORTH ISLAND, NEW ZEALAND.

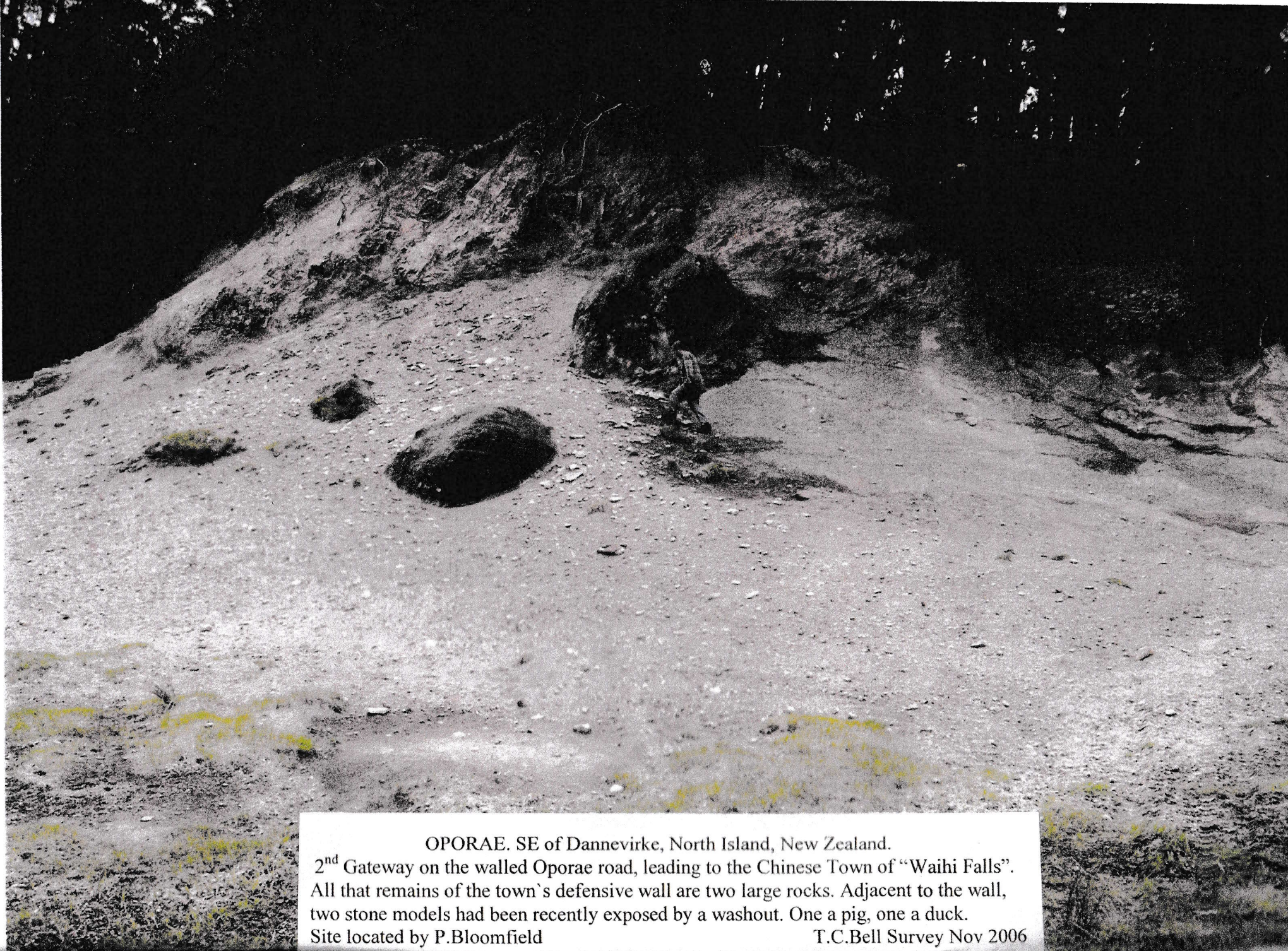
(34d, 45', 29.7 – 173d, 33', 43.6)

The Bluff overlooking the Tasman Sea, has a face carved into it. It is probable that the Chinese carved the face, one of several around North Island, as a guide to their mariners. Adjacent to the Bluff, are the remains of a Chinese fortified site, c 100m x 50m. Recent excavations have exposed sections of the lower courses of the double defensive walls. The foundations of the fort's eight c36m x 4m barrack blocks and a well, presumably spring fed, were also located. The foundations of the fort's 10m x 6m toilet blocks lie adjacent to the perimeter walls, on the landward side. The graveyard is adjacent to the path to the Bluff, just outside the fort's outer defences. T.C.Bell Survey Nov 2006





WAIHI FALLS ROAD. SE of Dannevirke, North Island, New Zealand.
Chinese Town "Waihi Falls", external defensive walls. (40d, 26', 29.1 – 176d, 14', 46.0)
The three rows of stonewalls, left to right, formed part of the town's defences and a gateway. One of the walled entrance roads ran along the ridge right. Each section of the town was also walled. (TW), F=Falls, H=harbour. Site located by B.Bloomfield
T.C.Bell Survey Nov 2006



OPORAE. SE of Dannevirke, North Island, New Zealand.
2nd Gateway on the walled Oporae road, leading to the Chinese Town of "Waihi Falls".
All that remains of the town's defensive wall are two large rocks. Adjacent to the wall,
two stone models had been recently exposed by a washout. One a pig, one a duck.
Site located by P.Bloomfield
T.C.Bell Survey Nov 2006



GUIDE TO CHINESE HARBOUR NEW ZEALAND.

