



THE MINERAL VEIN

Official Newsletter of

THE MINERAL SOCIETY OF MANITOBA

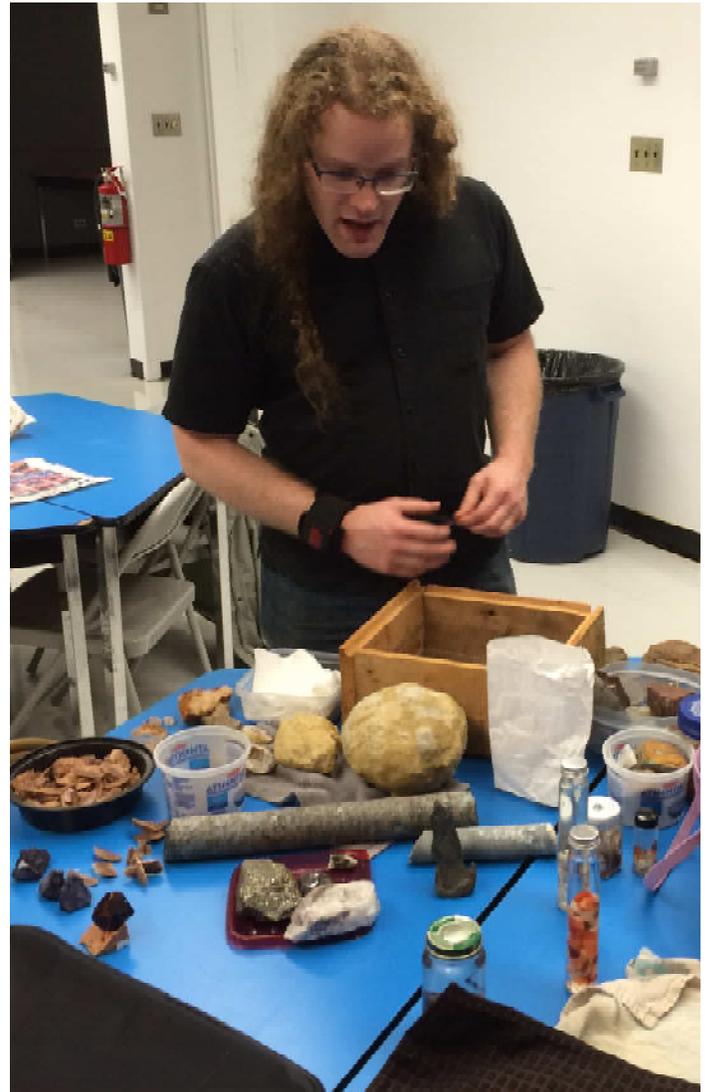
OCTOBER 2016

SEPTEMBER MEETING SUMMARY

(By Jacques Bourgeois)

They say that third time's a charm. Well, hopefully this will prove to be true this time around as our guest speaker, Ms Aura Diaz, who was supposed to present in May and in September but because of various factors (miscommunication and technical difficulties) couldn't present.

Ms Diaz is a Geological Science graduate student at the University of Manitoba and she is now doing her Masters degree in Environment and Geography. Her topic: "Thermodynamics of Sea Ice in the Arctic throughout the analysis of sea ice energy balance obtained from field data and controlled lab experiment" should be finally presented at the October meeting!



In the meantime, the September meeting was quickly filled with an impromptu **Show and Tell** featuring some beautiful ammonite from Alberta by Ron Jefferey.

and several mineral specimens from across the United States collected on field trips by Justyn and Leanne Hutchinson and TJ McCrea.

TJ talked about the various sites they collected and showed the minerals they collected during the Mineral Society's field trips to Souris and Snow Lake. They even had mineral gifts for all the members present!



THE MINERAL SOCIETY OF MANITOBA

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The Mineral Vein is published monthly from September to June.

Meetings are held on the first Wednesday of each month from September to May inclusive at the Manitoba Museum in room P47 on the Planetarium level. They begin at 7:30 PM and feature announcements, an invited speaker and a raffle. Members are encouraged to bring along any new, interesting specimens, or specimens appropriate to the speaker's topic.

