Diatoms from Santorini, Greece

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Last July my wife and I took a ten-day tour of Greece, with stops in Athens, Crete and Santorini. Looking forward to opportunities to collect exotic sea water samples, I brought along several 100 ml sample bottles. I was hoping to find new species aside from the usual freshwater species such as *Tetracyclus, Surirella* and *Pennularia*.

There was a beach across from our hotel in Crete, and I collected samples from the rocks on the shoreline and from a freshwater stream leading down to the sea. The seawater samples didn't yield anything of interest when we got home. As for the freshwater stream, I collected some algae and scraped some biofilm from rocks in the stream, but the sample yielded the "usual suspects" – mostly *Spirogyra*.

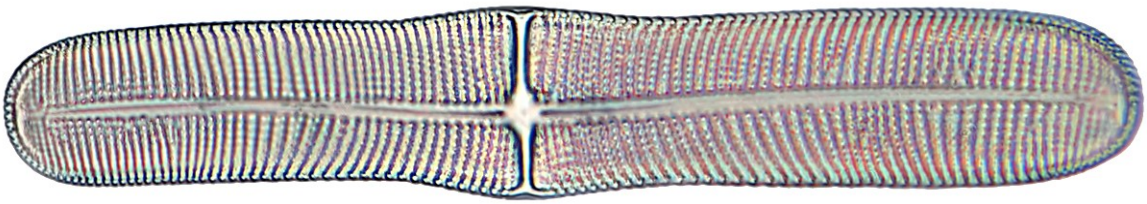
SANTORINI

Santorini is located in the Cretan Sea (a region of the Aegean Sea) between mainland Greece and Crete. Approximately 3,600 years ago a massive volcanic eruption destroyed the island and the eruption is credited with the collapse of the Minoan civilization.

Today, Santorini is a major tourist destination. In the center of this image is Nea Komeni. This is the volcanic cone that is a remnant of the major eruption. To the right is the main island of Thera. The island to the left is Therassia.

Fortunately for my wife and I, our hotel was located in Firostefani, and across the parking lot from our hotel is without a doubt the most iconic Greek Islands travel poster ever. Here is my version:

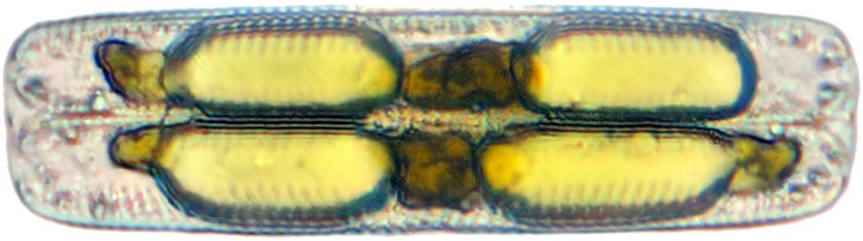
As is true of most package tours, in the case of Santorini, the tour offered a cruise around the **c**aldera. The term "caldera" refers to the big hole in the center of Santorini. Indeed, the entire inside of the caldera is steep cliffs of volcanic rock.



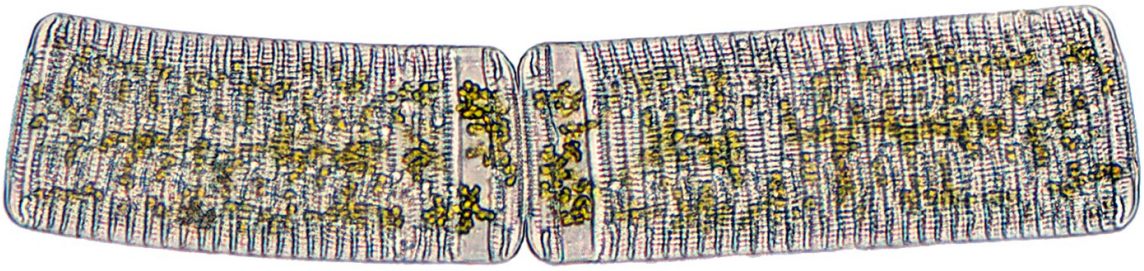
This was our cruise ship for our afternoon trip around the caldera. It actually was not crewed by Greeks, but entirely by Americans. Midway through the cruise we were all treated to ouzo. The seas were very high that day, so at one point we went under sail into the wind because the engine could not possibly move the boat forward through the eight foot swells.