This 7metre high face was carved into the rock at the narrow opening to a Chinese harbour in Whangape, New Zealand. Several of these Chinese harbour guides and identifiers have been located around New Zealand. The other major navigational aids used in ancient times are Pharos, (Controlled Fires, Beacons) eg Portsoy (Moray) alongside old ropeworks and the old graveyard, Gairloch(Wester Ross)

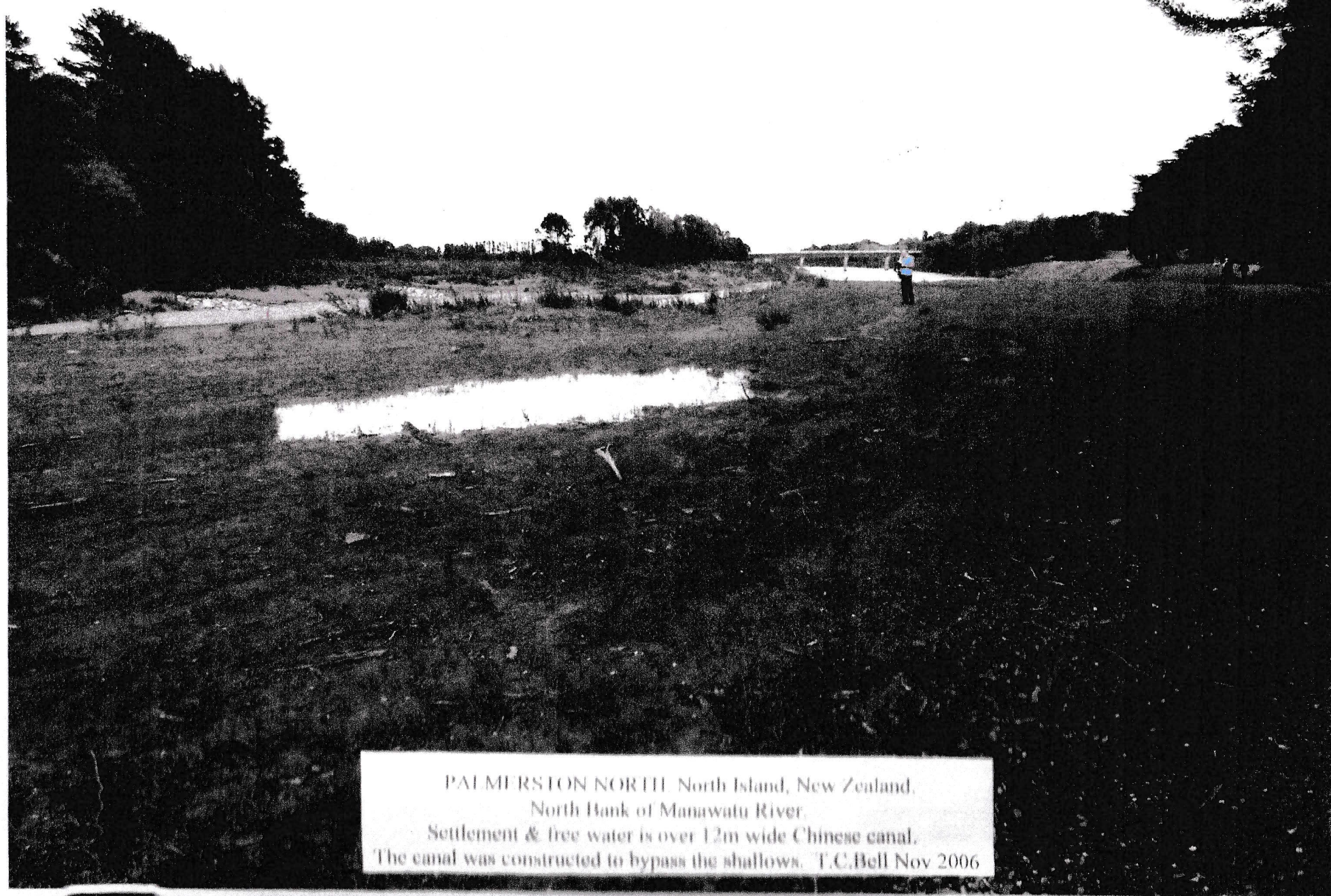
T.C.Bell Photo R.Buchanan NZ (2009)



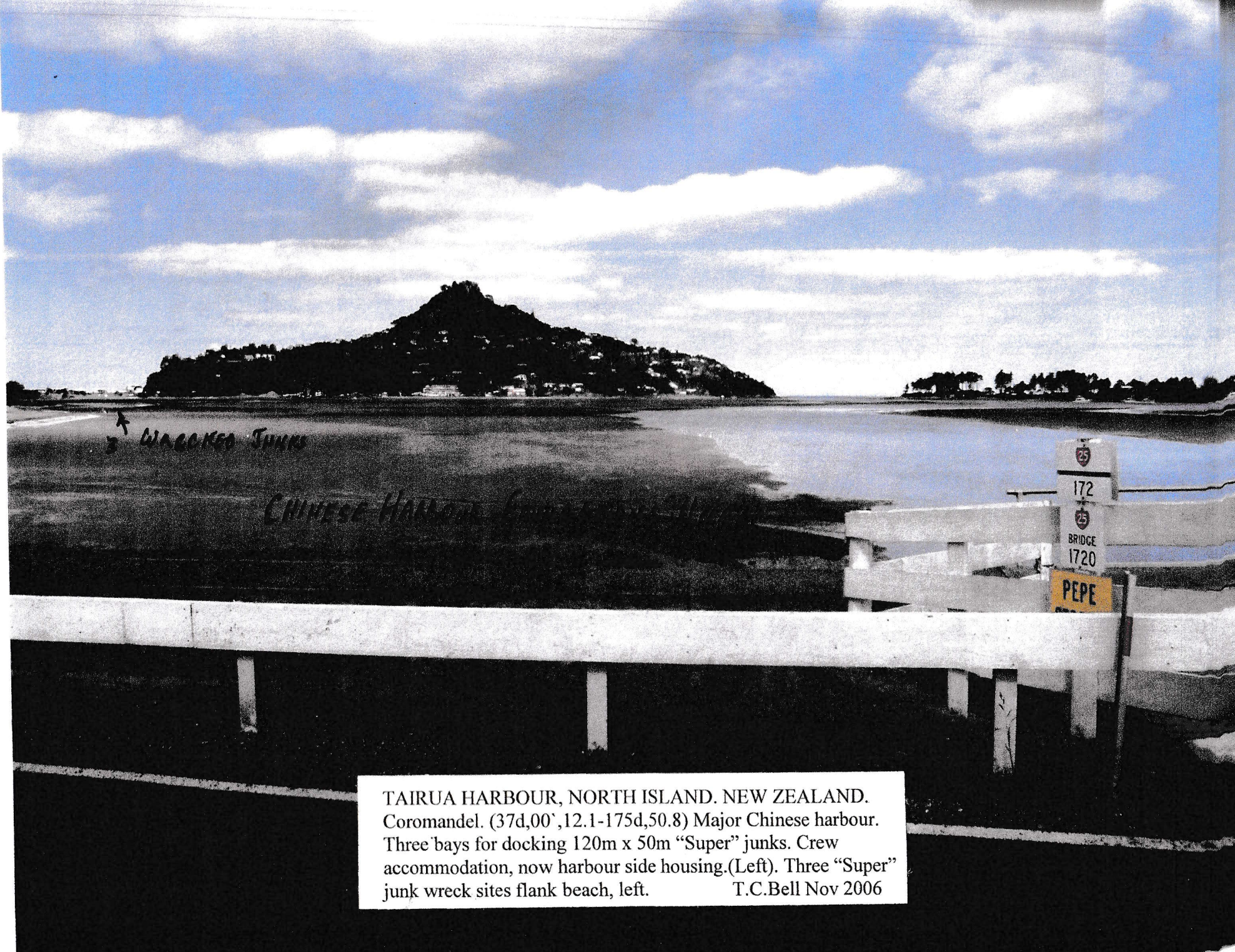
BAYLYS CAMPSITE, Nr.DARGAVILLE, WEST COAST, NORTH ISLAND.
(35d, 57', 01.85, - 173d, 44', 53.0)

