PPCA Newsletter
September 2023

Introduction

Welcome to September's Newsletter. This month Terry takes us around an evolving landmark and Kevin gives us what, by the standards of the Newsletter, is a very learned article. I was going to give this edition the title "The Return of the Crinoids" but I though that would be childish.

Editorial

It's wonderful to welcome Kevin as a contributor, particularly as his piece contains the two words that are music to an editor's ear, namely "Part One". It's particularly nice as Kevin is a self-confessed newbie - no offence to the regular contributors but new blood is always a good thing. Looking around on paddles and at the pictures on Facebook, the club has quite a few new members, many of whom look as though they can read and write so a few more articles from newbies would be very welcome.

I've also received a request, which comes around every now and again, for one of the experienced paddlers to do a basic guide to what to look for when buying kit so if anyone has any basic do's and don'ts, I'll try to put a list together.

Ivor Jones

Newsletter Editor

Features

Plymouth Sound Snippets #19, Millbay - Trinity Pier by Terry Calcott

This short snippet is about a feature in Millbay that we regularly paddle around and often under, Trinity pier. The pier was built during a period of rapid expansion in Millbay. During the mid-1850s the famous engineer Isambard Kingdom Brunel was contracted by the Great Western Dock Company to build new docks and facilities.

Part of the dock construction involved building an earth dam across the harbour to facilitate the creation of the inner basin. Part of this dam was retained for the construction of Trinity Pier.

Trinity Pier Just Before the Warehouses Were Demolished

The original stone pier can still be seen under the concrete arches. Next time you are paddling there have a look at the original 1880s structure. All the warehouse buildings have now been demolished. Various plans for use of the pier have been published but nothing yet has happened. I'm sure it won't be long before another plan is promoted, and the pier starts the next phase. Hopefully this impressive structure gets a makeover and has many years of use ahead.

The original Trinity Pier late 1880s

In November 1902 further improvements allowed Trinity Pier to be lengthened and widened, with improvements to the storage buildings.

Trinity Pier 2020s

Looking Along the Length and Width of Trinity Pier

The Geology of Plymouth Sound - Part 1, An Overview by Kevin Tole

As a newly joined member of PPCA it has given me enormous pleasure to paddle in the sound in fine company and allowed me to start upping my kayaking skill set which was far lower than my appraisal thereof. Whilst paddling the edge of the Sound I have had a chance to see the rocks in the area from a different and more detailed perspective. From what I have heard I want to dispel a few myths and give an overview to the geology of the sound which can be seen from sea level and try to give a bigger picture. My background is in Mining Geology with 40 years spent drilling wells of all kinds all around the world. I wouldn't say I'm a geological expert – most of my skill in my career came from an engineering database in my head, of which geology was a part – but I can still remember a bit and you never can turn off your eyes.

An Overview and Dispelling Myths:

Myth No. 1: Granite in the Sound: There is no in situ granite in the Sound apart from the blocks that have been transported for various building projects, the biggest of which is the Breakwater (which consists of upward of 4 million tons of limestone in the centre generally quarried at Oreston and capped with a sheath of interlocking granite blocks quarried on the Moor). More on the Breakwater later.

Myth No. 2: "Drake's Island is the top of an extinct volcano". I have no idea where this one came from but there's not a scrap of truth in it. Drake's Island DOES contain volcanic rocks but they are predominantly tuff beds – tuff is volcanic ash falling out from eruptions far to the north, falling out into a shallow sea and depositing thick bedded accumulations of this ash which has become tuff beds. There is a 'possibility' that part of the central section consists of a basalt lava flow – but this is very debatable and shows no features like a basalt. Evidence in conflicting.

The rocks around the Sound consist predominantly of SEDIMENTARY rocks. The Geological maps unfortunately cut the east half of the Sound off on a separate sheet so I have taken this screen shot from https://geologyviewer.bgs.ac.uk/ which is a free online viewer of the Geology of the UK.

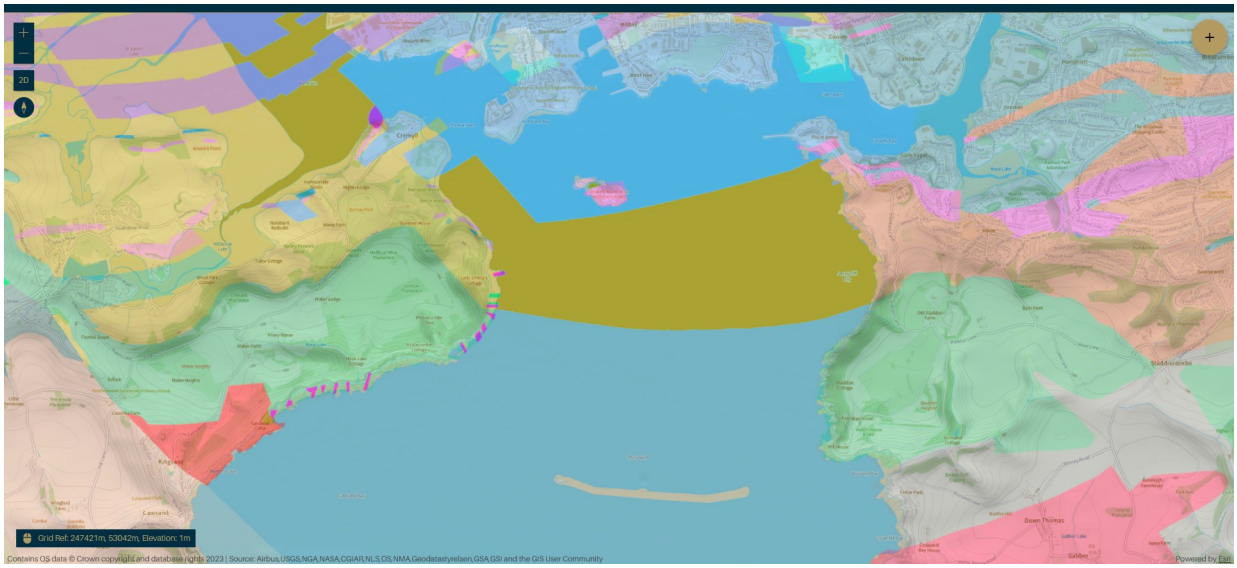

Figure 1: Geological Map of the Sound

The colour key to this map is vast and subtle and you need to go to the website to see it fully. So it is easier to make some broad sweeps.