At any rate, our first stop was one of the two harbors on Nea Kameni, which is where I was able to get my first samples. The next stop was the harbor of Therasia, where I got two more samples.

My sampling technique was thus:
At the site I would pluck some of the vegetation and stuff into the sample bottle and then top the bottle off with seawater.

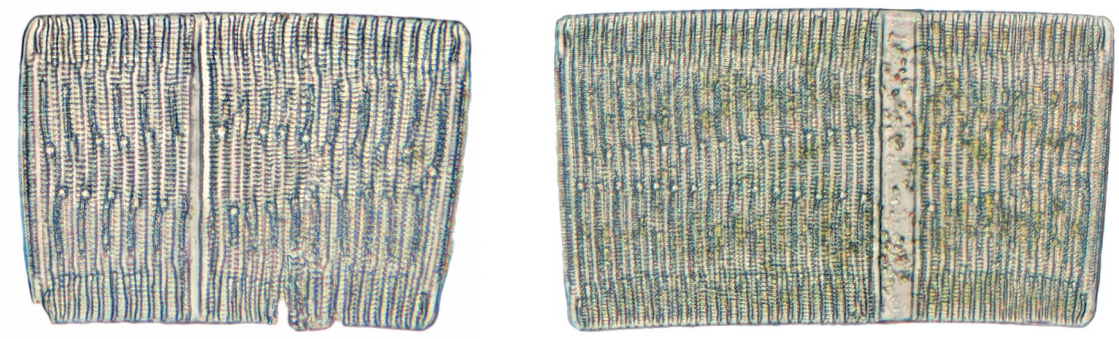


When I got back to the hotel, I would put the bottles out on the room patio in open shade so photosynthesis could continue.



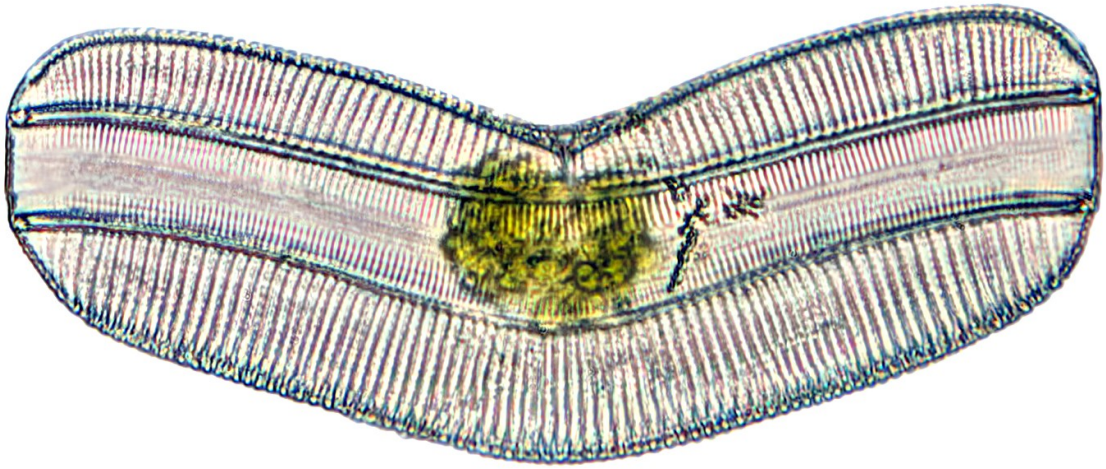
Now, the question that always arises is – "How did you get these back home through customs and security?" Funny you should ask.

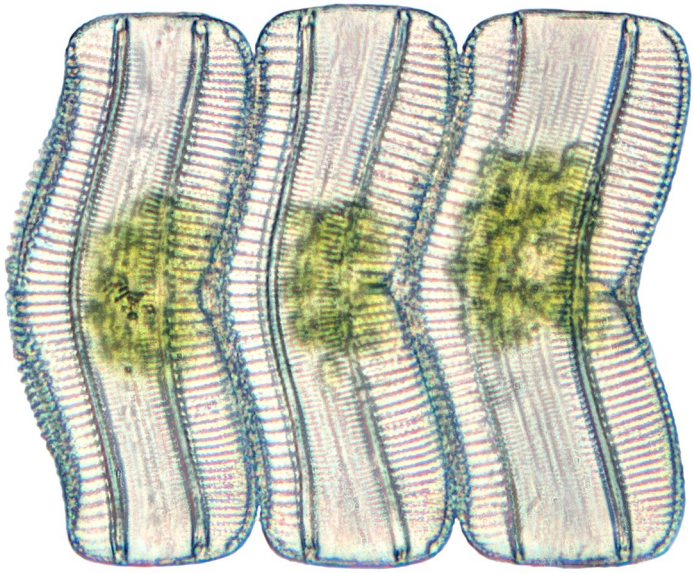
I ended up with five 100 ml sample bottles, which I wrapped in my dirty laundry in a smell-tight plastic bag.