The burnt grass is over the foundations to one of the gateways to the Chinese walled site (c 180m x 80m) which contained the 24 onshore barrack blocks for the crews of the two "Super" junks based on the nearby double bayed harbour. One of three on Baylys Beach, with a total harbour capacity for six "Super" junks, each c120m x 50m and displacing c 3,500 tonnes..

T.C.Bell Survey Nov 2006



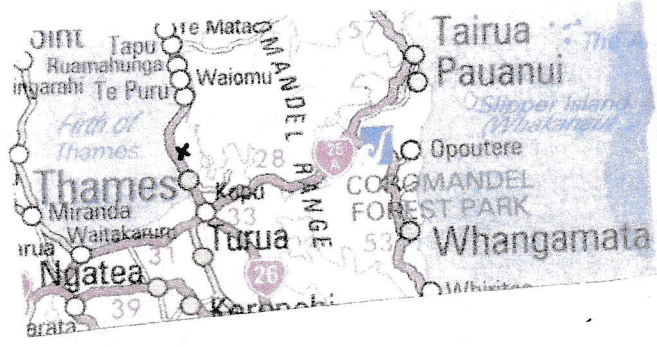
PALMERSTON NORTH, North Island, New Zealand,
North Bank of Manawatu River.
Settlement & free water is over 12m wide Chinese canal.
The canal was constructed to bypass the shallows. T.C.Bell Nov 2006



TAIRUA HARBOUR, NORTH ISLAND. NEW ZEALAND.
Coromandel. (37d,00',12.1-175d,50.8) Major Chinese harbour.
Three bays for docking 120m x 50m "Super" junks. Crew
accommodation, now harbour side housing.(Left). Three "Super"
junk wreck sites flank beach, left. T.C.Bell Nov 2006



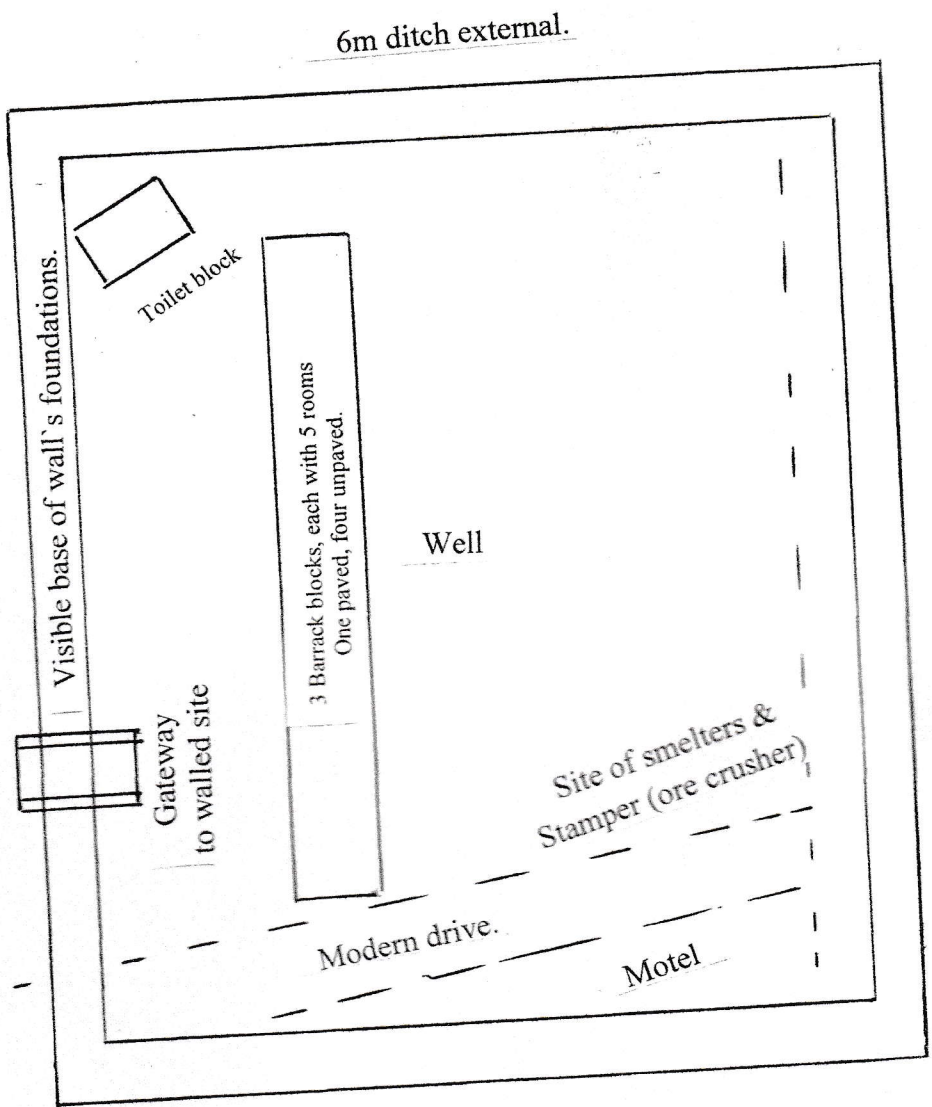
COROMANDEL. NORTH ISLAND, NEW ZEALAND.
Thames Coastal Motel. Site of walled Chinese ore exploitation
site, housing ore exploitation quarriers & smelters.
(37d,07',02.8-175d,31',33.8). Raised base of wall built on stone
foundation, flanks road. Note (centre) Raised line of gateway.
T.C.Bell Nov 2006



Site of Chinese small finger type harbour.

