The Geological Newsletter

News of the Geological Society of the Oregon Country

January/February 2017
Volume 83, Number 1

The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

Political Riots Smash Plans for GSOC November 2016 Lecture

by Carol Hasenberg

GSOC members coming to attend the November Friday night lecture were dismayed that the scheduled speaker, Harish Palani of Sunset High School, was unable to attend as a result of the nearby riots occurring in downtown Portland following the recent national election. GSOC VP Rik Smoody quickly came up with the idea of holding a science bowl with the audience. That was followed by a discussion by GSOC President Bo Nonn about his September trip to the south Oregon coast.

GSOCers attending the November lecture were definitely not doing much rioting.

Calendar

Friday Night Lecture

January 13, 2017, 53 Cramer Hall, Portland State University

Speaker Harish Palani, Sunset High School, will present "Quakify!"

see Quakify!, pg 2

Friday Night Lecture

February 10, 2017, Cramer Hall, Portland State University

Speaker Mike Collins, mountaineering and geology enthusiast, will present "Time Travel Tales from the Yellowstone Hotspot and Great Basin Geological Province."

see Time Travel Tales, pg 2

Annual Banquet with Paul Hammond

March 12, 2017

82nd Annual Banquet at 1:00 p.m. at Ernesto's in Beaverton. Dr. Paul Hammond, emeritus, Portland State University, will present "The Western Margin Of North America"

see Banquet Flyer on Page 8

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Free parking is no longer available at Portland State University. Hourly rates for parking are available in some parts of PSU parking structures. There is also on street pay parking, and many mass transit options.

2016 - 2017 Administration:

President Bo Nonn – 503/235-9135
bononn14@q.com

Vice-President Rik Smoody –
science@smoo.com

Secretary Paul Edison-Lahm – 971/404-6064
pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708
dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342
martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635
lkpurchase@q.com

Kirben Smoody (3 years) – 503/432-3580
ScienceK@gmail.com

Past Presidents:

Janet Rasmussen – 541/760-7846
jkayerocks@yahoo.com

Sheila Alfsen – 503/939-6003
shealf@viclink.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249
csh727@comcast.net

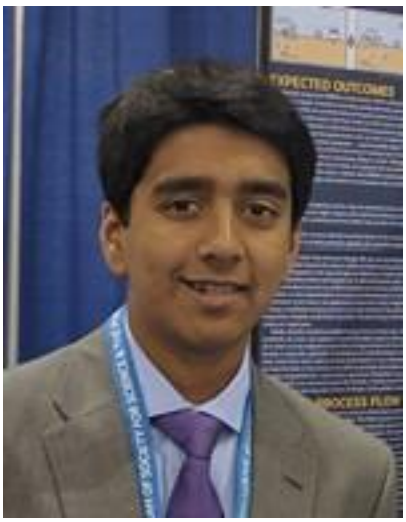
Website Paul Edison-Lahm – 971/404-6064
pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen –
503/939-6003
shealf@viclink.com

Quakify!

January 13, 2017, lecture from the GSOC Calendar

Speaker Harish Palani of Sunset High School, Portland, will present his project "Quakify" which won the second prize at the Intel International Science and Engineering Fair (Intel ISEF).



The goal of the project was to design a low-cost early warning system (Quakify) to provide adequate warning prior to significant earthquake shaking. Harnessing the power of MEMS accelerometer technology to enable crowdsourced data collection and analysis in the cloud, the system is characterized by a three-step process: (1) rapid detection, (2) real-time analysis, and (3) timely notification.

Time Travel Tales

February 10, 2017, lecture from the GSOC Calendar

Speaker Mike Collins worked in manufacturing and administration since he graduated from Portland State University in 1964. For many years his primary hobby was mountaineering, which led to a serious interest in the geology of the western United States. His first geological research quest was to find out the story of the flood basalts. He has found in his research that there are some amazing stories buried in geological literature that would capture the imagination of the general reader if written in plain language and story form.

The presentation is based on a manuscript he wrote several years ago but has not published. This story originally focused on explaining the emergence of the Yellowstone hotspot in S.E. Oregon and how it sculpted the Northwestern states. But in investigating how the hotspot might have influenced the Northwest, he investigated other interesting geological zones such as the Colorado Plateau, the Rio Grande Rift, the Nevada Rift, the Walker Lane in Eastern California, and the subduction of the Pacific plate below the North /American continent.

