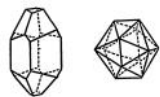


Tim's Geonews



An informal collection of observations on minerals, microminerals and fossils of New Zealand by Tim Sauderson

Firstly, thank you for all the feedback and comments regarding issue one of my newsletter.

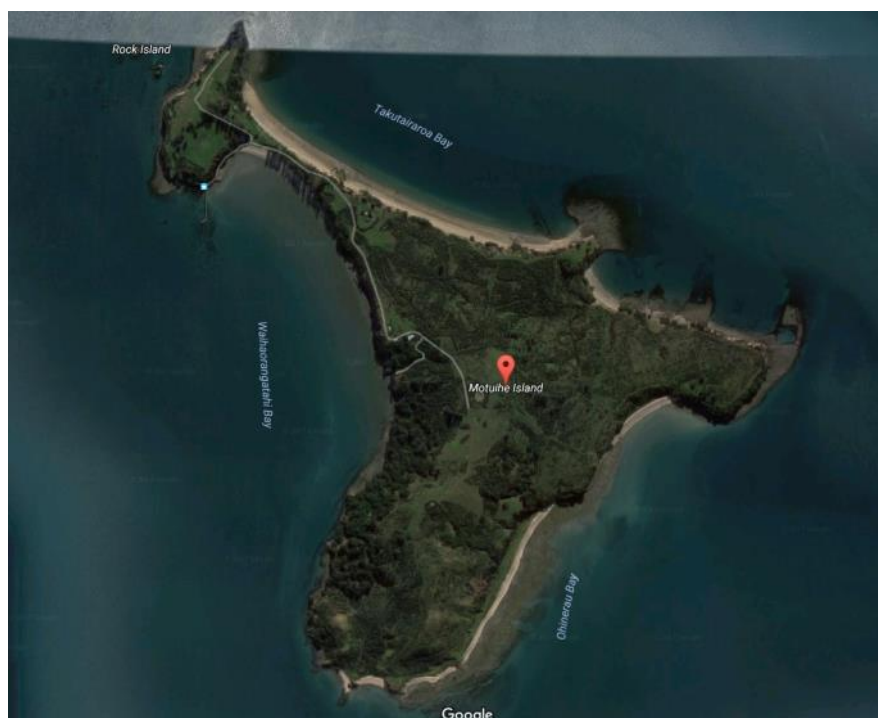
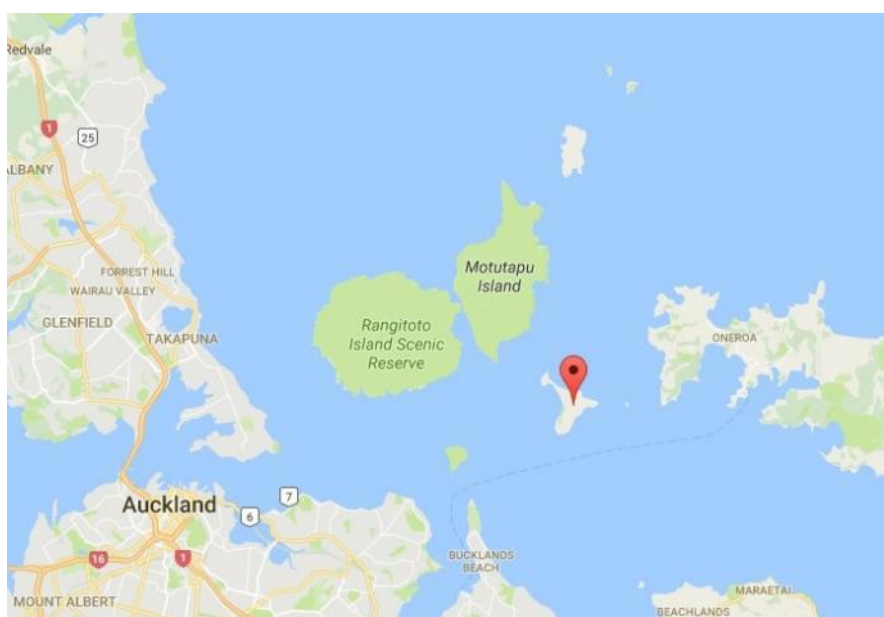
Over the last few weeks I have been studying some beach sand collected from Motuihe Island in the Hauraki Gulf. Many thanks to Peter Daymon-King for supplying the sand.

I wasn't really expecting to find very much but I am surprised at what is present and this issue will cover a few of the minerals and fossils from there.