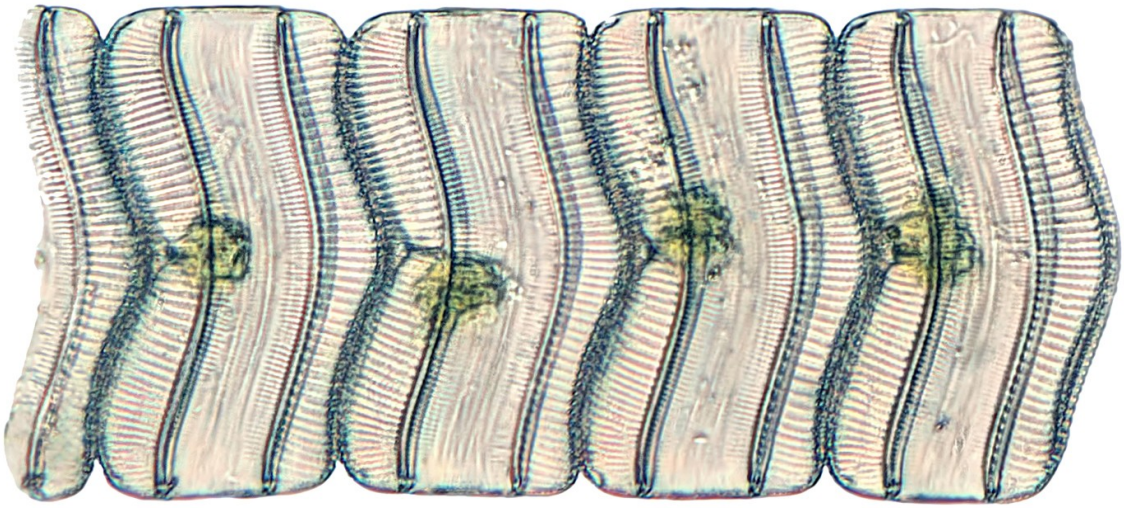


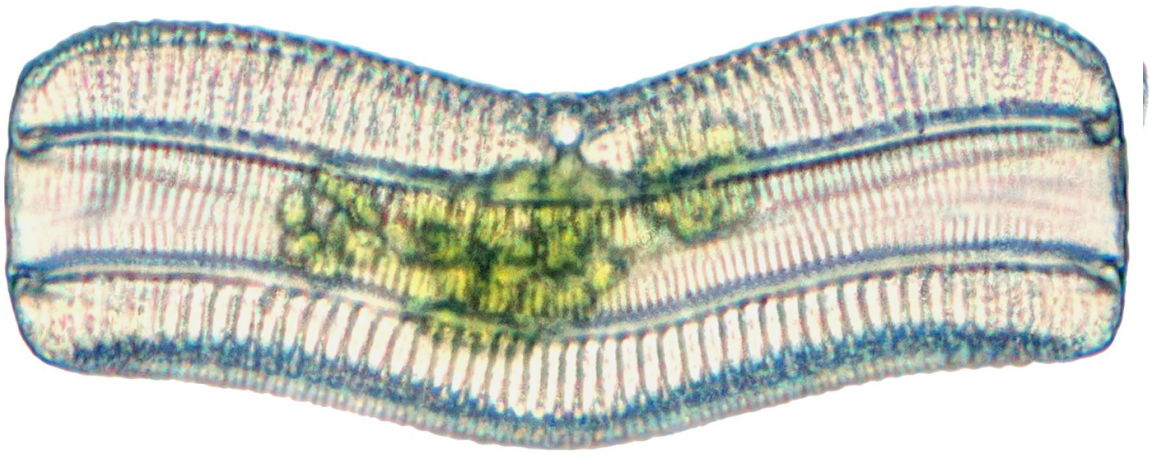
Once home, I strained out the vegetation with a wire tea strainer into baby food jars (we use baby food to sneak meds into one of our cats).