Tararu Road

< Thames



Water supply ex cliff face (spring) via aqueducts which are still in place..
This supplied the site's water for domestic use &, drove the crusher's
water wheels & the bellows which supplied the combustion air for smelters.
A trickle of water is still discharging from the cliff. Surveys are required
to check if any adit's (shafts) have been drilled into cliff face?

COROMANDEL. North Island, New Zealand.
Thames Coastal Motel, Firth of Thames
(37d,07',02.8 -175d,31',33.8)
Chinese Walled Barrack Blocks for Miners / Smelter Operators.
T.C.Bell Nov 2006

have seen and done, before it is too late and the years of surveying wasted. As the eldest of the team, after seven decades of fascinating experiences, I have now reached that point.

To understand the Chinese engineering design methods and their interface with the Romans and apply them to New Zealand, we have both surveyed large sections of New Zealand, Cape Breton Island, (Nova Scotia), Northern Britain and the Scottish Islands and even to the island of Innis Mor one of the Aran Islands in Ireland's Galway Bay. It was the appreciation that a canal had been constructed down the east coast of New Zealand's South Island which generated the thought that if they could carry out such work away from China, did they also connect the Pacific to the Caribbean. This sparked off the research for the survey carried out by Colonel John Blashford Snell and his team in 2010 which located probably the first canal to connect the Pacific to the Caribbean via Lake Nicaragua. Prior to the construction of the Panama Canal.

We can but leave our stepping stones for others to follow.

One of New Zealand's major mysteries is the origin of Moeraki's boulders. Whilst Otago's geologists claim that they are concretions and purely the result of nature, they have failed to explain why the large number of boulders at Moeraki are not reproduced under every New Zealand cliff, with a Tourist centre on top of it. One well known Otago geologist actually made an offer on the Larry Holmes television show in 2003, to eat his hat if the Moeraki boulders were other than concretions. As it appeared to be his favourite hat, I'll not hold him to it.

CHAPTER 10

TECHNICAL DETAILS. ROMAN AND CHINESE.

As an engineer and a Roman surveyor, faced with a further dimension of Chinese sites my interest was to ascertain the difference between Roman and Chinese designs, already being aware of several similarities. I was already the first in Britain to publish the design of Roman aqueducts and inland and deep sea harbours. When surveying large sites it is totally impossible excavate complete sites, or wet harbours, or as in New Zealand, not legal. Therefore it is vital to understand the physical designs of the ancients when carrying out surface surveys by magnetic anomaly, or any other form of non destructive surveys. Without this understanding of the ancient's construction design, the site cannot be identified. This appears to be a major problem in site recognition in New Zealand. Maori did not construct canals, aqueducts or harbours. Digging sticks are hardly the tool for serious excavations.

AQUEDUCTS. The Roman and Chinese designs of aqueducts are identical. The duct can be formed by a rectangular, or square profile, or with smaller ducts, a circular profile. Standard profile, Stone flag base, sides and cover, bonded and waterproofed with puddled clay. The central duct being flanked by rubbish stone, this forms a barrier to the side thrust of the water. Eg a metre wide duct would have another metre of rubbish stone on either side, giving a total width of c 3m. Small ducts have been located made from puddled clay, with smaller stone inserts forming a circular duct to resist abrasion from flowing water. A magnetic anomaly survey will detect the backing (rubbish stone) sides of the duct and the actual duct which shows as a lesser anomaly.

HARBOURS INLAND. The Roman and Chinese inland harbours are to the same design. Invariably these harbours can be recognised by a reed filled depression. Usually by a Roman or Chinese fort. The depression is lined with puddled clay to waterproof it. The ones I have excavated have had a c 100mm thick puddled clay lining. The quays are formed from either stone, akin to an underground stone wall, or left as an earth mound, covered with puddled clay and a stone capping to prevent wear to the lining by docker's boots. The quays are not connected to the side of the harbour for security purposes. The inland harbours are accessed by locks and connected to the nearest river by canals. The harbours are usually walled for security purposes.

CANALS. Roman canals are lined with stone walls bedded in puddled clay, aqueducts flank the canal on both side and another aqueduct runs at the base of the canal. The side aqueducts are connected, alternatively every 18m to the base aqueduct. The side aqueducts are fed every 18m at right angles by ground draining 18m long aqueducts usually filled with small stones to prevent blocking.. The design, forms a biological oxygenating demand control system, keeping the canal free of odour and weeds. The Chinese equivalent left out three flanking aqueducts, but retained the 90degree aqueducts, which provided makeup water. Previously I mentioned that at Rakia's North South canal the local Council's notice board warns folk of the depressions across the track, these depressions are over the Chinese canals make up aqueducts, and roughly 18m apart.

ROMAN COASTAL HARBOURS FOR DEEP SEA VESSELS.

Usually sited alongside a river mouth. Stone walled, square, or rectangular, usually with at least two internal sections, presumably for easy maintenance. Fitted with two sets of locks, double gated, capable of admitting 30m x 6m vessels. Flanking the shore at the land side of the harbour is a large aqueduct fed from the local river which is dammed to raise the physical water head. Water is directed into each compartment of the harbour to keep it full. I have identified some harbours by the upper covers of the aqueduct falling off and sand falling into the duct, creating a hollow along the beach. The Roman harbours appear to have been accessed from half to full tide.

CHINESE HARBOURS FOR DEEP SEA VESSELS.

Chinese deep sea vessels have been located in four different sizes. Two of the sizes requiring different harbour designs. Harbours for c 47m x 11m and below. The harbour walls are little wider than the vessel, they have a central keel slot which runs the length of the harbour. The harbour is sited at the mouth of the local river or creek. An aqueduct links the water source to the keel slot which keep it free for debris.