Motuihe Island has a mixture of Waitemata sandstone, with Parnell Grit in the headlands, greywacke at the south, and even a coastal section with flaggy limestone on the west coast.

There are minerals in the sand that have come from volcanic origins; olivine for example has probably arrived via Rangitoto. Auckland's basaltic volcanoes often have small fragments of olivine in the lava. There are also minerals which are more typical of rhyolitic volcanoes and these may have been deposited from the Taupo Volcanic Zone via the Waikato river when it flowed into the Hauraki Gulf. See the following link for some interesting info on this:

<https://www.nzgeo.com/stories/4664/>

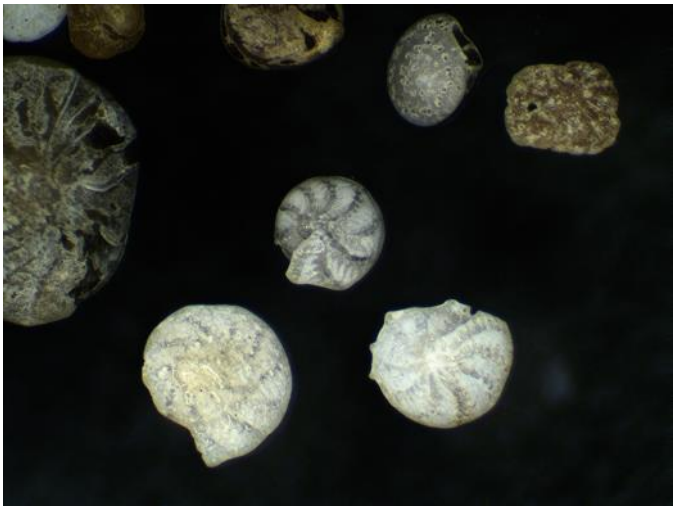




Fossil corals, bryozoans etc, probably originating from the Waitemata group marine sandstones and clays which would make them lower Miocene. FOV is 4.21mm



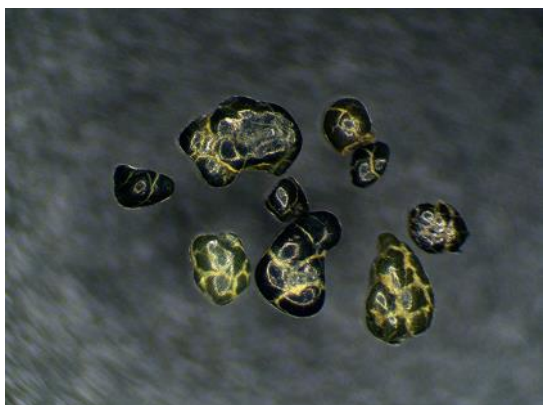
Foraminifera—mostly fossil and a few recent ones too. FOV 7.45mm



Foraminifera detail FOV 3.04mm



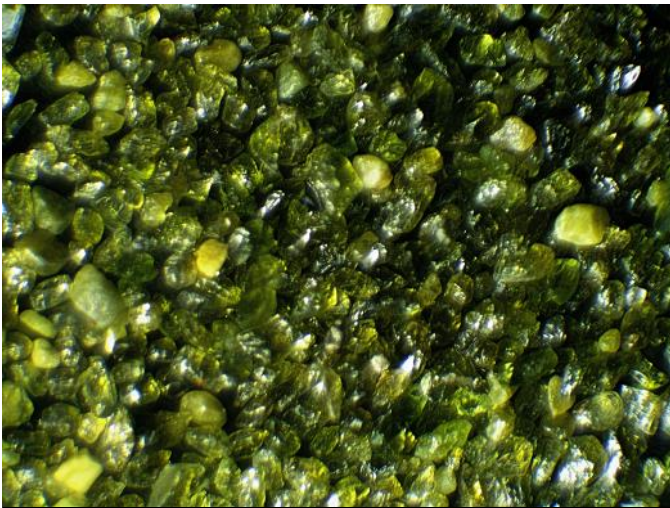
Rosalina bradyi 0.53mm—a modern foraminifera that moves about on rocks, seaweed etc near low tide mark.



Glauconite nodules FOV 4.4mm. These often form in marine sedimentary rocks.



