March 2015

COMMITTEE MEMBERS

PRESIDENT:	Committee members take turns on a two monthly basis		
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	Mary Davis-Bourne	5456075	davies_bourne@clear.net.nz
	Paul Henare	5410985	paulhenare@hotmail.com

GENERAL NEWS

SUBS: You can pay direct to our bank account Wespac 03 0751 0274539 00 please inform Hub,the treasurer hub.opdenbuysch@xtra.co.nz or post a cheque to 436 Sunrise Valley Road, RD 1 Upper Moutere 7173. Cheque to be made payable to Nelson Rock and Mineral Club. Alternatively you can see Hub at one of our monthly meetings.

Sheila Hardwick is collating the history of our club to coincide with our 50th anniversary this May. If you have any old photos or information Sheila would be delighted to hear from you.

Digital file storage for Club business is being stored on Diane's OneDrive. The directory is viewable but not editable for those granted sharing rights. If you want access, email Diane and she will email you the link .

Large tumbler for hire: Takes two drums. Operates off main. Size: 1m x 300depth x 900high.including table. Grit available. Cost: $10/month plus the cost of grit. Contact Kevin.

50th Anniversary
Nelson Rock and Mineral Club

May 9th, 2015
Saturday Field Trip followed by Dinner (details later)

Gather your pictures, stories and other memorabilia

The format for the 9th of May 50th Anniversary has yet to be finalised and further details will be communicated by Email. Current and past members and partners are all welcome to attend.

Those wishing to attend, please inform Diane in good time as we need to hire a venue to accommodate everyone.

The Dinner will be pot luck, so please bring a dish to share with other members.

Our Patron Mike Johnson has offered to give a talk, topic to be confirmed.

Nelson Rock and Mineral Club has had a rich and interesting history with many ups and downs. We hope you can attend the evening, and help set the foundation for the next 50 years!

January 2015 Meeting.

As many members are away at this time of year it was decided to hold an informal meeting with no sales table or library. Diane presented an entertaining talk about her Christmas trip to Europe, then we watched a fascinating documentary on the Little Ice Age.

Alan Mathews was the MC for the last time after many years in the limelight. A big thank you is due to Alan for his individualistic and enthusiastic approach to hosting meetings over the years.

The Little Ice Age—Big Chill

The world had been enjoying a period of warmth known as the Medieval Warm Period which lasted from 800AD to 1300AD (approx)

For reasons that are still the subject of lively discussion, from about 1280 onwards temperatures began to plummet. The majority of the temperature drop occurred over a thirty year period to 1310. Despite the best efforts of Priests sprinkling Holy Water on Glaciers, they were still unable to stop the Glaciers from advancing.

The English vineyards t(whaich had extended as faar North as Northumbria) took a big hit and had to be closed down

Marginal regions

During the height of the Little Ice Age, The Baltic Sea froze over, as did most of the rivers in Europe. Winters were bitterly cold and prolonged, reducing the growing season by several weeks. These conditions led to widespread crop failure, famine, and in some regions population decline.

The prices of grain increased and wine became difficult to produce in many areas and commercial vineyards vanished in England. Fishing in northern Europe was also badly affected as cod migrated south to find warmer water. Storminess and flooding increased and in mountainous regions the treeline and snowline dropped. In addition glaciers advanced in the Alps and Northern Europe, overrunning towns and farms in the process.

Iceland was one of the hardest hit areas. Sea ice, which today is far to the north, came down around Iceland. In some years, it was difficult to bring a ship ashore anywhere along the coast. Grain became impossible to grow and even hay crops failed. Volcanic eruptions made life even harder. Iceland lost half of its population during the Little Ice Age.

Drawing of an advancing Glacier about to slowly but irresistibly demolish a town in Europe.

Tax records in Scandinavia show many farms were destroyed by advancing ice of glaciers and by melt water streams. Travellers in Scotland reported permanent snow cover over the Cairngorm Mountains in Scotland at an altitude of about 1200 metres. In the Alps, the glaciers advanced and bulldozed over towns. Ice-dammed lakes burst periodically, destroying hundreds of buildings and killing many people. As late as 1930 the French Government commissioned a report to investigate the threat of the glaciers.

All in all, it was a pretty miserable period until temperatures started to increase around 1850.

Trip to Charleston Nelson Anniversary Weekend

Saturday, Little Totora River, by TimSaunderson

The fossil beds at the Little Totora River are Miocene marine sediments (Waiauan stage) and are between 10 and 11.5 million years old. The area around Charleston was the site of intensive gold mining which began in 1867 and the miners referred to this bluish-grey fossil-bearing layer as the 'Blue Bottom' because it represented the bottom of the gold-bearing sand and gravel.