Harbours for c 70m x 28m and for 120m x 48m vessels are also slot harbour, little wider than the vessels they are designed for. The keel slot is also connected by an aqueduct to a water source. If there are a number of flanking harbours, the feeder aqueduct flanking the shore is always the first to look for. Flanking the keel slot are a number of stone pads set at regular intervals, running down the harbour length, three for the larger vessels and two for the smaller vessels. The design allows the vessel to sit on the stone pads when the tide goes out, this ensures that the massive hulls are not distorted, especially the larger vessels which have a concrete hull lining. From the positions of the anchors located it appears that the vessels entered the slot harbours stern first. This enabled the anchors to be used as kedges when leaving harbour. All the Chinese vessels had oars, plus the sighting of a multi oared small vessel at Bayly's Beach suggests that Rowing Tugs existed.

ANCHORS.

The Chinese design of double fluke anchors acting at the same time predated the design of the European single fluked anchor by a thousand years. See photograph of model. Two sizes of anchor have been located, For the larger junk, a large piece of rock c 3m x 0.75m carved to form sharp ended flukes at both ends, a similar section linked to each other c 7m apart by a section of oak, set into a square hole in each section of rock. The anchor cable being fastened to the centre of the linking piece of timber. The beauty of this design is that whichever way the anchor fell, always two flukes dug into the sea bed, unlike the European anchor design in which only one fluke ever dug into the sea bed, giving only half the holding power of the Chinese anchor. The smaller Chinese vessel's anchor width was c 3.5m.

ROMAN BARRACK BLOCKS, For Soldiers. Roughly 44m x 4m. Built in stone, roofs could be tiled, or thatched. Some had wooden buildings with stone foundations. They had ten unpaved rooms each c 4m x 4m, which held eight men and one paved for the officer.

ROMAN CAVALRY BARRACKS, had similar dimensions to the foot soldiers, but only six or seven rooms larger rooms for the cavalrymen's equipment. Cavalry could also be identified by the stables c 10m x 6m with a drainage trench running the length of the stables. Walls and roofs long gone. But identifying foundations in place. The Chinese cavalry had barracks and stables of roughly the same dimensions.

ROMAN DOMESTIC BUILDINGS. (INSULA). Roughly 80m x 10m, Built in stone, with clay tiled roofs or could be thatched. Ten unpaved rooms each 10m x 10m and one paved room for the officer.

CHINESE BARRACK BLOCKS, for Soldiers, Miners, Sailors and Slaves barracks, as sailors in home ports slept ashore. Built in stone with presumably thatched roofs c36m x 4m with Eight 4m x 4m unpaved rooms, one c 4m x 4m paved room for the officer.

CHINESE DOMESTIC BUILDINGS. Built in stone, presumably with thatched roofs. 30m x 10m With three rooms, the centre one paved and the outer ones unpaved.

ROMAN GRANARIES. Built in stone, with stone tiled roofs for fire resistance. External stone buttresses set every 3m to stiffen the walls against internal thrust. Internally longitudinal sub floor stone strips, spaced apart, with stone paved floors over for ventilation. These unusual features enable identification, without excavation. In Britain, many later churches built over Roman granaries as these always had the heaviest foundations.

No Similar Chinese Structures have been Identified in New Zealand, or Britain.

ROMAN TEMPLES.. Usually situated outside the Roman Forts, in Roman Towns, usually situated on a massive (up to 100m long) artificial curved platform and walled site which held the Forum (shopping Centre) identified by the internal c metre square foundation for the roof support pillars. The massive raised platform also contained the Public Toilet Blocks, Male and Female, the Temple and frequently a small Theatre.

ROMAN TEMPLES.

Temples are invariably of rectangular construction and built in stone. There is usually and outer defensive ditch and a single entrance. There is always an inner and outer wall with a c metre gap between. It is thought that this gap was roofed and used for clothes storage. At the centre of the temple is always a water filled bath, this varies in size according to the temple size, the smaller temple bath is c 750mm x 2m. The bath is filled via an aqueduct. It is thought that this is the forerunner of the Christian immersion bath. External to every temple located in Britain is a toilet block. These have a single central trench fed by the water ex the temple.

ROMAN BATHS.

These structures located in Britain range from massive multi roomed structures around 30m x 20m with several rooms to small towns having a single bath c10m x 6m with an

Adjacent boiler room, and an external toilet.

CHINESE BATH HOUSES.

The Chinese sites located in Britain have had identical toilet blocks and small bath houses with a central bath and an external boiler house. On my first survey of a similar unit in New Zealand, I wondered at a Roman designed Temple, then scanning around the site located the external boiler house and realised it was a bath house.. The largest Chinese bath house located in New Zealand was in the South Island at the Port Hills Fort. This large fort guarded the "Pass of the Kiwi" between Lyttleton Harbour and Christchurch.

ROMAN FORTS.

These usually had four external defensive ditches, and a single wall with a tower at each corner of the fort and double gateways, side by side, with inner and outer gates, on each side.

CHINESE FORTS.

The Chinese forts located in Britain and New Zealand had one external wide ditch and two entrances gateways, front and back. They had double walls with towers at regular intervals.

CHINESE BARRACKS FOR SAILORS.

Eg Crew for Super Junks would hold several hundred men. These had one external ditch and double walls and towers at each corner, presumably for bowmen. With only one gateway.

ROMAN TOWNS.

One external c 6m ditch, single walled, but frequently with sub sections also walled and gated. Internally Insula, ten roomed houses, all unpaved, one paved room per insula. Public toilets and wash houses plus Forum shopping centre. Major Granary external to town, ditched and walled with external fort. Ullswater City, Britains largest city. Covered nearly 1,000 acres, it had one amphitheatre and five D shaped theatres and six Forum (shopping centres) and multiple toilet blocks. It's wealth was based on metallic ore extraction, manned by slaves.

CHINESE TOWNS.

One external c 6m wide ditch, One front gateway and one rear gateway, towers along the walls at regular intervals. Internally three roomed houses. Public toilets, temple and baths. External to town, one major Chinese town in Britain, Hadrian's Wall, had an external granary, of Roman design, walled and ditched with an small external double walled fort.