Once the samples had settled down I was rewarded with wonderful new species –

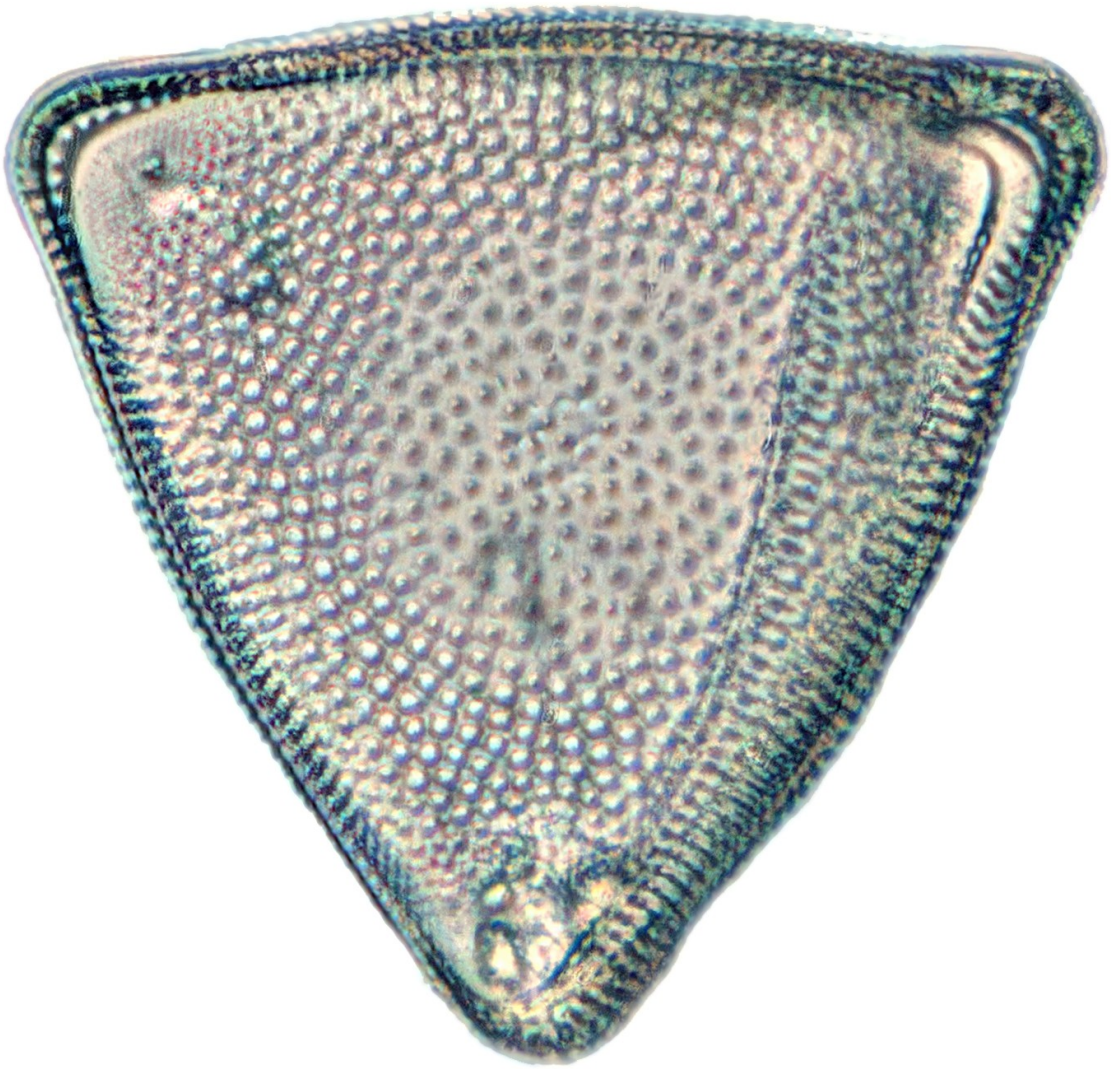


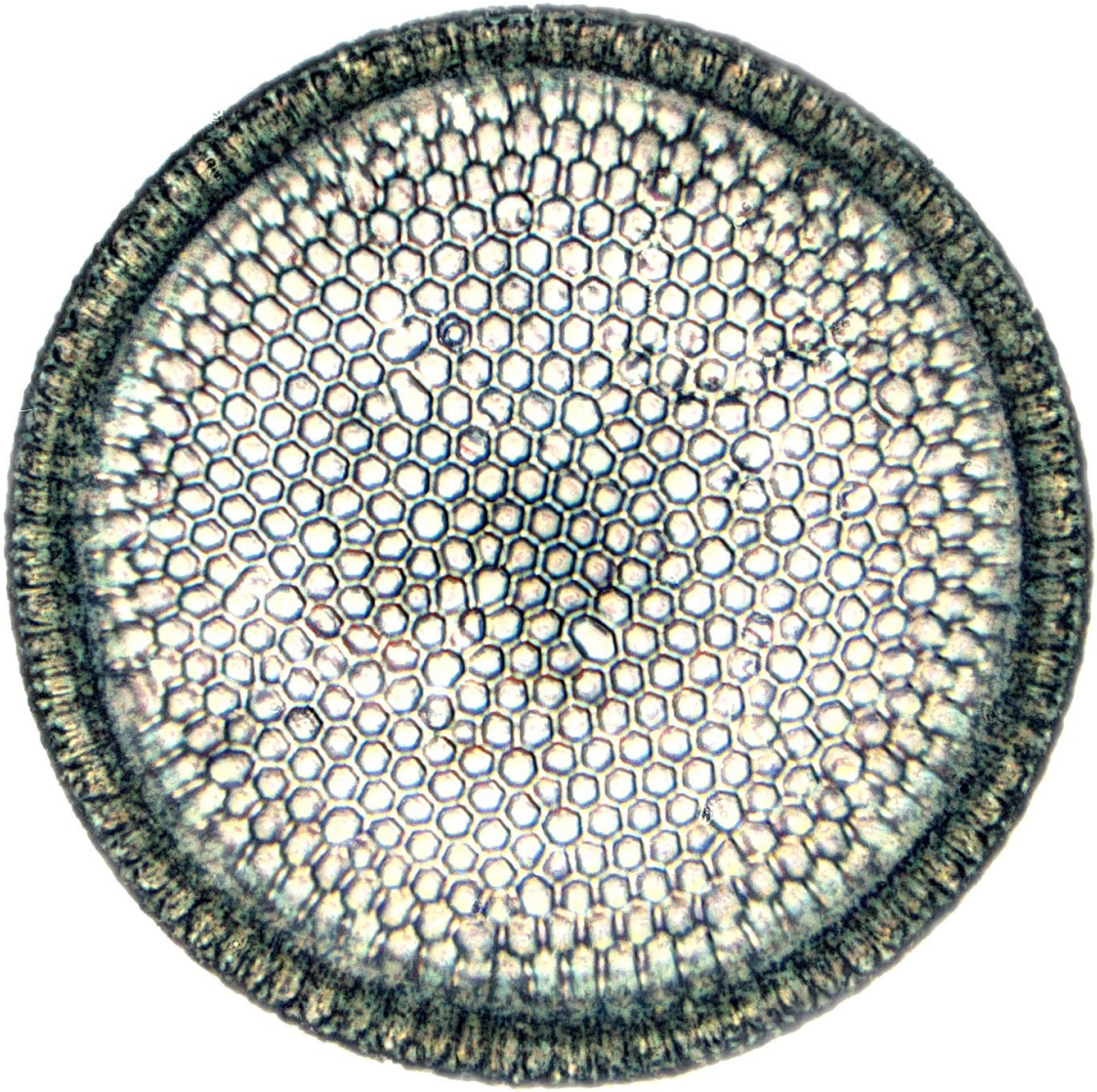