We walked up the river maybe half a kilometre or so, the only problem being the ever-present sandflies. Some fairly large pieces of fossiliferous rock were found in the river and Kevin made short work of them with his brand new sledgehammer. We found some very large bivalves and the largest Dentalium (Tusk shell) I have ever seen.


Walking a little further upstream there is an area where the fossil beds outcropped on the bank of the river and here is where we did most of our collecting. The water in the river is slightly acidic and over time it softens and erodes the sediment layers by dissolving the calcite which has cemented the rock together.

I noticed a round blob protruding from the side of the deposit, under the water so I carefully knocked it free then cracked it open with a hammer. I thought that it might be a concretion and just maybe it would contain something interesting. It was and it did.

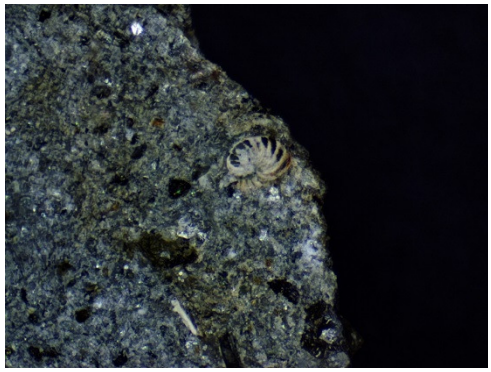
My initial reaction was "cool, a crab claw!". It was not until I did some further research that I found that it was not from a crab, but a Ghost Shrimp. Ghost Shrimps (Callianassa) are still around today and they live in seafloor sediments in multi-branched burrows up to a meter deep. They have one huge, thick claw and the rest of the creature's shell is thin, flexible and transparent hence the name "Ghost" shrimp. Usually it is only the large claw that gets fossilised… the rest of the shell is just too thin. On the edge of the same concretion was a tiny solitary coral about 3mm across which I managed


to partly expose because the outer edges of the concretion had been softened by the river water. This allowed me to scrape away much of the matrix with a scalpel.

Paul found another concretion shortly afterward which I cracked it open for him and there was another Ghost Shrimp claw!

This area is known to have rare fossil nautiloids. I did in fact find one but only about ten percent of it is sticking out of the matrix so I am going to have quite a mission exposing it without wrecking it completely. Mary found a few fragments of nautiloid as well.

It is worth checking the rock with a loupe for small fossils too… I managed to find a juvenile nautilus which is only about 1mm across!



Paul decided to have a look for concretions so he moved up river and worked along the bank where the river was about 2 meters deep. He found a narrow ledge about a meter below the surface which he could stand on which allowed him to work away at the bank. At one stage he dropped his chisel in the water, so he took his glasses off and stuck his head under the water to look for it... then remembered he can't see too well under water. What to do? Paul was using a small Panasonic Lumix camera that was waterproof, so he simply put the camera under the water and took a photo. There was the chisel, on the ledge, bingo!

Sunday, Beryl Mine, by Chris Fraser

On Sunday morning we woke up to periods of showers but still decided to go to the beryl site in Deep Creek, minus Vanessa and Irene. Eight of us piled into two cars and proceeded to the parking area. The track into the site was overgrown in places and it took us a bit longer to get into the site. Just before we got to the pegmatite there were a couple of fallen trees to negotiate around. With the showers being consistent at this point in time we got rather wet, but we all enjoyed picking up pieces of microcline and mica. Alas, the beryl remained elusive yet again. After a couple of hours scratching around we decided to head back to the cars, with Paul taking a shot of us standing in a long puddle (since we were all wet through).

In the afternoon people went to a couple of different sites, and by this time the showers had disappeared and made the way for a hot sunny afternoon in Charleston. Dave and Chris walked down to the mica mine in Constant Bay, and yet again heavy bush growth made the task a little more difficult, but it is only a short walk and we found the site. This mica mine was mined in 1911 and 1912, where about 2 tonnes of mica was taken out. Dave and Chris found more microcline and mica books, including some blood-red garnet.