In New Zealand we did not locate any stone circles, although we had been assured that they exist. In the UK stone circles are very common, my surveys over stone circles had observed that they always (nearly) had been built over springs. It was only after my colleagues returned from a visit to Beijing's observatory and gave me a set of

photographs that I realised that the spring supplied the water for the equivalent water tables, these combined with a shadow caster, provided the max and min sun's and moons altitude to be recorded and enabled calculations being made from which the times for sowing and harvesting crops to be made, plus fish and bird migrations being recorded. Surveys of the stone circles revealed that each had three graduated stone trenches, each puddled clay lined c 20m long outside the circles pointing North. The trenches being connected to the spring. The water provided the reflective surface from the shadow caster.

THE MOERAKI BOULDER STORY.

Due to dramatic cliff erosion at Moeraki. During the Nov 2006 survey, photographic evidence was obtained of recently exposed Moeraki type balls, both within and below the

hull of the exposed, "Super" junk. One ball, frozen at the point of impact, as the junk hit the cliff and the ball dropped from the hull bottom, the other hit and distorted the concrete lining of the junk's hull and can still be seen embedded in the hull's concrete. Complete proof of their use on Chinese vessels.. Another ball, recently emerged from the hull, has its external coating and the concretion core fully visible. A further ball has its outer coating disintegrating, as the concretion internal emerges. Akin to a butterfly emerging from its chrysalis.

The analysis of the balls ex the Moeraki "Super" junk and a survey of every known ball site in New Zealand, coupled with a geologist's survey of samples ex these balls, are tabulated below. The conclusion of the investigation into "Spherical Objects" was that the Chinese had utilised "balls" from c1m to c1.7m, an average of 1.5m, for some function on their junks. Some balls, possibly replacement balls, had been cut out of solid igneous rock. Some had been manufactured from concrete, as a snowball, with larger pieces of rock infill (voidage). Some had started as a natural concretion, then a coating had been applied. We do not know the origin of the coating, it was not concrete on the balls examined. (ie No reaction to Hydrochloric acid). One wonders at a rice based mortar coating. Rice adhesive was used to bond the "Super" junk's concrete lining to the wooden hull and we know that rice mortar was used to bond the stone and bricks of the Great Wall of China. We still do not know the use of the balls on the junks. The most unusual dump of modified concretions on the east coast of North Island, can only be construed as Chinese "work in hand". They lie over a double bayed, Chinese "Super" junk harbour.

Spherical Objects Survey, some located near known Chinese Junk wreck sites..

North Island, West Coast.

(1a/b/c) AUKLAND, Grafton Street, Parkland near City Centre. Origin Not known. Four balls. Diameter 0.7m to 1.2m Regular circular shape. External hard coating. Comments. Acid test result. Fizzes. The regular spherical shape and visual examination of samples of the external shell indicate they were manufactured from a form of concrete.

(2a,b) Between AHIPARA (South end of 90mile Beach) and Waitanga on Highway 12.

35d, 49', 42.8-174d, 00', 56.4. Ball on north side of road at house entrance, painted pink. Origin not known. Diameter 1.5m, Regular circular shape. External hard coating. Comments Acid test result. Fizzes. The regular spherical shape and visual examination of a sample from the external shell indicates that it was manufactured from a form of concrete.

(3a) WHANGAPE HARBOUR, 35d, 20', 21.5-137d, 13', 36.2. North side of harbour at end of track, adjacent to mangrove swamp. Diameter 1.2m regular circular shape.

Comments. Acid test result. Fizzes. The regular spherical shape and visual examination of a sample from the external shell indicates that it was manufactured from a form of concrete. Known Chinese based harbour.

North Island, East Coast. East of Dannevirke.

(4a,b,c,d) NETHERTON FARM PARK (40d, 00', 46.0-176d, 51', 59.6)

Four balls ex MANGAKURI BEACH. 39d, 58', 08.8-176d, 54', 57.3 (Super Junk Wreck Site) No cliffs. Diameters c 1.5m, regular spherical shape. Evidence of external parallel circular grooves c 30mm wide, appears to be cut groove for rope. External circular crack, man made construction. Comments. Acid test result. Fizzes. The regular circular shape and visual examination of a sample from the external shell indicates that they are manufactured from a form of concrete. Chinese wrecked junks are known in the area..

(5a,b,c,d) POURERE BEACH. (low cliff) 40d, 07', 10.4-176d, 52', 24.6 Site of two Super junk harbours, large amount of cut stone ex harbours visible. Aqueduct fed. Large number of sausage shaped, c 1.00m diam x 1.5m long ie and some broken spherical concretions within small area. Cliff only 2m high. (Cannon / Mortar Balls also located on steps of adjacent beach house. As located at Moeraki & Shag Point. Cannon balls cast in concrete). Comments. Acid test result on sausage shaped concretions. Negative. These are real concretions. Known Chinese "Super" junk harbour site. BUT, many of these concretions had man made square holes or circular machining at their ends, as if to mount wooden axles. It is known that Chinese siege battering rams also used round balls on a timber frame. Dr Andrew Bell, our geology advisor, stated that such modifications to concretions are not found in nature.

South Island, East Coast.

(6a,b,c,d,e,f) MOERAKI. (South end of beach) 45d, 21', 14-170d, 49d, 49

Concretion (?) surrounded by man made exterior. External diameter 1.7m, thickness of man made external ring, 0.250mm.

Comment. This ball (?) has appeared from the mud cliffs under the wreck of the 100m x 50m "Super" junk, between Oct 2003 (last film shot of site by TVNZ and T.C.Bell) and the 2006 survey. The latest erosion of this cliff has exposed a ball in the middle of the hull and another smashed half way through the concrete lining of the hull. Both balls consisted of concretion centres and man made external coatings. A similar ball was photographed (2006) emerging from a cliff on the "Tourist" centre beach, in this case the external "Coating" of the concretion had nearly disintegrated.

The "Coated" concretions and the man made concrete balls appear to have formed part of the 100m x 50m "Super" junk's (Treasure ships) equipment. We have received photographs of similar sized balls located in both New Zealand and other parts of the world, which have been fabricated from solid rock. Presumably these have been constructed to replace balls damaged during use. We can only hope that a "Super" junk is located somewhere in the world, with it's holds in sufficiently good condition to enable the installed "Balls" to be viewed in their working environment.