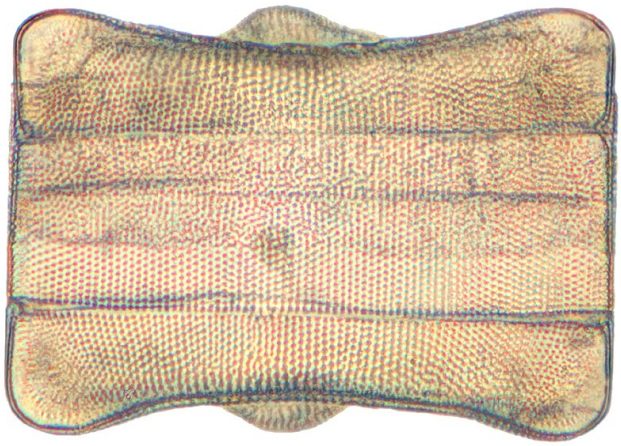


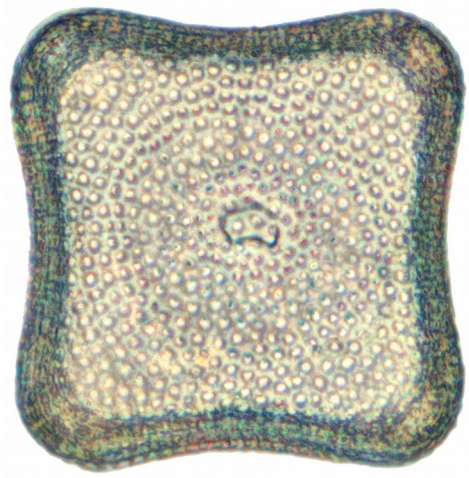
Some of these diatoms were familiar from Diatomaceous