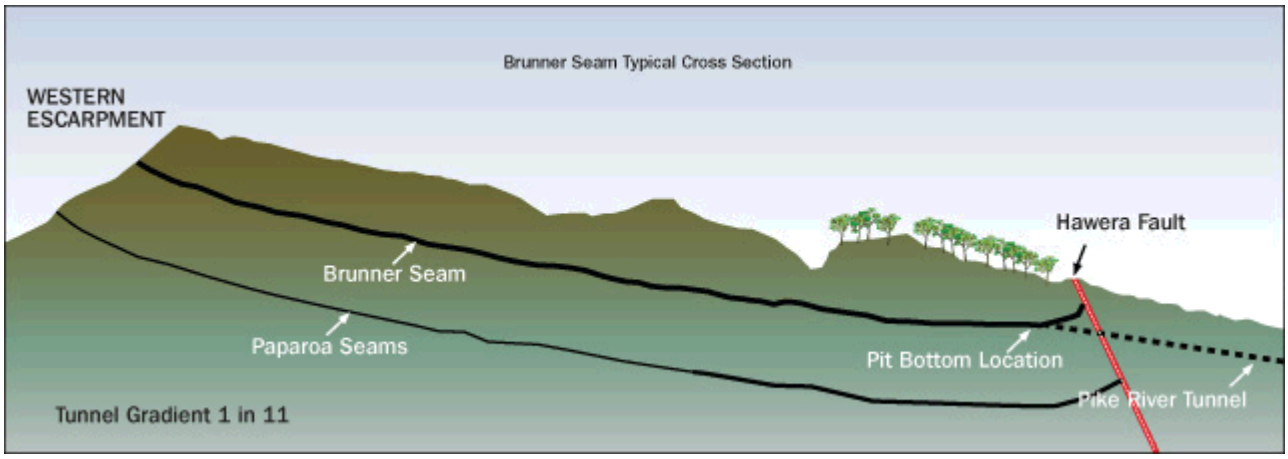
Sunday, Visit to the Jade Gallery, by Mary

After lunch,we walked over to the home and gallery of Paul Honey. During a final burst of rain we stayed nicely sheltered, studying and discussing his fabulous collection of serpentines, bowenites and nephrites (with the odd fossil thrown in). Paul showed us one rich deep green nephrite (in the middle at least) that he'd found and left in his workshop for years before finding the other half of it a mile down the same riverbed – though it took another length of time before he realised what a perfect match they were! Paul's rocks are for sale at the right price; he is situated next to the motorcamp in Charleston.

Sunday, Coal Measures, by Dave Briggs

All the way down the coast, south of Charleston, the Brunner Coal Measures form a narrow outcrop, which is often exposed in road cuttings. Many of the sections looked interesting as we drove past them on the way south, with the black coal seam sandwiched between bright yellow and white sediment layers. On the return trip to the camp, therefore, we stopped at one of the sections for some fossicking. The sediments above and below the coal were composed of silts and sands, with occasional thin stringers of rounded quartz pebbles, and appeared to be estuarine deposits laid down as the sea regressed, then transgressed again, over a shallow coastline. The coal seam was 2-3 metres thick, and the coal itself brittle and blocky. Fossils were generally lacking, but near the top of the coal we found a few plant remains - roots or stems of sedges perhaps. Scattered throughout, were also numerous tiny pieces of low-grade amber. Geologically, this is fossilised plant resin (and is sometimes called resinite). Resins can be produced by a wide range

of plants (not just trees), though most of the larger pieces found in New Zealand derive from kauri trees. Ours were too small and too poor quality to show much of interest, though under the microscope they can be seen to be made of concentric bands of different coloured resin. Unfortunately, there were no signs of any preserved insects or plant remains - and certainly no dinosaurs! (The Brunner Beds are, in any case, Eocene in age - about 33-60 million years old - so dinosaurs would have been a special surprise!).



If you don't like the geological explanation for amber, you might prefer the classical version (thanks to Wikipedia): "The classical name for amber was *electrum* [Greek - *ēlektron]*, connected to a term for the 'beaming Sun' (*ēlektōr*). According to the myth, when Phaëton son of Helios (the Sun) was killed, his mourning sisters became poplars, and their tears became the origin of *elektron*, amber."