GSOC Board Meeting Notes

December 2, 2016

President Bo Nonn called the meeting to order at the home of Carol Hasenberg. Board members present constituting quorum were Rik Smoody, Dawn Juliano, Paul Edison-Lahm, Marty Muncie, Larry Purchase, Janet Rasmussen, and Sheila Alfsen. The minutes from our October and August meetings were approved.

Treasurer's Report: (Dawn) The treasurer's report was approved. PSU received our $1000 scholarship check and sent us back a thank you. Dawn will be talking to a potential auditor for our books. Also Paul will research the requirements for our Annual Meeting.

EVENTS

Friday night lectures

Sheila will contact the Geology Department to see if there's anything can be done to improve the parking situation. Rik is looking for a January speaker. Marty is looking for snack committee volunteers for the January meeting.

Field Trips

President's Trip Recap: Bo will be making more guides for people who want them.

St. Helens Helicopter Tour recap: (Sheila) Trip got a very good response (16 people) but the trip was cancelled due to weather. Sheila will schedule the tour again for better weather next July.

Downtown Tour recap (North Tour): (Paul) We now have both a North and South tour that we can schedule for both spring and fall of 2017. Cris Morgante did a great job soloing on his first tour. Paul will work on a producing field guide for the library for GSOC members over the next year. Also, Sheila will be picking a time in June for her Salem building tour.

2017 Eclipse Trip: Rik is looking for a location within the path of totality, perhaps near Mill City.

OLD AND NEW BUSINESS

Nomination Committee

Nominating Committee: (Bo, Larry, Paul) The slate of officers for 2017 is as follows:

- Rik – President
- Sheila – Vice-President
- Dawn – Treasurer
- Paul – Secretary
- Marty – Director in third year
- Larry – Director in second year
- Carol – Director in first year
- Janet – Past President
- Bo – Past President

Communications Report: Paul distributed a communications report detailing all of our current GSOC online tools (Squarespace, Mailchimp, etc.) which board members will read and discuss at our next meeting.

Member Database: Janet will be doing data entry for our membership roster, but we need to clean up the existing Google spreadsheet and look at using an actual database to handle spouses/family members. Rik, Dawn, Janet, Paul and Peregrine Edison-Lahm will meet in January to discuss low-cost cloud-based database solutions.

Next board meeting at February 11th 2017, 10:00 a.m. Larry will confirm with Rosemary for location.

Notes compiled from board meeting minutes submitted by GSOC Secretary Paul Edison-Lahm.

Dawn and Barbara lead the Christmas carols with their terrific instrumentals.

Larry and Bev confer next to the Christmas rock found in the Columbia Gorge by Cris.

GSOC HOLIDAY PARTY WRAP-UP

Ho, ho, ho! This party rocks!

It was 3 weeks before Christmas and all was joyous at the 2016 GSOC Holiday Party. A good selection of entrees and salads, and a vast array of desserts were gobbled up by the participants. Then our fine musicians led a selection of Christmas standards and provided a magical atmosphere. The eating and singing were followed by a slide show of this past year's field trips.

GSOC President Bo Nonn led the show with his slide of the 2016 President's Field Trip "Lava Flows and Accreted Terranes," Sept 6-11, 2016. His trip included stops along the central and southern Oregon coast, northern California along the Smith River, the Oregon Caves, and Upper Table Rock near Medford, Oregon. Amongst the gems of the trip was a stop at Rainbow Rock on the Oregon coast, containing folded layers of ribbon chert.

Paul Edison-Lahm reviewed the field trips of the buildings of downtown Portland which he organizes, "Ancient Walls 2016, Exploring South and North Portland Downtown Buildings' Geology," June 25 and October 22, 2016. Now in its fourth year, our downtown geology tour has expanded to include a second "north" tour with many new buildings, including Pioneer Courthouse, Union Bank building, Multnomah Central Library, and the First Baptist Church among others. We also welcome Cris Morgante as the tour's newest expert guide. Our understanding of the stone trade was greatly enriched by the opportunity to walk the tour with master stonecutter Joe Conrad. The tour was the subject of a two-day taping by OPB's Oregon Field Guide and also the focus of a highly creative school "Quest" project spearheaded by Sarah Anderson at Southwest Charter School and her 4th grade students, who created beautiful artwork and inventive poetry about the buildings and geology.