Field Trips take place from May to September to interesting sites in Manitoba or neighbouring provinces and states.

Membership: A single membership is \$15 while a family membership is \$20. Memberships run from October to October.

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UPCOMING EVENTS

October 5, 2016: MSM regular monthly meeting begins at 7:30 p.m. at the Manitoba Museum. Our guest speaker will be **Aura Diaz** (third time's a charm!), a Geological Science graduate student at the University of Manitoba who is now doing her masters degree in Environment and Geography working in the "Thermodynamics of Sea Ice in the Arctic throughout the analysis of sea ice energy balance obtained from field data and controlled lab experiment".

This is also our **Annual General Meeting**. Have you considered serving on the Board of the Executive? This is your chance! There will be some positions open this year and we need you to help us fill them. Hope to see you there!

November 2, 2016: MSM regular monthly meeting begins at 7:30 p.m. at the Manitoba Museum.

Guest speaker to be announced.



Founded in 1971, the Mineral Society of Manitoba is dedicated to promoting the study of minerals, rocks and fossils for their scientific and recreational value.

The Mineral Society of Manitoba hosts monthly meetings covering a variety of mineral related topics. In addition, the Mineral Society organizes summer field trips to collecting localities, and hosts educational exhibits about minerals and fossils.

OLD ROCKS, NEW DEBATE

(by: Ivan Semeniuk, The Globe and Mail)

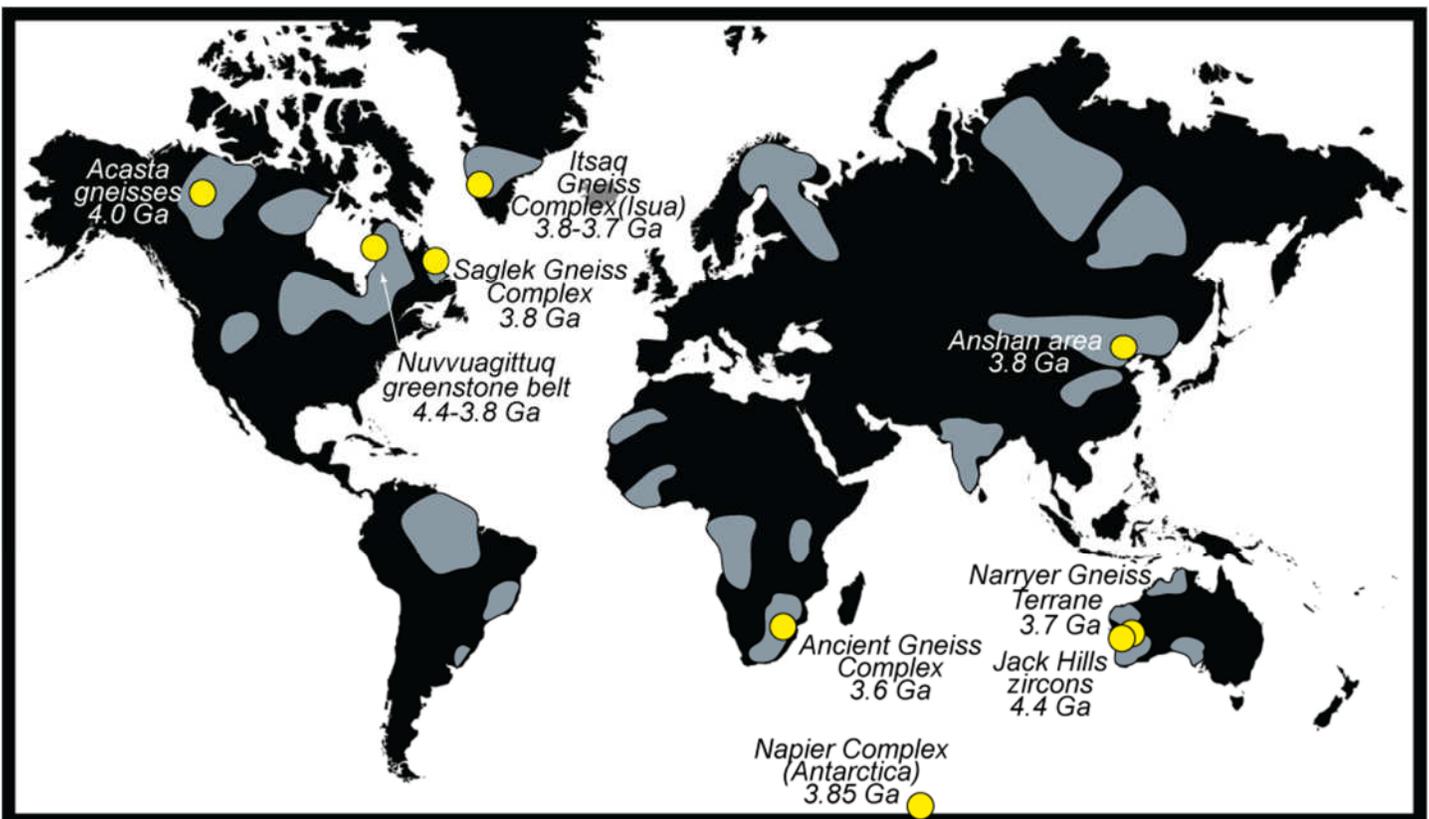
The oldest rocks in the world might be on a stony outcrop located about 300 kilometres due north of Yellowknife. These rocks found in the Acasta Gneiss Complex in the Northwest Territories are 4.0196 billion years old, give or take a couple of million years, dating back to a time when Earth was about one-ninth its present age. In other words, they are staggeringly old and so provide a remarkably deep window into our planet's geological past.