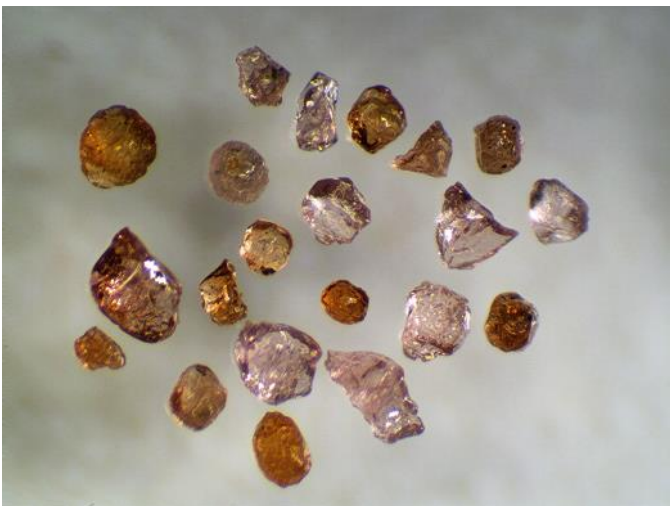
I am not sure what these are but I suspect they are tiny fossil teeth. FOV 4.74mm



Olivine crystals and fragments possibly from nearby Rangitoto which last erupted about 600 years ago. FOV 8.49mm



Aegerine crystals FOV 4.2mm



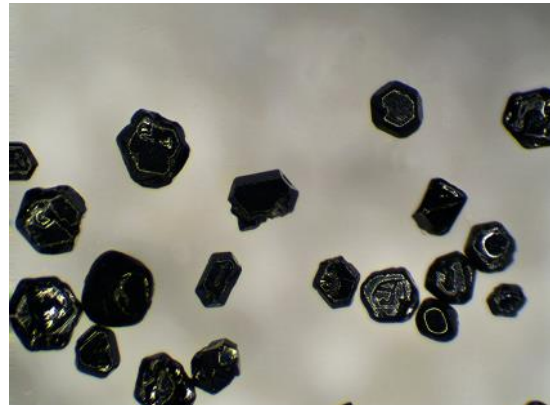
Garnet crystals and fragments. Not well formed—most are fairly rough. FOV 3.64mm. Never thought I would find garnets in Auckland!



Pale orange zircon crystals measuring 0.36mm each — very rare, I found only these two.



Ilmenite crystals FOV 8.46mm



Ilmenite crystals FOV 3.04mm. Mostly flat, roughly hexagonal crystals



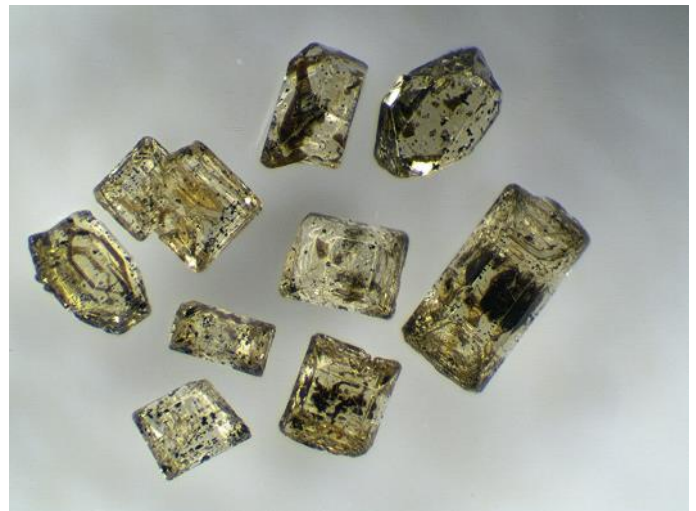
Magnetite crystals. Fairly typical magnetic, black bipyramids. FOV 6.47mm



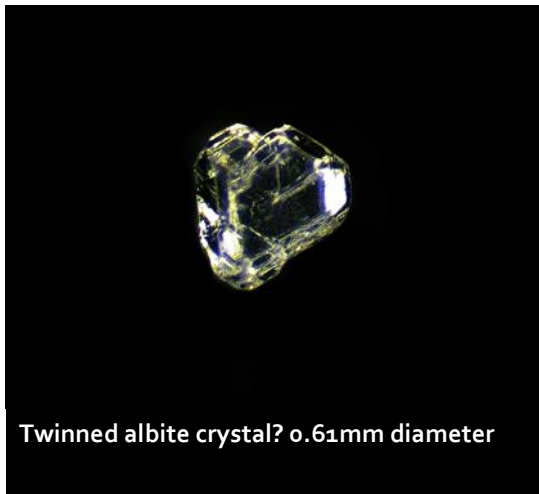
One of the black amphiboles I guess. Octagonal in cross-section. 1.04mm long