Sunday, Cemetery Walk, by Vanessa

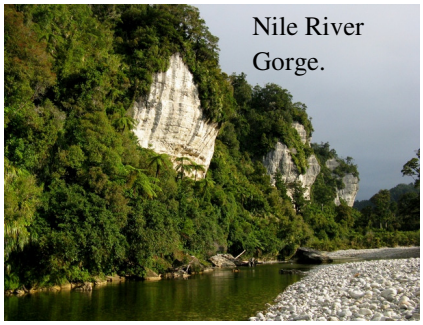
On Sunday evening after tea Chris, Vanessa, Dave, Irene and Paul went for a walk to the two nearby cemeteries in Charleston. The first cemetery is about 200 metres south of the camping ground on the main road, while the other cemetery is about a kilometre walk northwards up to the Nile Hill Cemetery. In both cemeteries we found marked graves dating back to the early 1870's, but there were plenty of unmarked graves that could have been older than this. Some of the graves were marked with magnificent marble tombstones, but it looks like the effects of the sea air have turned most of them black and showed slight signs of salt corrosion. Some of the tombstones had broken or fallen down over the years. Many tombstones told the stories of how some of the people perished at birth or during childbirth, young children, people who were drowned in local rivers, mining accidents and landslides. It is a reminder of how we now live in a world that has healthier and safer living conditions. At both cemeteries there were one or two old man pines towering over the tombstones.

Monday, The Rainforest Train Trip and Buller Gorge, by Diane Toole

After packing up our cabins, we all met at the UnderWorld Aventures site for our train trip through the rain forest to the caves in Paparoa National Park. The UnderWorld building looks quite out of place in Charleston as it is new, modern and two storied. It caters for rafting and caving as well as the train trip we were going on.

We were taken in a mini bus with a couple of American tourists doing the caving trip to the beginning of the train ride in UnderWorld's mini bus. Along the way we had a commentary from the driver on Charleston's history which was quite astounding – 30,000 people and a 114 pubs in the 1880's! This was because of the gold rush which is evidenced by the vast area inland between the town and the National Park which has been largely dug over and regenerated back into scrub with numerous humps, hollows and drains. Alluvial gold in large quantities were claimed from here and then claimed back again in the many Pubs no doubt.

At the end of the road at the National Park boundary we boarded the quaint home built train and carriages and putted and jiggled our way 2km uphill through the rain forest alongside soaring limestone cliffs and the lovely Nile River Gorge. At the end of the line we continued to walk uphill until we reached the mouth of the extensive limestone caves


Nile River Gorge.

high up on the limestone cliff. Here, we had to stop as we didn't have a permit to go into the caves. However we were able to fossick in the riverbed on the way back to the train station before returning to the UnderWorld main site. There, we had coffee, tea and eats – Mary couldn't help herself and indulged in both a scone AND a huge whitebait sandwich. Then homeward bound.

Along the way we found a suitable place near the Hawkes Crag Bluff to access the Buller River and explore the many varied rocks to be found there. This is a great place to fossick with rocks brought down the river from far way Lake Rotoiti. There were many pink and white granites and granodiorites with muscovite and biotite micas to be found. Often there were large feldspar crystals in the granites with surrounding quartz and a little mica. There were frequent veins of pink granite through a white granite with varying crystal sizes from large to small. I managed to find a good specimen of what appeared to be a black pyroxene no doubt from up the river further near Inangahua from an inclusion in the granite. There were fine siltstones with fragments of granite and greywacke as well has breccia from the Hawkes Cray Bluff which was in a coarse matrix. The Berlins porphyry is a dacite stock that has pushed through the rocks along the river but I'm not sure how to identify this as it is written as quartz porphyry in a matrix of brown glass with phenocrysts of quartz, feldspar and mica – sounds like granite to me! Rarely, we found a fine green rock with red inclusions very similar to what we find in the Aniseed Valley. Whether this was a banded argillite, a chert or a tuff, I don't know. Lastly, there were the sedimentary rocks from the surrounding Waiuta Formation which is greywacke and argillite.There is much to read about and study to get a good idea of the geological history and the accompanying rocks and to that end we feel that a field trip to this area would be a good idea where we can collect nice specimens, learn of the geological history and visit the old uranium mine location at the same time.


Blacksanding at Rahu, near Charlestos.

We called at the Berlins Hotel for a refresher and inspected it for potential accommodation for a field weekend. It looked to be clean and comfortable and a suitable place to stay sometime in the next few months.

We arrived back in Richmond at 5pm having had a splendid weekend with only one soaking in the rain!

Present on trip: Diane Toole, Tim Saunderson, Dave and Irene Buchan, Chris and Vanessa Fraser, Mary Davies (leader), Kevin Bourne, Dave Briggs, Paul Henare. Missed were Sheila and Tez Hardwick, who broke down en route.


Only one soaking in the rain!

February 2015 Meeting

Ably hosted by Mike Blowers, we were treated to a fascinating insight into micro minerals presented by Tim Saunderson and Hubertus Op den Buysch.

They have both been putting many hours in to improving the photographing of microscopic crystals, and their results were nothing short of stunning. Tim also demonstrated the use of 3D software enabling a rotating image of the object to be screened. This was very popular with the audience when viewed via the projector, at approximately 500 times magnification!