Dave Olcott finished the show with his slides from the June 11th and 12th field trip entitled "New Insights into the Geologic Evolution of the West-Central Columbia Plateau".

Dave reminisces, "On June 11th and 12th, 38 GSOC members ventured into the western margins of the Columbia Plateau under the guidance of Jim Anderson, Steve Reidel, and Terry Tolan. The two-day trip figuratively unveiled geologic processes and features of the said area dating back to the early and middle Miocene. The 'geo-

print' of ancestral Columbia and Snake River gravels, Saddle Mountain (Columbia River Basalt) and Simcoe Volcanic intracanyon flows within the regional structural framework of the Yakima Fold and Thrust Belt, enabled participants to better interpret the chronology of the dynamic events that formed this area."

"The distinguished leaders illuminated the areas' diverse geology ranging from the latest stratigraphy of the Klickitat Canyon and Valley to the altering impact of the network of northwest trending strike-slip faults. Participants enjoyed the opportunity to interact with such outstanding geologists and educators. Jim, Steve, and Terry, we thank you!"

WELCOME NEW MEMBERS!

Susan Nelson
James Gurganus
Rebecca Simmons
Jim and Karen Glass
Cole Kingsbury
David and Sallie Jones

NOMINATING COMMITTEE RESULTS

The following slate of officers has been selected by this year's nominating committee:

President ..... Rik Smoody
Vice President ..... Sheila Alfsen
Secretary ..... Paul Edison-Lahm
Treasurer ..... Dawn Juliano
Director, 3 years ..... Carol Hasenberg
Director, 2 years ..... Larry Purchase
Director, 1 year ..... Martha Muncie

Nominations will be closed for this year's slate of officers after the January meeting of the society. The slate of officers will be voted on and approved at the February monthly meeting.

The Nominating Committee members were Bo Nonn, Larry Purchase, and Paul Edison-Lahm. Our thanks to the selected members and members of the Nominating Committee!

THE GEOLOGICAL NEWSLETTER INDEX

Volume 82, 2016
compiled by Carol Hasenberg

ARTICLES and REPORTS ..... Page

INDEX, continued from Page 6

SOCIETY BUSINESS

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907

GSOC Eighty-second Annual Banquet

Sunday, March 12, 2017

The Geological Society of the Oregon Country invites you to its 82nd Annual Banquet. Speaker Dr. Paul Hammond will present "The Western Margin Of North America." The western margin of the North American continent from Alaska south to Guatemala is a zone as much as 1,600 kilometers wide and contains thousands of north-striking faults, a fewer number of east-west-striking folds, and other minor structures. These structures began developing in the late Mesozoic, more than 100 million years ago, and are continuing today caused by the northward drift of the Pacific plate. There is the possibility of a major earthquake along one of these faults, similar to the 1906 San Franciso earthquake along the San Andreas fault.

Dr. Hammond received his geologic training at four universities—Brown University in Providence, RI, University of Colorado at Boulder, UCLA, and University of Washington at Seattle. He was introduced to the Pacific Northwest working for the Northern Pacific Railway, mapping their lands in Washington. He taught geology at Portland State University for 31 years, retiring in 1994. After retiring he continued mapping in the Washington Cascades until 2004. Since then he has been completing his mapping reports and giving talks on geologic topics.

The banquet will be held March 12, 2017, at Ernesto's Italian Restaurant, 8544 SW Apple Way, Portland, OR 97225, located in a strip mall along the Beaverton-Hillsdale Highway between Raleigh Hills Fred Meyer and Jesuit High School. There is ample free parking, and Beaverton-Hillsdale Hwy is served by TriMet bus route 54. Doors to the banquet room open at 1:00 p.m. Dinner at 1:30 p.m. Program will begin at 2:15 p.m.

Dinner will be an Italian Style buffet – including salad, one meat dish, 2 pasta dishes (one meatless) and dessert. Coffee, tea, soda, and fresh bread are also included in the buffet. Please contact Dawn if you have special dietary requirements. (503) 367-7708.

GSOC 82nd ANNUAL BANQUET RESERVATION FORM – clip at line and mail.

