

St Helena

Where Have all the Beaches Gone?

by DAVID HOLT

The Walrus and the Carpenter were walking close at hand;
They wept like anything to see such quantities of sand:
'If only this were cleared away' they said 'it would be grand!'
'If seven maids with seven mops swept it for half a year,
Do you suppose,' the Walrus said 'that they could get it clear?'
'I doubt it' said the Carpenter, and shed a bitter tear.

Tweedledee in 'Alice through the Looking Glass'
Lewis Carol (1871)

Ascension has bathing beaches so why not St Helena?

Tourist brochures describing the attractions of St Helena mention the impressive sheer cliffs but include no reference to sandy bathing beaches because, as readers well know, there seem to be none. Yet Ascension, the nearest land to St Helena and likewise of volcanic origin has an extensive beach where the turtles come to lay their eggs. So why does Ascension have beaches and St Helena none?

Well actually, believe it or not, St Helena does have beaches but they are not much good for bathing because they are all up in the air several hundred feet above present sea level. And if this sounds like a joke to readers they might reflect on what Charles Darwin wrote following his visits to the Island in 1836. 'At Sugar Loaf Quarry irregular masses of impure lime occur. As this substance is now being abundantly deposited by the surf at Ascension it is possible that these masses may have thus originated, but if so it must have been at a period when the land stood at a much lower level. This is found at a height of between 600 and 700 feet'.

Are Darwin's 'masses of impure lime' really elevated fossil beach relics?

Robert Seale, an island resident who made a detailed study of the Island over many years and published his findings in 'The Geognosy of the Island of St Helena' in 1834 states the case even more clearly and poses the question of how they got there. Marine shells being found in large quantities at one thousand nine hundred feet above the sea may argue in favour of the opinion that from this circumstance the Island has been raised 'en masse' from the bosom of the ocean. If the remains of sea shells indicate that the sea has once existed where these collections have been found, there either has been a great recession of the waters of the ocean or a vast elevation of the mountainous parts of the earth. They are not strata of shells but depositions which have been made upon several

projecting flats on the sides of some of the hills and in one instance upon an extensive plain. The latter statement can be interpreted as a good description of an elevated fossil beach composed of material such as is found today on the Long Beach at Clarence Bay on Ascension (and also the adjacent Dead Mans beach, both of which are used by turtles for egg laying). However the idea that relics of former beaches could occur on St Helena up to some 1,900 ft may seem so preposterous that it is appropriate to consider Seale's and Darwin's writings on this in the light of later observations and interpretations.

The despoliation of St Helena's Beaches

To search out and examine such alleged beach relics on St Helena we are immediately up against a great difficulty however, because although these can in no way be regarded as bathing beaches they do have a use since they form a very valuable local source of an important raw material. This is because like the Ascension beaches they consist almost entirely of fine fragments of broken down coral derived material and so are highly calcareous and therefore a source of lime.

On St Helena from the time of its discovery an apparent lack of known deposits of calcareous material to make lime was such a disadvantage that in 1707 Governor John Roberts ordered an advertisement to be published offering a reward of '\$100 to any person who can get any quarry of stone to be burnt into lime for fortifications'. The result of this was within a few weeks "Aron Johnston, soldier, the first that found a Limestone on the Island rewarded with twenty Dollars, the quantity being small, about two tun, which burns and sements as well as any chalk'. However the search for lime did not end there and in 1712 it was recorded that 'A Lime Kiln built at Sandy Bay close to the beach will burn near 1,000 bushels at once'. Despite this decades later, in 1745, the local Officials objected to some proposed building improvements 'because lime cannot be made fast enough for fortifications'. This situation probably continued until 1797 when it was recorded that 'a great quantity of limestone has been discovered near Bank's Battery of a better quality than at Sandy Bay'.

The result of such activities was that as soon as any such calcareous deposits were found (somewhat misleadingly referred to as 'Limestone' in the records), whether large or small they were immediately dug out and used as material for lime mortar without any record being made of their exact location, altitude above sea level or of their shape or size. Thus has much valuable scientific evidence on this subject been lost to us forever, so that by the time that Seale and Darwin were making their observations what they saw must have been only a small part of what had previously existed. Nor did the working of these deposits end in Darwin and Seale's time because when the London University College 1981 Expedition came to the Island with the express purpose of examining and interpreting the nature and origin of its landforms (ie. Geomorphology) it was noted that 'Seale recorded large numbers of marine shells deposited on projecting flat of the hills at three levels in the vicinity of Flagstaff at 580m (1,900 ft), 523m (1,715ft) and 473m (1,550ft) above present sea level. In either direction from Flagstaff there are no flat areas so one must reluctantly conclude that since the time of Seale and Darwin the deposit must have been removed entirely'.

Does what remains of these deposits provide evidence that they were beaches?