I am not sure what these crystals are... possibly sanidine. They are very plentiful, always have tiny black inclusions and are often twinned. 1.36mm crystal



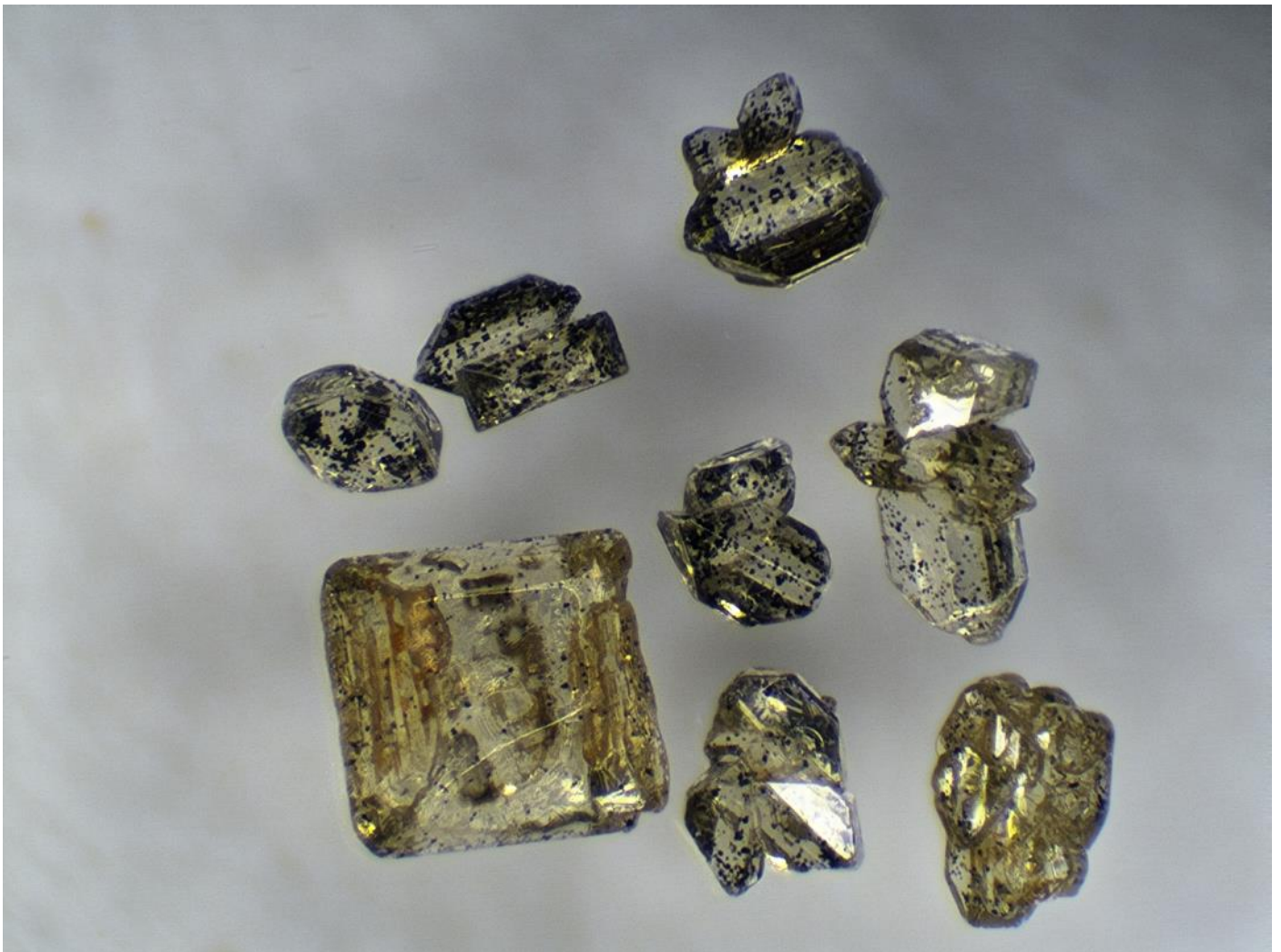
More of the same; note brownish phantom in left crystal. FOV 3.04mm