_____ Number of tickets at $30.00 each (includes gratuity). If ordered online, the price is $31.21 to cover the Stripe processing fees.

Names of persons attending:

_____

_____

_____

_____

_____Amount enclosed. *Reservations must be received by Friday, March 3, 2017.*

Please mail reservations and checks to GSOC, PO Box 907, Portland, OR 97207-0907

The Geological Newsletter

News of the Geological Society of the Oregon Country

March/April 2017
Volume 83, Number 2

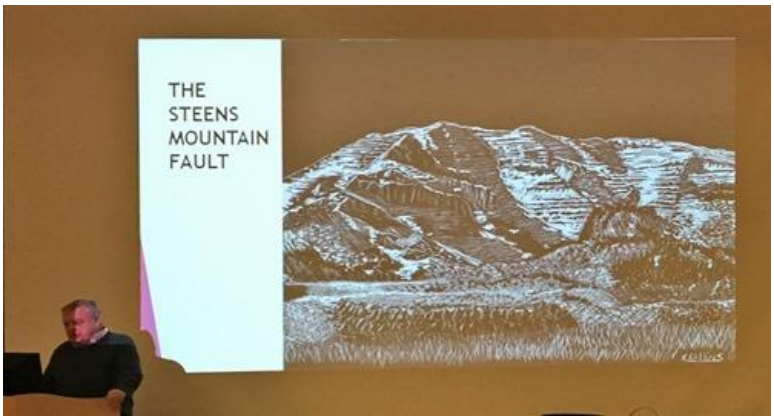
The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

Time Travel Tales

by Carol Hasenberg

Mike Collins, a retired General Manager in manufacturing, and an avid mountaineering and geology enthusiast, presented his slide show "Flood Basalts, Hot Spots, and Spreading Centers and the Creation of the Western Landscape," to a full house last month at the GSOC Friday night lecture. His show was based upon a manuscript he has produced explaining the evolution of the Western landscape in terms that non-technical people can understand. It is lavishly illustrated with scratchboard drawings that he has drawn, which take the reader back to scenes he describes in the book.

see Time Travel Tales, Page 13



Mike Collins showing one of his excellent scratchboard drawings of Steens Mountain.

Calendar

Annual Banquet with President Bo Nonn

March 12, 2017

82nd Annual Banquet at 1:00 p.m. at Ernesto's in Beaverton. GSOC President Bo Nonn will present "Cascade Geology From the Top Down: Features You Won't See From the Road"

see Annual Banquet on Page 12

Friday Night Lecture

April 14, 2017, Cramer Hall, Portland State University

Speaker Dr. Anita Grunder, Professor at College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, will present "Basalt and Rhyolite Volcanism of the High Lava Plains of Oregon: Timing, Tectonics and Petrology."

see Bimodal Volcanism, pg 10

Friday Night Lecture

May 12, 2017, Cramer Hall, Portland State University

Speaker Dr. William Orr, Director of the Condon Collection, University of Oregon, will present "Thomas Condon- What we can learn about the man from his personal collections."

see Thomas Condon, pg 10

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Free parking is no longer available at Portland State University. Hourly rates for parking are available in some parts of PSU parking structures. Parking Structure #2 across Broadway from Cramer Hall is $7.00 flat rate in the evening. Park in permit (NOT reserved) spaces and pay at the kiosk by entering your vehicle license number. There is also on street pay parking, and many mass transit options.

2017 - 2018 Administration:

President Rik Smoody – science@smoo.com

Vice-President Sheila Alfsen – 503/939-6003 shealf@viclink.com

Secretary Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708 dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342 martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635 lkpurchase@q.com

Carol Hasenberg (3 years) – 503/522-4249 csh727@comcast.net

Past Presidents:

Bo Nonn – 503/235-9135 bononn14@q.com

Janet Rasmussen – 541/760-7846 jkayerocks@yahoo.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249 csh727@comcast.net

Website Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen – 503/939-6003 shealf@viclink.com

Bimodal Volcanism

April 14, 2017, lecture from the GSOC Calendar

Dr. Anita Grunder earned her BS at Berkeley, and her PhD at Stanford. She has been at Oregon State University since 1986. Her research is in volcanic rocks as a probe for crustal magma process in time and in diverse tectonic settings.