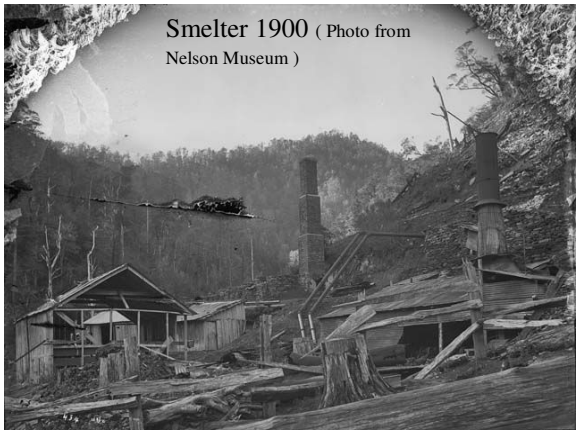
They make use of a stage on which to mount the crystal, and the stage can be moved vertically 1 micron at a time, to enable a number of photos to be taken at different focal lengths, the software then combines the photos to produce one image that is totally in focus.

The wonders of modern technology!

They intend to do another presentation in the future, no doubt even more impressive than this one.

Field Trip to Champion Mine

Ten of us set off from Warring Street Car Park hoping for a fine day and some fine fossiking.



We arrived at the Roding car park at 9:45, just set off walking and the rain set in. Undeterred we rock hopped two river crossings to reach our first stop off point, the smelter.

We browsed the tailings then took what little shelter there was for morning tea by the information board.

It was another hours walk to the mine through some impressive native bush, sure footedness is required on this route as the path has been subjected to a number of slips that needed to be negotiated.

On arrival at the mine the weather broke and the sun shone for a little while. Taking advantage of the opportunity this afforded, we all started scavenging the area including the stream below. Finding green stained rock was easy, but good examples of micro minerals and slabs of natural copper took more diligence. Dave Briggs was up to the task, finding a piece of native copper (from memory approx. 150mm x 80mm x 5mm)

I found a few pieces that have micro mount potential. I really need to look at them under the club microscope to view them properly.

We spent three hours hunting specimens, then headed off back to the car park in the rain that had just returned.

Tim had trouble getting up the river bank, we quickly discovered the cause, his rucksack was full of heavy rocks. Tom kindly offered to share his load and balance was restored.

It wasn't all plain sailing for Dave either, for on the return journey he was stung by a wasp.

The mine is a great place for repeated field trips especially for anyone interested in crystals (albeit small ones) The walk to the mine is open to the public so anyone can go whenever they like (just sign your intentions in the intentions book)

Tez Hardwick 24/2/15

Minerals known to be present at Champion Mine:

Antlerite

Atacamite

Brochantite

Chalcanthite

Chalcocite

Chalcopyrite

Chrysocolla

Connellite

Copper

Cuprite

Cyanotrichite

Epidote

Grossular

Hematite

Langite

Malachite

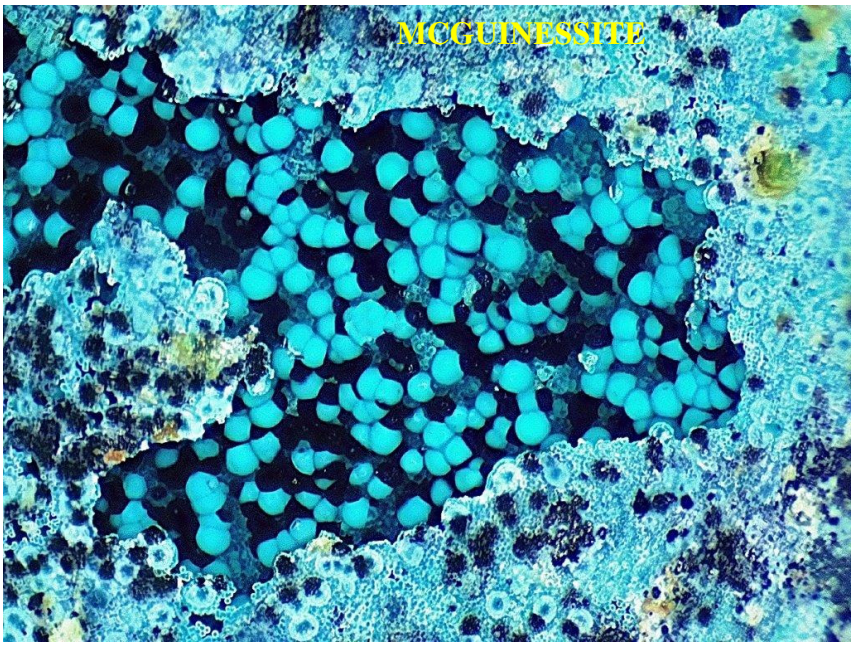
Mcguinnessite

'Pumpellyite'