1. The light blues and light greys are Plymouth Limestone. This is predominantly a coral limestone and for the most part this is made up of coral reef debris (crinoid bits, sea urchin bits, and coral bits) and mats of algae known as stromatopores cemented together with mud and calcareous ooze.

These limestones stretch in a band all the way from Sherford in the west, through Elburton and Billacombe, then the band is split by the Plym , so we have limestones at Cattedown and Oreston to the north and Turnchapel and Mount Batten to the south (which then disappear under the Sound).

To the north the limestones continue through the foreshore of the Hoe, Millbay, Firestone Bay, Devils Point then across the Tamar to leave a final deposit on the north side of Barn Pool and in Cremyll itself. You don't see the fine detail till you look really closely at the rock. The algae mats are a study in their own right. They look like circles or ovals-within-ovals. The best I have seen are on the east side of Firestone Bay, past the swimmers huts at Eastern Kings.

Figure 2: Crinoid Debris Pieces

2. The pale purple / mauve irregular band going from Elburton, through part of Mount Batten and onto Drake's Island. These are the volcanic ash beds known as TUFFS – or more thoroughly, Pyroclastic ash beds – previously mentioned above with relation to Drake's Island. Tuff beds are common throughout Devon and Cornwall and particularly in the Plymouth area. Most of the steep hills in the area are formed by beds of tuff, and at their base, where they lay generally over shales you get many spring lines of fresh water because the Tuff beds are porous.

3. The ochre yellow and pale tan colour to the south of the the Plymouth Limestone. These are - to the east Middle Devonian shales and slates and, to the west the Saltash Formation of similar age consisting of slates, shales and siltstones. The best place to see these is at Jennycliff in the east and at the edge of Edgcumbe below Lady Emma's Cottage before you get round the corner to Picklecombe (the massive landslide!). This is generally pretty unstable rock and where there is geological faulting through this rock type commonly causes landslides and cliff slips as evidenced over at Edgcumbe and also above Jennycliff on the coastal path.

4. The next set of deposits to the south are the pale greens which are the Staddon Formation showing in the east Staddon Heights and to the west in Maker Heights and behind Picklecombe. These consist of sandstones, siltstones and shales. Because we have tough durable sandstone beds with shales around them these show best the way the rocks have been deformed by tectonic (earth-moving) pressures through time. These are fantastic beds and are best seen in the stunning section from the Navigation mast around to Bovisand. Here you will see numerous superb folds and faults in all their glory and do your best to distinguish BEDDING from CLEAVAGE, the two planar features associated with sedimentary rocks that have been deformed.

Figure 3: Overturned West limb and anticlinal fold. The Bedding is clear. The Cleavage is running across the bedding. Note the bedding and cleavage beyond which is all overturned i.e. 'the wrong way up'

I should explain – an ANTICLINE is where the rocks are domed UP, a SYNCLINE is where the rocks folded down into a basin.

5. Then we have a split between the east and west sides of the Sound. On the east side we have a pale grey area and further south a pale pinky red. The pinky red area is known as the Dartmouth Group and is of thin interbedded shales, siltstones and sandstones which stretch from the south side of Crownhill Bay (south of Bovisand) and onwards around the South Hams coast to past the Erme estuary. This group also takes in the creamy pinky coloured group on the west side of the Sound to the south of Cawsand / Kingsand where it is called the Whitsand Formation. The grey colour around Bovisand is a belt of a transitionary group called the Meadfoot Beds.

6. That leaves a very important section, orange coloured on the map stretching north-east from Kingsand. This IS a volcanic IGNEOUS rock, that is it has been formed from magma poured out onto the surface as lava. It is a very special and much studied deposit. Dark brown to pink in colour with small gas bubbles in it, it can be seen in the small bay with the ruined building we commonly haul up in. This lava had a very high silica content forming a very sticky lava and a rock type known as Rhyolite. The most interesting thing is that it formed at the same time as the Dartmoor granite – only the granite never got to the surface but this Rhyolite did. The granite is INTRUSIVE. The Rhyolite is EXTRUSIVE.

That's enough for now. I've already said too much and probably confused the hell out of you. But if people are interested then I can do further articles and am happy to talk as much as you want…. Or don't want!!!

Exchange and Mart

Discounts and Offers

A selection of discounts and offers are available on the PPCA website. Click here to see them.

Next Committee Meeting

Please forward any items you would like considered at the next committee meeting to secretary@ppca-canoe-club.org.uk. They will go to the secretary.

Next Edition

There is no specific deadline as such for contributions but please bear in mind my general sloth and indolence and let me have anything time-sensitive well in advance.

Contributions

Please send any contributions to newsletter@ppca-canoe-club.org.uk

Acknowledgements

As ever, I have plundered Facebook for the cover photos - my thanks to all concerned.

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