CHINESE WRECKS LOCATED IN NEW ZEALAND
& THEIR APPROX DIMENSIONS..
2003 South Island February, June and Oct / Nov surveys.

	37m x 15m =1	18m x 7m =2
	34m x 14m = 1	16m x 8m =2 Sampans = 4.
100m x 50m = 12	28m x 11m = 1	11m x 8m =2
47m x 11m = 36	28m x 14m = 1	20m x 19m =1 Raft
-----	22m x 6.5m =1	13m x 10m =1 Raft
	20mx 7m =1	
Plus 40m = 48 (a)	Plus 20m = 6 (b)	Less 20m = 8. (c)
TOTAL OF	(a) = 48 Junks over 40m.	(c) 8 less than 20m, some possibly
	89	
plus (b) 6 Junks 20m -40m	horse transports or mobile rafts.	
TOTAL 2003	= 54 Junks over 20m	

Nov 2006 Survey North & South Islands.

NORTH ISLAND

Super Junks c100m x 50m (Treasure Ships) Located	Harbour Bays
Waitangi 0	1
Dargaville 6. West Coast	6
Ahipara 1 West Coast (south end of 90 mile beach	1
Makuta 1 East Coast (South of Tauranga)	
Coromandel 3 East Coast	3
Mangakuri Beach 1 East Coast (Dannevirke)	
Pourere Beach 0	2
North Island 12 Super junks	13 North Island

SOUTH ISLAND

Moeraki 12	10 South Island
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& Catlins

Further harbours anticipated at Catlins

Total Super Junks all surveys North Island 12 & South Island 12 = 24

Total Super Junk Harbour Bays North Island 13 & South Island 10 = 23

Total wrecked junk sites located over 20m 2003 / 2006 surveys = 78

NOTE. These measurements are paces and to be taken as approximate.

Moeraki 120m x 48m and Wakanui (Maori for big ship!!) 47m x 11m visible

All other junks located by magnetic anomaly at low tide whilst surveying along many thousands of metres of suspected beaches with creeks (rivers) running into the beaches.. Confirmed by enhanced satellite at Moeraki, Papatowai, (South Island) and at North Island Bayliss Beach and Tairua, (Cormandel). These surveys also confirmed the accuracy of the magnetic anomaly surveys.

BALCLUTHA, OTAGO, SOUTH ISLAND, NEW ZEALAND.

SITE OF A CHINESE MAJOR SHIP BUILDING YARD & DRY DOCK

New Zealand was the Chinese southern Pacific base. Wear and tear of the Chinese fleets required both repairs and replacement. Returning to China for repairs was out of the question due to the distance with an unseaworthy vessel. New Zealand was an ideal wooden ship building centre, as it contained a wonderful supply of hard woods and tall straight trees, ideal for masts of ships. Wood, especially hard wood, was always in short supply in China and probably formed one of the major Chinese imports from New Zealand. One New Zealand timber is still called Rimu, having retained its Chinese name over hundreds of years. Mu is Chinese for timber /wood.

Whilst basic repairs to vessels could be carried out in the tidal slot harbours designed for either the c47m x 11m junks, the work horse of the fleet, or the so called c120m x 48m Treasure ships. Major ship repairs, or building new vessels, required a dry dock. Still visible on the shores of China's River Yangtze, at Nanking, over 250 mile from the Yellow sea, are three ancient dry docks, two of the same size, one longer, the first excavated was 421m long x 41m wide. One is not sure where the sideways measurement was taken, the dock appears to have sloping sides, which could well cater for the hulls slight curvature. Dr Church is of the opinion that these dry docks appear to have been too narrow for a c120m x 48m beam (Bell's dimensions) Baochuan, or Treasure Ship. (See Sally Church's surveys of the Nanking Dry Docks). However at Longjiang ship yard, also on the Yangtze, it is claimed that dry docks c63m wide existed, these are now built over. Along the western coast of Scotland, a number of wrecks of Chinese junks c 70m x 26m and their slot harbours, with water flushed keel slots and hull support pads have been located. Three of these vessels in a line, could have been constructed in the Treasure Ship yards. One wonders at the design of the massive lock gates to the dry docks, whilst flooding of the dry docks, to float the junks out, was simple, pumping the water out to start constructing the next batch must have been difficult. The c 63m replica of a Treasure ship, built for the Beijing Olympic games, is now a museum to Zheng He and sited in one

end of the Nanking dry docks. The North Sea drilling rigs were built within a dry dock composed of earth dykes, then one dyke end was demolished to float the rigs.

Around the coast of New Zealand the author has located a large number of the tidal slot harbours for the c47m x 11m junks and 23 of those designed for the c120m x 48m, junks, however harbours accessed from half to full tide cannot be used for ship building.

The town of Balclutha is in South Otago, South Island, New Zealand, and sited alongside the River Clutha, the largest river in South Island. The name is taken from the Roman name for the River Clyde in Scotland. Many of the earliest settlers arrived from Scotland to farm and some to prospect for gold, hence many of the towns bearing Scottish names. Immediately north of Balclutha, on the south bank of the River Clutha, the Chinese constructed a major ship building yard, a mirror image of the Chinese Yangtze ship yards, where so many ancient vessels were built. The total site is now little more than a swamp. The first records of the site which became Balclutha Town in 1852, also recorded the riverside lagoon (the dry dock site) surrounded by flax. Interestingly the records of the Nanking shipyard also show that flax was grown to provide material for the sails and cordage..

The Balclutha site appears to have contained two dry docks, side by side, both carefully angled across the river at a bend, providing maximum clearance for vessels leaving, or entering the dry dock. One dry dock was very roughly 150m x 50m, suitable for a Treasure ship, or smaller vessels, the other very roughly, 80m x 30m for smaller vessels. Upstream of the dry docks, was a triangular shaped area roughly 300m long and 100m wide at the middle. This enclosed water, appears to have been a harbour to supply the ship yard. Or possibly for building smaller vessels. The large volume of water could also have been used to speedily flood the dry dock to launch the completed hull. A canal fed from upstream of the dry dock, arced around the site provided both a defence and feed for the reservoir and dry docks and by discharging at the river side of the dock gates, continually flushed the channel from the dry dock to the river. To enable the dry docks to be pumped out after a launch, probably the Chinese installed a long line of waterwheel driven pumps. Over 2,000 years ago, the Nabateans at Petra, Jordan, used acceleration devices in their hydraulic systems.