The High Lava Plains is an enigmatic province between the hot-spot related Steens Basalts and the subduction-related Cascades. We will explore the implications of the westward age progression of rhyolites and the effect of protracted magmatism on the composition of the volcanic rocks and the crust.

Thomas Condon

May 12, 2017, lecture from the GSOC Calendar

Bill Orr was trained as a geologist specializing in paleontology. Awarded his degrees from Oklahoma, California and Michigan, his career spans 50 years. In his 30 year career at the University of Oregon (1967-1997) he did two tours at the National Science Foundation as program officer and participated on the Deep Sea Drilling Project as shipboard scientist on three tours. He has written some 20 books on diverse subjects, including the standard references in the Pacific NW and Oregon on Geology and Paleontology. In 1982 he was appointed director of the Condon collection at UO and continues in that position today.

Thomas Condon, Frontier Missionary and Oregon's First State Geologist, came to the Oregon Territory in 1852 and soon became interested in its remarkable fossil assemblage. Collections made by paleontologists impart an enormous amount of information about the ideas and motives of the individual. Condon's personal collection of Oregon plant and animal fossils reflect not only his science but his travels and associates as well. Dr. Orr will examine these aspects of his life as well as the nature of his work and achievements.

GSOC Board Meeting Notes

February 12, 2017

President Bo Nonn called the meeting to order at the home of Rosemary Kenney. . We thank Rosemary for having graciously hosting our board meetings since 2000. Board members present constituting quorum were Rik Smoody, Dawn Juliano, Paul Edison-Lahm, Marty Muncie, Larry Purchase, Janet Rasmussen, and Sheila Alfsen. Other members present included Carol Hasenberg, Dave Olcott, Jane Walpole, Peregrine Edison-Lahm, and Doug Rasmussen. The minutes from our December meeting were approved.

Treasurer's Report: (Dawn) The treasurer's report was approved.

Dawn reports that we currently have 63 paid members out of 150 potential members. The board agreed that more frequent announcements and more frequent email reminders are needed to encourage people to pay their memberships. The board delegated discussion of membership and dues issues to the Membership subcommittee.

The board affirmed Dawn's proposal that next year's annual membership meeting for members be held immediately prior to the lecture open to the public. Paul will calendar this for February 2018.

EVENTS

Holiday Party recap

The party at Carol's house was again a success and she reports (based on a careful assessment of the leftovers) that there was enough food. The Hasenbergs would be happy to host again next year.

Friday night lectures

Upcoming speakers: Sheila is working on possibilities for April and beyond. She will reestablish the connection with people in the PSU AV department who have been very helpful with microphone issues.

Friday Night Parking: PSU parking structure access is available but requires payment through a kiosk. The signs have been confusing for some however. Janet will clarify parking procedures with PSU and we'll put the information with our event announcement and in the newsletter: e.g. use Parking Structure #2 at the Broadway entrance across from Cramer Hall, using the "permit" and not the "reserved" spaces; go to parking kiosk to pay by entering your vehicle license number.

Snack committee: Marty has volunteers for April and is looking for May volunteers and beyond.

Public outreach: Sheila is getting many requests and recently spoke at a Camas elementary school. Bo volunteered to do his presentation on meteorites for elementary students.

Annual Banquet: Paul will send out the email announcement shortly.

Field Trips

Downtown Tours: Paul has two Downtown Building Stone Tours planned for June 24th (South Tour) and October 7th (North Tour). Cris Morgante and Paul will be guiding — and any of our other past guides who are interested. Paul will update the tour guide creating a catalogue of the sites.

Quarry Tour: Larry is choosing quarries for this tour, tentatively June 17.

Eclipse/President's Trip: We will be camping on private property in Mill City and exploring the Western Cascades, Friday to Monday (the eclipse is on August 21). Rik will reserve a Porta-potty asap.

Johnson Creek Watershed Tour: Paul and Sheila are working on with Johnson Creek Watershed Council and Terry Tolan for a September tour and science pub.

BOARD MEETING NOTES

continued from Page 11

Mt. St. Helens Helicopter Tour: Sheila may plan this for August, however the helicopter site has been sold, so it's up in the air.

OLD AND NEW BUSINESS

Election Results: President Rik; Vice-President Sheila; Treasurer: Dawn; Secretary: Paul; 3 Year Director: Carol (Larry is 2 year director; Marty is 1 year director).