Pyrrhotite

Vesuvianite

I was looking for micro minerals to start my micromount collection. Here are two photos of samples that I found on this trip. (Photos taken by Tim)

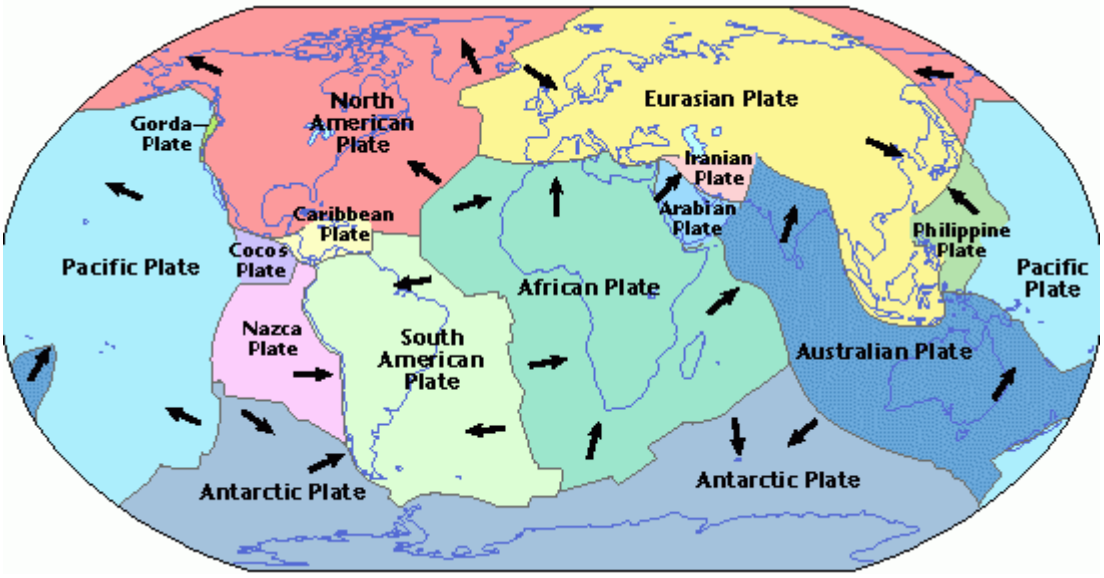


VOLCANOES

In the last newsletter there was a write up to the talk given by Peter on Volcano types.

Supplementary to that I have an article here that details the latest techniques in aging old volcanic outpourings

I found it reasonably straight forward to grasp, I hope you enjoy it.



Uranium isotopes leave a distinct 'fingerprint' in the sources of volcanic rocks, making it possible to gauge their age and origin. Geologists have gained a new understanding of how Earth's crust is recycled back into its interior based on these uranium isotopes.

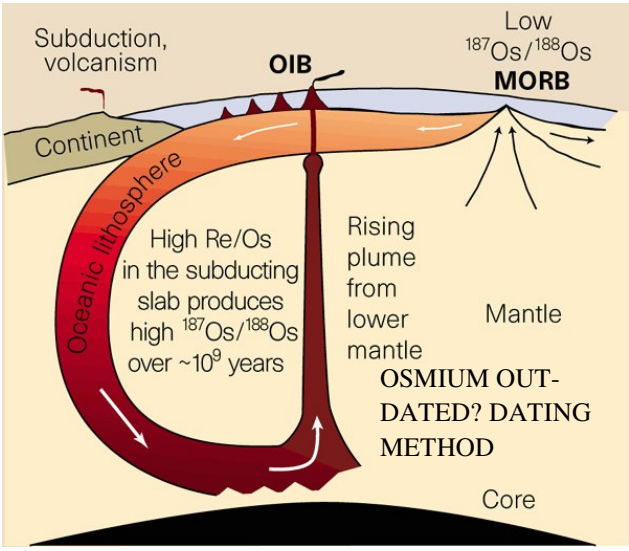
From the beginning of time, uranium has been part of Earth and, thanks to its long-lived radioactivity, it has proven ideal to date geological processes and deduce Earth's evolution. Natural uranium consists of two long-lived isotopes uranium-238 and the lighter uranium-235. A new study of the global cycle of these uranium isotopes brings additional perspectives to the debate on how Earth has changed over billions of years as revealed in a recently published study in the journal Nature.
From early Earth history, the continental crust (Earth's thick solid outer skin that we live on) has accumulated mass from the underlying hot mantle. Most of the newly formed crust, however, is lost again. At mid-ocean ridges at the bottom ocean, where plates drift apart, new oceanic crust is constantly produced as basaltic rocks when hot volcanic lava emerges from the mantle and solidifies. The oceanic crust moves away from the mid-ocean-ridges and ultimately gets transported back into the underlying mantle through "subduction" at ocean trenches.