Earth samples.



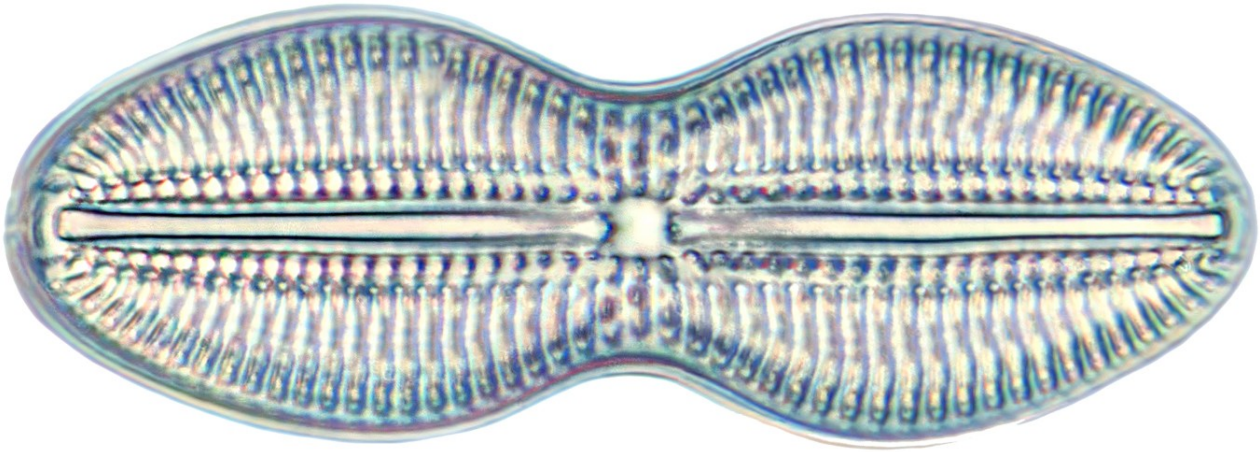


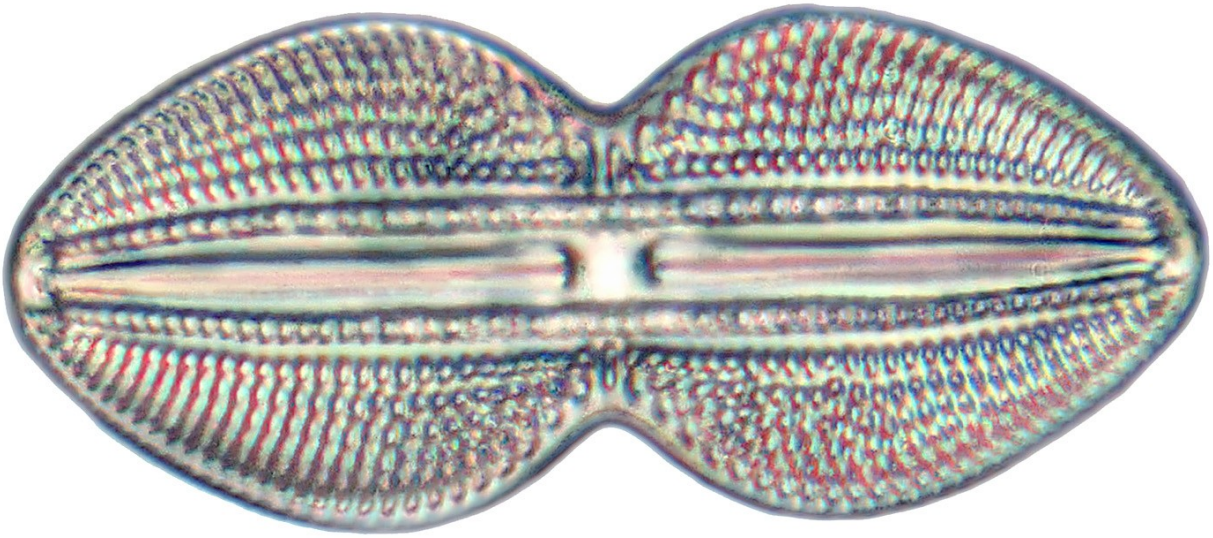
Many of the diatoms were very new to me.