"It's the oldest known rock that has a composition similar to what we think continents are like," said Jesse Reimink, lead author of the Alberta study and now a post-doctoral researcher at the Carnegie Institution in Washington, D.C. But in addition to being really old, Dr. Reimink and his colleagues say the rocks are important for what they don't contain – any clear signs that they formed in a place where a continent was already present.



The new results, published in the journal *Nature Geoscience*, are in line with a contentious theory the group first championed two years ago when they suggested that the Earth of four billion years ago was an ocean-dominated world where continents were relatively small, few in number and rather like the volcanically active Iceland of today.

"Geodynamically, Earth is completely different than the other planets and we don't really understand why," said Jonathan O'Neil, a University of Ottawa researcher who was not involved with the Alberta study.



OLD ROCKS, NEW DEBATE (CONT.)

Dr. O'Neil's work has focused on another ancient formation, located in northeastern Quebec, that he and his colleagues recently dated with a less precise technique at about 4.3 billion years old. But while the Quebec rock may turn out to be older than the Acasta Gneiss, there's no doubt that it represents something quite different. It is a remnant of a piece of ocean crust that was later incorporated into the North American land mass.

In contrast, the Acasta Gneiss has a chemical signature that is more like continental crust. First identified as geologically significant in the 1980s, the remote region on the border between boreal forest and Arctic tundra has become increasingly attractive to researchers looking for evidence of how and when the first continents formed. That evidence comes in the form of tiny mineral grains called zircons that crystallize out of molten rock and can offer a durable record of exactly when the parent rock formed and in what sort of



Jesse Reimink, lead author of the Alberta study and now a post-doctoral researcher at the Carnegie Institution in Washington

In their latest study, the Alberta group examined trace isotopes of the element hafnium in the zircons they collected from the Acasta Gneiss sample. The results show that the rock melted and mixed with an older material as it was emerging from Earth's interior and that the older material, they conclude, was not continental crust.

Mark Harrison, a geochemist at the University of California, Los Angeles, disagrees with the team's conclusion that there was a continent-sparse period four billion years ago. He noted that rocks found on isolated islands in the Pacific, such as Samoa, would be expected to show a similar signature as the Acasta Gneiss, despite the fact that large continents are still present elsewhere on Earth.

Tom Chacko, who leads the Alberta group, concedes the point. "Part of the limitation of early Earth studies is that there are so few samples," he said. "You have to try to milk everything out of the actual samples you have." Ann Bauer, a graduate student at the Massachusetts Institute of Technology who also studies the complex, said the Alberta group had been "very thorough" in its analysis. "Canadians should be excited that they have the oldest rocks in the world in their country," she said. "That's pretty cool."