Despite their failure to locate these particular features the University College Expedition Report goes on to say 'The shells at Sugar Loaf at the northern tip and those at Potato Bay and Lots Wife Ponds in the south of the Island are found in association with sands. Their marine origin has been attested by many authors'. The same Report goes on to say that the faunal assemblages contained in these sands is distinctly marine and could be anything in age from Miocene (ie. the radiometrically dated age of the St Helena volcano) to Recent. The Report also comments that included with the marine mollusca which are in places very abundant are fragile tubular cavities thought to have been created by burrowing crabs and lined with cement derived from their spittle.

Where on St Helena can these relic beach deposits be found?

The further question that arises is where exactly on St Helena can these relic beach deposits be found and at what altitudes above sea level. Even though evidence available today is limited, it is also complex. It can however be summarised.

High-level marine sands/shells found on St Helena

| Altitude above sea level Feet Metres | | Location | Observed/recorded by: |
|--|---------|--|---|
| 1900 | 580 | Flagstaff | Seale 1834, Darwin 1844 |
| 1715 | 823 | Flagstaff | Seale 1834 |
| 1550 | 473 | Flagstaff | Seale 1834 |
| 1115 | 340 | Prosperous Bay | UCLE 1981 |
| 787-820 | 249-250 | Sugar Loaf | Darwin 1844, UCLE 1981 |
| 656 | 200 | Potato Bay | Baker 1968 |
| 394 | 120 | Deep Valley, Banks Valley Eagles Eyre, Turks Cap. | UCLE 1981 |
| 361 | 110 | Deep Valley | UCLE 1981 |
| 229-262 | 70-80 | Fishers Valley Lots Wife Ponds Potato Bay, Turks Cap. | UCLE 1981 |
| 197-213 | 60-65 | Potato Bay Lots Wife Ponds | Daly 1928, UCLE 1981 |
| 98 | 30 | Half Moon Battery | UCLE 1981 |
| 16 | 5 | Stone Top Bay | UCLE 1981 |
| 10-13 | 3-4 | Jamestown, Lemon Valley Turks Cap Bay, Prosperous Bay, Broad Gut, Manati Bay, Thompsons Valley | UCLE 1981 |
| 3-10 | 1-3 | Lemon Valley Bay, Manati Bay, Prosperous Bay Turks Cap Bay | (UCLE = University College London Expedition) |

Are these deposits really relic beaches, and if so how did they come to be there?

However unlikely it may seem to some, it has to be accepted since the scientific evidence is clear and conclusive, that these strange deposits are indeed the remains of former shoreline beaches which were formed at the locations listed and now to be found at the altitudes shown.

This in turn means, as commented by Seale, that 'there must have been a great recession of the waters or a vast elevation of the mountainous parts'. In other words in the distant past (but since Miocene times when the St Helena volcano erupted 14 million years ago) sea levels must have stood at the heights indicated in relation to the land, or alternatively the whole island mass must have stood at a lower level in the water long enough for the beaches to be formed and has subsequently risen, thereby raising them to their present elevations.

For evidence to help evaluate these alternatives one has to look elsewhere for the relics of other coastline features such as sea caves, wave cut ledges and rock platforms and the shapes of river valleys, not only on St Helena itself, but also on other oceanic islands.

The results of such an appraisal indicates that since the St Helena volcano first erupted global ocean levels seem never to have been higher than about 440ft (135m) above the present level. It therefore follows that the higher relic beaches around Flagstaff, Prosperous Bay, Sugar Loaf and Potato Bay must have formed when St Helena Island was lower (and smaller) than at present, and that it has subsequently risen in relation to what was then the mean sea level, this process taking place in stages. However, just to complicate matters the mean level of the sea is known to have varied globally in the period in question from the maximum quoted above to some 443ft below present day, the latter being during the time of the last great glaciation about 16,000 years ago (see 'The Real Shape of St Helena' Wirebird No 12, October 1995).

From the above it may be concluded that the relic beaches above 440ft were formed when a 'pushing up' of the mass of the island from below was occurring due to minor or declining volcanic action. Subsequent and lower beach relics may on the other hand be due wholly or partly due to global variations in sea level.

These ideas may be difficult for the layman to grasp, but they are real nevertheless and in line with modern thinking of our world, not as a fixed and solid entity, but rather as a continuously changing 'living planet'.

Finally we may conclude from the above that Ascension, which shows evidence of very recent volcanic activity (probably shortly before it was discovered by the Portuguese in 1502) looks today very much like St Helena did when it had beaches all those millennia ago.

So Where have all the Beaches Gone?

It can now be seen that the answer to this question is they have been left high and dry by natural processes, then dug out, burnt for lime and incorporated as lime mortar in buildings all around the island, leaving in situ traces here and there.