Twinned albite crystal? 0.61mm diameter



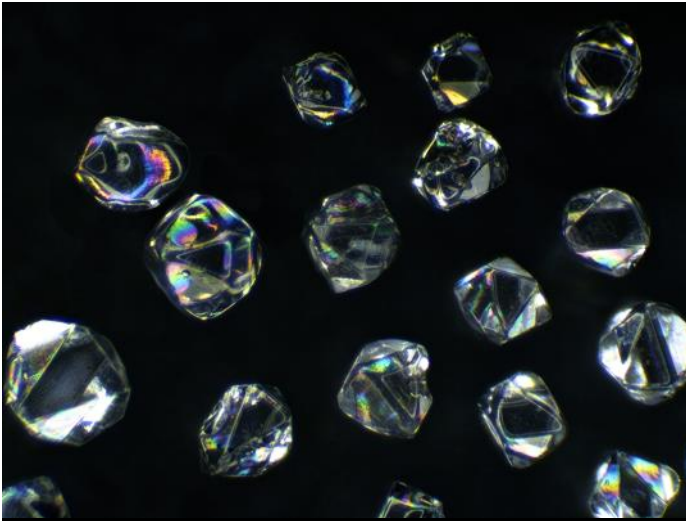
Other side of same crystal.



More of these crystals with black inclusions; most are multiples (possibly twinned). FOV 3.62mm



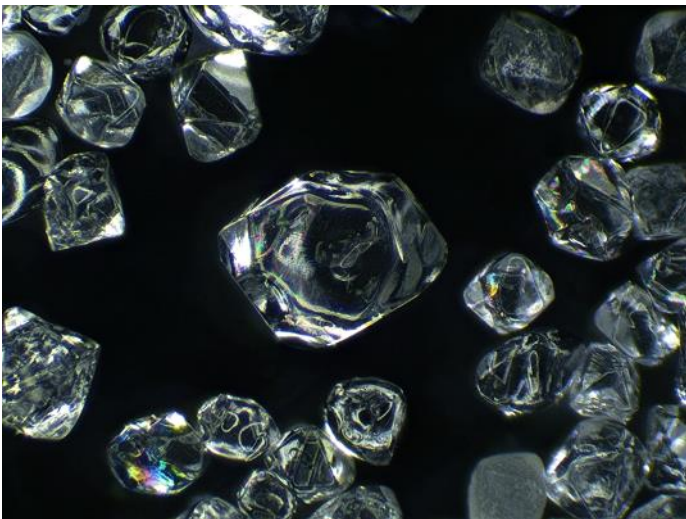
These appear to be splintered pyroxene crystals. The ends are drawn into tooth-like points that are round in cross-section with a smooth, glossy surface.



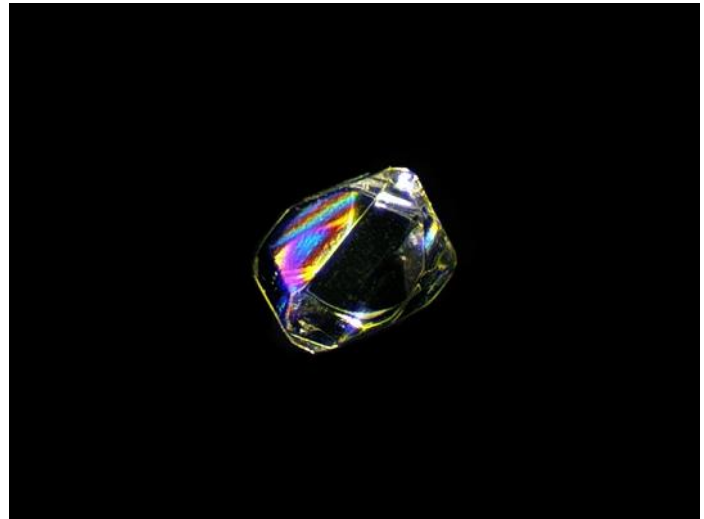
Beta quartz crystals FOV 3.02mm. Please note—the colours here are due to the crystals acting like tiny prisms. They are not iridescent.



Beta quartz crystals FOV 2mm



Beta quartz crystals . The central crystal is 1mm across.



Asymmetrical beta quartz crystal, distorted and flattened. 0.5mm across

A brief note on beta quartz

Beta quartz is one of the high temperature polymorphs of silica (others are tridymite, cristobalite etc). Ordinary quartz is alpha quartz. Beta quartz forms at 573°C and below this temperature it will immediately revert to alpha quartz, so in actual fact these crystals are alpha quartz pseudomorphs after beta quartz. It generally forms in acid lavas such as rhyolite.

As usual, feel free to forward this newsletter to anyone who might be interested.

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