Member Database Committee: (Paul/Janet/Rik/Peregrine): Peregrine will be assisting cleaning up the spreadsheet with Rik. The committee will be considering a cloud based, low-cost or free database solution, such as SalesForce. Our next meeting will be at 9:00 a.m. prior to the next board meeting.

Communications Report: (Paul) this is tabled until the next board meeting when we can review our web use on a large screen.

Bylaws Committee: Janet will email the committee's proposals to the board.

Next board meeting will be at Paul and Peregrine's at 10:00 a.m., April 15.

Notes compiled from board meeting minutes submitted by GSOC Secretary Paul Edison-Lahm.

GSOC Eighty-second Annual Banquet

Sunday, March 12, 2017

The Geological Society of the Oregon Country invites you to its 82nd Annual Banquet. GSOC President Bo Nonn will present "Cascade Geology From the Top Down: Features You Won't See From the Road." Mr. Nonn be giving brief descriptions of mineralogy and eruptive histories of Cascade peaks from California to the Canada border and beyond. It's based on what he's learned about PNW geology over the years and what he's seen in 40 years of climbing with the Mazamas.

Bo Nonn was born in Germany and raised in Wisconsin. He earned a Bachelor's Degree in Geology in the 1960's and another degree in Mechanical Engineering many years later. He and his wife Ellen spent six years teaching in Kenya and Botswana. Prior to retirement, Bo worked in research and development in the medical equipment industry.

Since then, he has pursued some engineering work, obtained a patent, and has been auditing dozens of geology classes at Portland State University.

In his spare time, he has led climbs of Cascade Peaks and taught basic climbing skills with the Mazamas over the past decades.

Bo has been a member of GSOC since 2011.

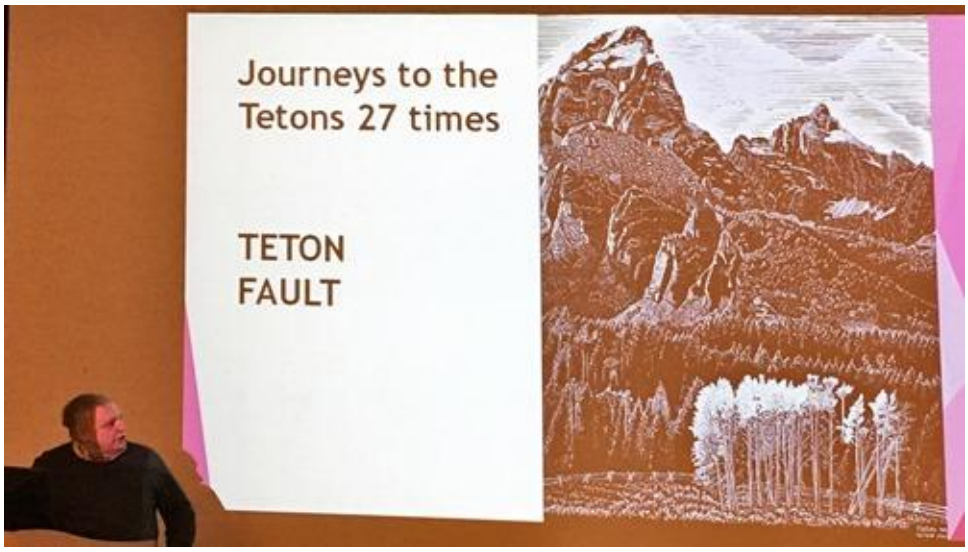
The banquet will be held March 12, 2017, at Ernesto's Italian Restaurant, 8544 SW Apple Way, Portland, OR 97225, located in a strip mall along the Beaverton-Hillsdale Highway between Raleigh Hills Fred Meyer and Jesuit High School. There is ample free parking, and Beaverton-Hillsdale Hwy is served by TriMet bus route 54. Doors to the banquet room open at 1:00 p.m. Dinner at 1:30 p.m. Program will begin at 2:15 p.m. Reservations will be accepted through March 3 on the GSOC website, www.gsoc.org.

Time Travel Tales

Synopsis of Friday night lecture on February 10, 2017, with speakerMike Collins, continued from page 9

Collins was inspired to create this work as a result of a Geologic Society of America (GSA) seminar which he attended at a national GSA meeting a few years ago in Portland.