Presumably, at Clutha, as at Nanking, the basic hulls were built upstream, free from Typhoons etc and also nearer the timber source, then the finished hulls, with minimum draught, towed down river to be fitted out at a berth nearer the sea. Two Chinese vessels appear to be sunk in the River Clutha, and one at the mouth of the river, all covered in silt. Presumably the vessels were in or by the dry docks when the low flying meteorite's heat fired the trees and carbonised everything combustible, including all vessels above the water line. Finally, the Tsunami created when the meteorite struck the Tasman Sea, would have rushed up the Clutha, flooding the low lying fields washing any vessels, already carbonised by the extreme heat, out of the dry docks, sinking them, and covering them with silt. Where they lie today unrecognised until an ex marine engineer noticed them.

Presumably the vessels now located in the River Clutha, had not been rigged to reduce their draft for the down river trip, this has ensured they sank in their floating position, not heeled over due to top weight. To those that say such sunken vessels would have been detected in the river, should remember the Vasa. The Swedish warship Vasa, sank when fully rigged and loaded, on her maiden voyage in 1628, then as memories dimmed, remained undetected in the river for over three hundred years. Finally in c1960 was located by one man's determination, surveying from his rowing boat. Vasa was raised in 1961 and is now exhibited in a Stockholm dry dock.

SWEDISH WARSHIP VASA 1210 tonnes Displacement.

Length between perpendiculars 47.5m Beam 11.7m Draft 4.8m Hull/Beam ratio 24%
Crew 145 Sailors, Soldiers 300. Total 445. Well worth a visit. Details Ex Wikipedia.

CHINESE TREASURE SHIP (BOACHUAN).

(c120m x c48m x c 7m (?) draft x block coefficient of 0.5 = c20,160 tonnes displacement.
Hull Length/ Beam Ratio 40% The draft is estimated as around 7m, as vessel virtually flat bottomed. Surveys at St Peter's harbour, Cape Breton Island, Nova Scotia.
along known natural quay side with a charted depth of 7m was used by the Chinese Boachuan fleet (Confirmed by the occupancy of the adjacent large barracks and others located. . Crew / Soldiers, no records of proportion. Total c 768.

T.C.Bell C.Eng MIMarEST

Thomas Cedric Bell



Thomas Cedric Bell (who referred to himself usually as “Cedric Bell” and occasionally as “T.C. Bell”) was born on 21 April, 1931, and died on 10 March, 2025, at the age of 93. He lived in Sockbridge, Penrith, UK, but has family around the world, including in New Zealand. He worked as a Chartered Engineer, with eight years at sea from Junior to Second Engineer; he spent seven and a half years as a surveyor, around eighteen years as a Works Engineer, two and a half years with Delta Metal, Birmingham, that employed c. 1,000 employees, and 26 years with Castrol Oil, which employed c. 450 and was the largest Lube Oil Factory in Europe, where he worked around fifteen years as Works Engineer and eleven years as Production Manager and Deputy Works Manager.

Cedric Bell’s hobby was Roman, Chinese, Norse, UK, Irish and New Zealand history. Exploring rammed earth dykes, stone gateways, river navigation, etc., he spent c. 26 years working on Roman sites. He actually lived in an ex-Roman town that is still surrounded by visible Roman sites. He has written two long survey reports on Roman Penrith and its region (“Penrith's Roman Heritage”:

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.glenriddingcybercafe.co.uk%2Fdocs%2FTCBell%2FPENRITH%2520ROMAN%2520TOWN%2520EVIDENCE..doc&wdOrigin=BROWSELINK> and “The Route, the Guarding Forts & the Roman Towns and Cities and major highways it linked from Windermere to Ullswater & Penrith”:
<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.glenriddingcybercafe.co.uk%2Fdocs%2FTCBell%2FHIGH%2520STREET%2520ROMAN%2520ROAD.doc&wdOrigin=BROWSELINK>), and another on Roman Scotland (“Scotland's Roman Heritage”:

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.glenriddingcybercafe.co.uk%2Fdocs%2FTCBell%2FPORTSOY%2520-%2520NORTH%2520SCOTLAND%2560S%2520ROMAN%2520HERITAGE..doc&wdOrigin=BROWSELINK>); he has also spent six years

training with the U. K. expert on Roman river navigation; he has given c. 150 site survey reports to U. K. museums and libraries. In addition, he has written a survey report comparing Roman with Chinese engineering and another on Roman and Chinese river and canal engineering. He also researched the ancient Chinese canal in Nicaraguan, which linked the Caribbean Sea to the Pacific Ocean (pre-Panama Canal). The actual survey on site was carried out by Col. John Blashford-Snell, Britain's best-known explorer. Cedric Bell's surveying experience extends to one survey on Cape Breton Island in Canada, five surveys in New Zealand, one in Ireland, and hundreds in Scotland and the Isles, and Northern England over a 30-year period. This includes using magnetic anomaly survey (MAS) and hiring expert geophysics surveyors.

Unfortunately, Cedric Bell was largely ignored by the academia and governments he reached out to. In fact, his notes mentioned which of the sites he found ended up being deliberately destroyed.

Cedric Bell carried out these surveys at his own expense for no monetary gain. He did not seek fame either. His dedication came from the love of finding the truth. He was generous to people who shared the same faith with him by patiently explaining his findings and mailing his survey reports to them. Cedric Bell's discoveries and spirit will live forever in our minds and hearts through his memorable words:

We can but leave our stepping stones for others to follow.

It is hoped that publishing these surveys will attract people with an open mind to view information not publicly available before. It is hoped that this information will not be used to deliberately destroy other sites and instead will further Cedric Bell's theories, whether to confirm or refute findings with more modern methodologies.

Cedric Bell's ORCID ID, for contacting researchers working in this field (and who knew him), is <https://orcid.org/0009-0002-1189-3433> . We will happily answer your enquiries on Cedric Bell's behalf. Cedric Bell and his estate own full copyright to all his works.



Bell's ORCID ID