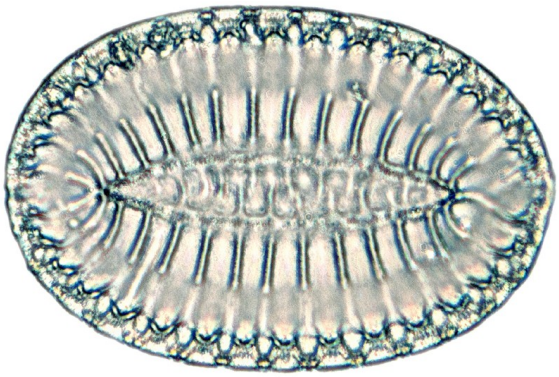


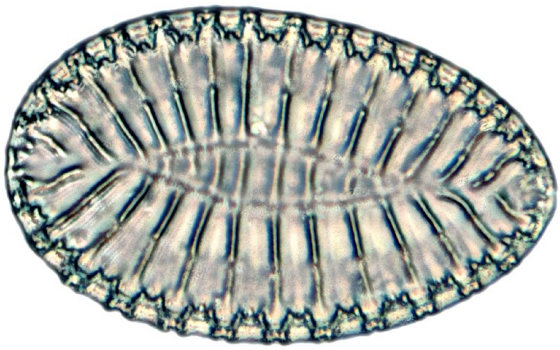


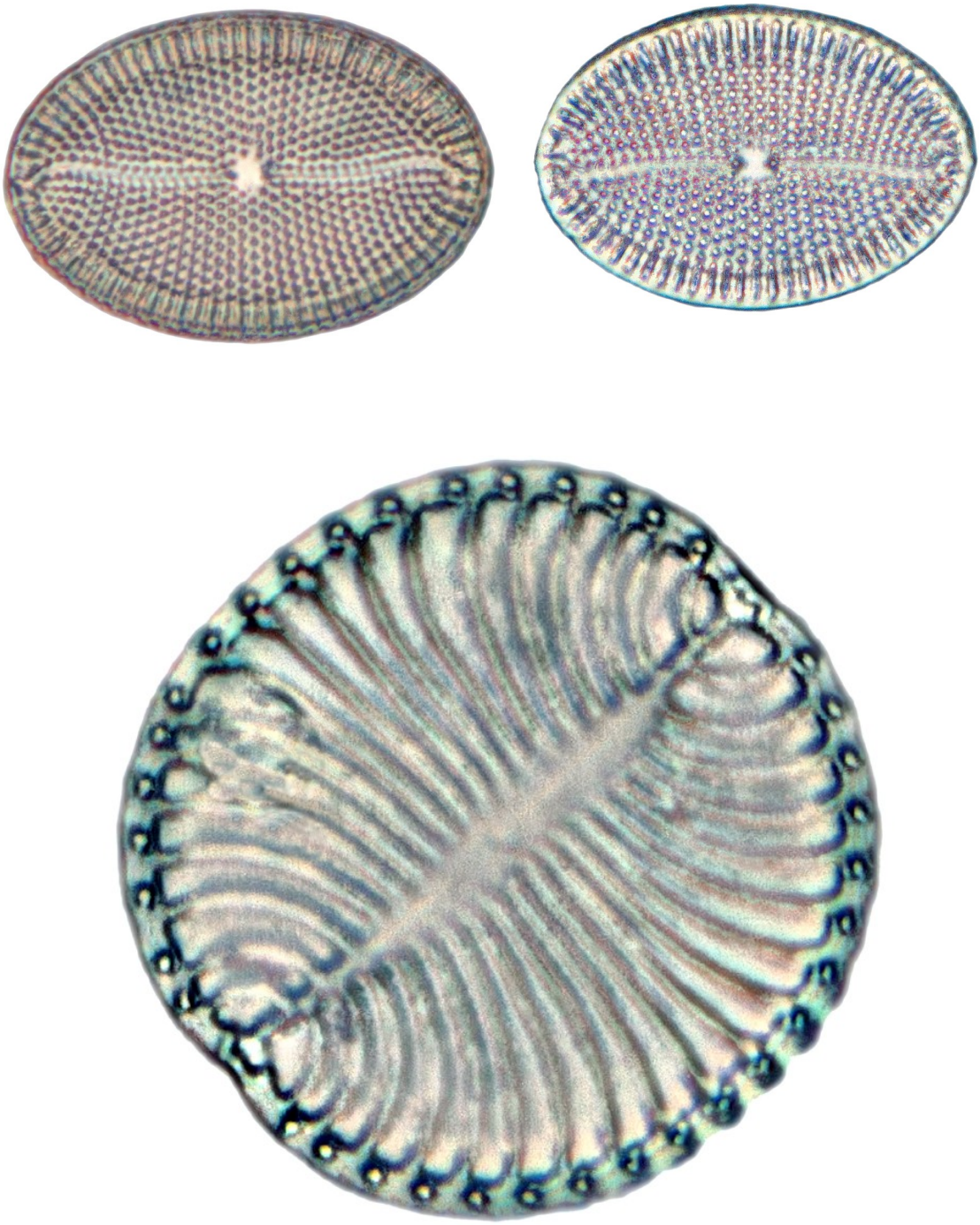
After about two weeks of allowing the samples to continue to photosynthesize, I felt it was time to dissolve the clumps of matter in the samples to see what the result would reveal.
I consolidated the samples into one jar and added 50% sulphuric Acid to the sample (Note: If you do this, add the acid to the seawater in an outsize container, since the acid will react to the seawater and foam significantly).
What this does is two things: a) it dissolves all of the chlorophyll in the specimens and 2) it will break up the clumps we are all familiar with in water samples.
After washing the samples in the acid, I poured off the acid being careful not to disturb the sediment, added water to dilute it, poured it off again, diluted it again and then neutralized the acid with sodium bicarbonate.