Uranium is enriched in the rocks of the continental crust; however, at Earth's surface, different environments over time have influenced its mobility. In an oxygen-free atmosphere, as prevailed on early Earth, uranium stayed immobile in rocks as tetravalent uranium (IV). Only after atmospheric oxygen was formed did uranium become oxidised to its mobile hexavalent uranium (VI). This more mobile uranium may then be released during the weathering and break-down of rocks and transported to the oceans in aqueous form. As the cooling oceanic crust moves away from the mid-ocean-ridges in the oceans, seawater eventually percolates through cracks in its rock and in the process uranium gets incorporated into the oceanic crust, in a similar way that a sponge takes up water.

"The radioactive nature of uranium isotopes has long been key in reconstructing early Earth history, but we now see that they also have another story to tell" explains Morten Andersen, a geochemist in the Department of Earth Sciences at ETH Zurich.

Uranium isotopes form specific signatures

For this work, conducted at the University of Bristol including Morten Andersen (now Earth Science, ETH Zurich) along with researchers from the Durham (UK), Wyoming and Rhode Island (US), used the 'fingerprint' carried in the ratio of the two uranium isotopes.



The specific "fingerprint" derived from the ratio of the uranium isotopes, relates to uranium oxidation processes at Earth's surface. In particular, the researchers found that a higher ratio of uranium-238 to uranium-235 is incorporated into the modern oceanic crust, when compared to the uranium isotope signature found in meteorites. The meteorites represent Earth's "building blocks" and, thus, yield the original uranium isotope composition of Earth as a whole, and also the undisturbed mantle. This uranium isotope "fingerprint" of the altered oceanic crust provides a way to trace uranium that has moved from the surface and back into Earth's interior through subduction.

In order to examine the uranium cycle (and the rock cycle), the researchers analysed mid-ocean ridge basalts (MORBs), the hot volcanic lava that is produced from the upper and well-mixed part of the mantle. The ratio of the uranium isotopes in MORBs can be compared with those found in ocean island basalts in places such as Hawaii and the Canary Islands. These islands are so-called "hot-spots" with lava formed from hot mantle plumes that up-well beneath the oceanic crust. Compared to the MORB mantle, the island basalts are made up of material transported to the surface from a much deeper, less well-mixed, mantle sources.

Heavy uranium from surface to the deep

The isotope ratios for uranium-238 to uranium-235 are significantly greater for MORBs than for ocean island basalts. The ratios are also higher than that found in meteorites. This suggests that the MORBs contain a "fingerprint" of the uranium from the oceanic crust, drawn down from the surface and into the upper part of Earth's mantle through subduction, according to Andersen.

Through convection -- slow movements of material in the upper mantle -- the material was eventually mixed around and carried to the area of the mid-ocean ridges and transported back to the surface in the lavas that make up MORBs.

In contrast, the island basalts' ratios of uranium-238 to uranium-235 correspond to those of the meteorites used in the study and showed that these rocks could not have the same mantle source as the MORBs. The researchers explain that ocean island lavas comes from a deeper, less mixed, mantle source and therefore any uranium added from the surface originates from a much earlier time in Earth's history, when the surface environment was very different from today.

Study co-author Heye Freymuth of the University of Bristol explains: "Although uranium was incorporated into the oceanic crust since the initial rise in atmospheric oxygen about 2.4 billion years ago, the ocean crust did not incorporate higher amounts of uranium-238 as the oceans did not yet have adequate supplies of oxygen."

Only during the second marked increase in atmospheric oxygen content 600 million years ago did the deep ocean become fully oxidised, which allowed the oceanic crust to gain the "fingerprint" of high uranium-238. So, despite the oceanic crust having been transported into Earth's mantle for a long time, the uranium isotope ratio of the subducted oceanic crust first differed from Earth's mantle only after the full oxidation of the oceans.

"An important result of this study is how changing conditions on Earth's surface and the increase of oxygen in the atmosphere influenced the composition of deep Earth. Our results suggest that due to changes over the past 600 million years, uranium was mobilised from the surface, transported into Earth's interior and distributed within the mantle," says Andersen.

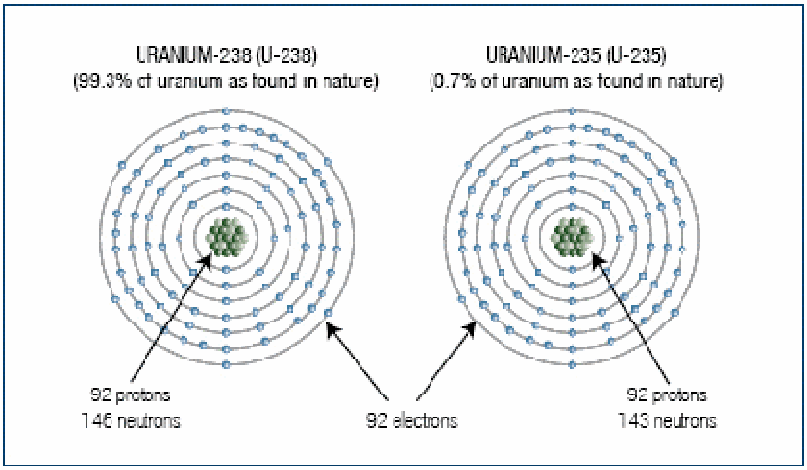
Hot debate about Earth's early days

The study of uranium and the crust's cycle brings new perspectives to the debate about how the face of Earth has changed over billions of years. "This is currently one of the hottest research topics for Earth scientists," Andersen points out. Particularly lively debates take place on how the concentration of oxygen in the atmosphere evolved; after all, it is associated with many other geological weathering processes, including the fate of uranium. The current study is mainly fundamental research in a relatively young research area. The identified uranium isotope signatures could in future be used commercially to detect unknown uranium deposits and help understand processes of uranium mobility. The first basic scientific work pointing to the potential of uranium-238 to uranium-235 variation on Earth was published in 2007. The study by Andersen and his colleagues is the first to use the uranium isotope ratio for the examination of igneous rock and apply it to the recycling process in deep Earth.

Reference:
Morten B. Andersen, Tim Elliott, Heye Freymuth, Kenneth W. W. Sims, Yaoling Niu, Katherine A. Kelley. The terrestrial uranium isotope cycle. Nature, 2015; 517 (7534): 356 DOI: 10.1038/nature14062

Note : The above story is based on materials provided by ETH Zürich. The original article was written by Peter Rüegg.

Uranium-235 is an isotope of uranium making up about 0.72% of natural uranium. Unlike the predominant isotope



uranium-238, it is fissile, i.e., it can sustain a fission chain reaction. It is the only fissile isotope that is a primordial nuclide or found in significant quantity in nature.
Uranium-235 has a half-life of 703.8 million years. It was discovered in 1935 by Arthur Jeffrey Dempster. Its (fission) nuclear cross section for slow thermal neutrons is about 584.994 barns. For fast neutrons it is on the order of 1 barn. Most but not all neutron absorptions result in fission; a minority result in neutron capture forming uranium-236.

COMING UP

March 19 Club night: Stephen Webb talk, geology and travels in the Andes

March 22: Field trip to Collins Valley, Mike Blowers is the trip leader

April 16 Club night: Stephen Eager talk on "Illuminating Minerals"?

May 9: Field trip followed by 50th Anniversary celebration

All meetings at Richmond Library, third Thursday of the month, commencing 7:30pm

Please note that this program is provisional and liable to change. Updates will be posted by email.

If you would like to share your knowledge by giving a talk to the members at a club night, or know of anyone who would like to, please contact any member of the committee. You will have plenty of time to prepare the talk as the spare slots begin in June 2015.

We have a large tumbler available for our members to hire. It has two drums and operates off main power. Overall Size: 1m x 300depth x 900high. Grit can be provided at cost. Tumbler hire $10/month

Braithwaite Prize: The committee decided to not continue with the Braithwaite Prize for the Science Fair. Instead, this will be kept in the Club and be presented for a "Find of the Year" This must be found by the owner within the current year and be voted on at the AGM.

Library: If you have borrowed a book from the library, you are invited to submit a brief review for inclusion in our newsletter

Big Saw: The Rock Fella, Motueka has an arrangement with the Club. Charges $10/hr or $15/hr for larger pieces.