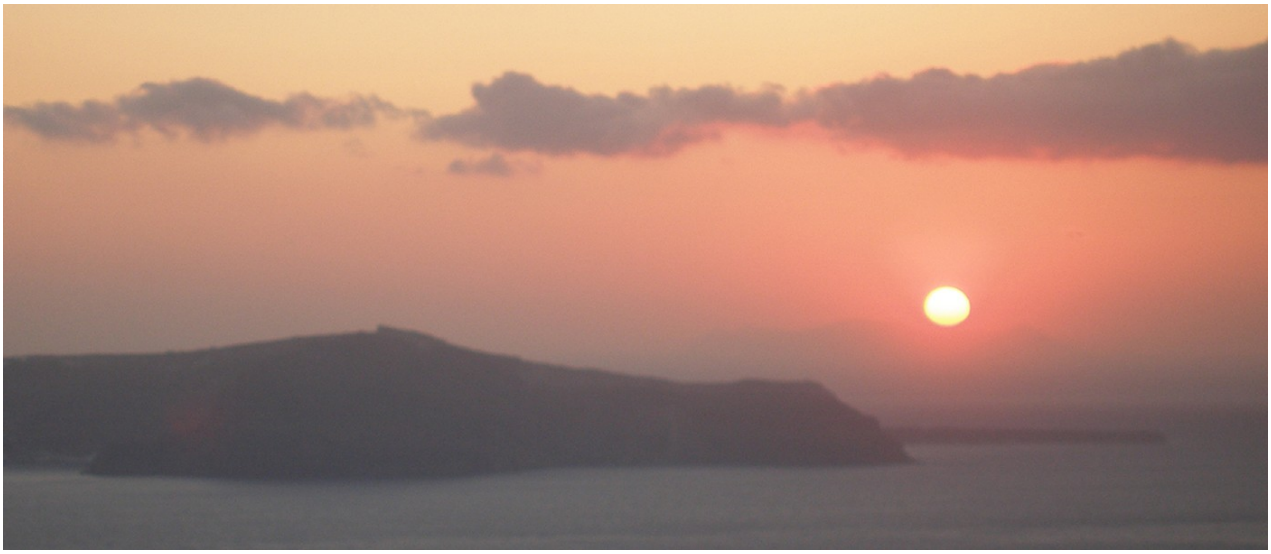






Bonus find –

Foraminiferan – possibly *Cribrostromum textulariforme*



Sunset – Santorini

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