Collins' personal journey began with a visit to Multnomah Falls as set in its backdrop of a multitude of flood basalt layers, which represent lava flows from hundreds of miles away. He then spent time in southeast Oregon near Steens Mountain and the Alvord Desert. This lead him to McDermitt Caldera, the scene of violent rhyolitic eruptions and the beginning of a track across Oregon, Idaho, and terminating at Yellowstone Volcano in Wyoming. This "hot spot" trail has proved to be very fascinating for Collins and has fueled his interest in geology and led him to research this and other phenomena that created the Western landscape.

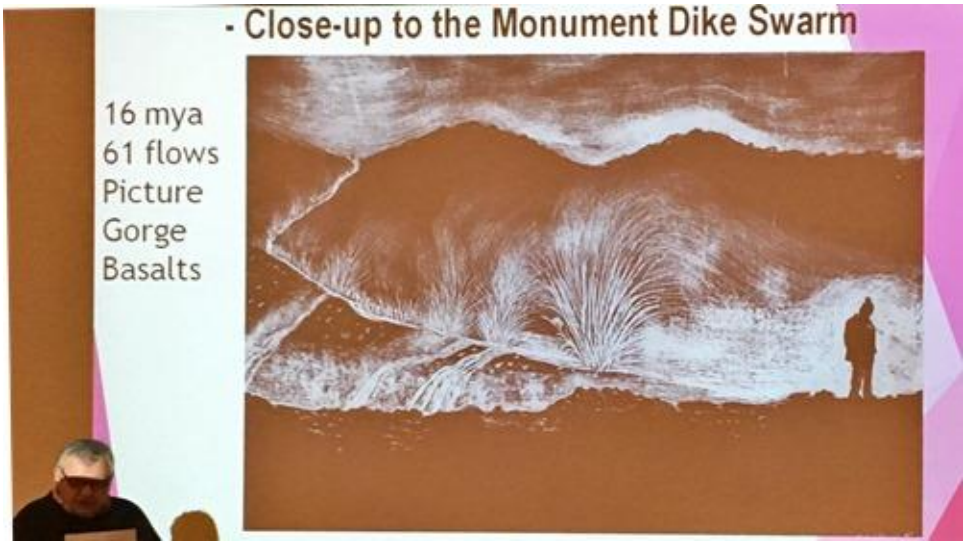


Some of Collins' research included traveling to places he studied.

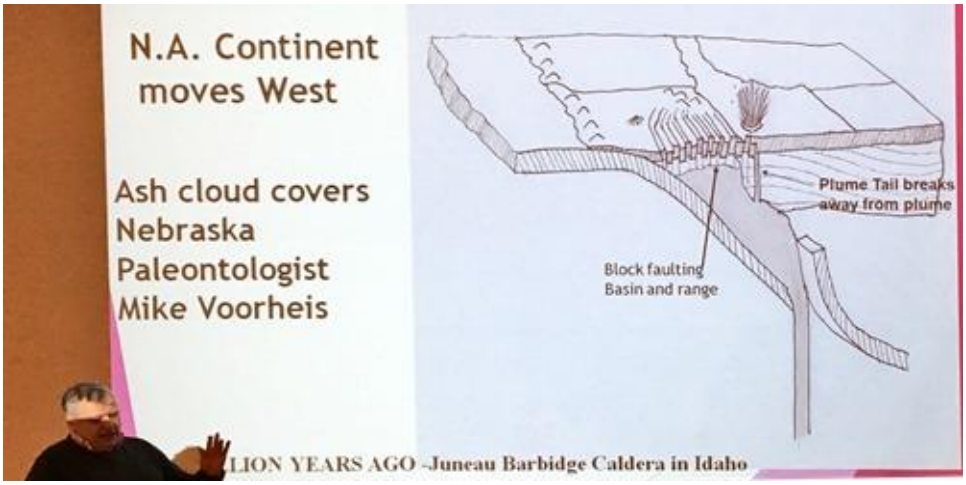
In his research into hot spots Collins found 45 active hot spots on the planet described, with 8 under continents and 3 under North America. Hot spots under land masses tend to produce massive volcanic eruptions in the form of "supervolcanoes" as is commonly described today. These supervolcanoes are compared in size by a metric known as the Volcanic Explosivity Index (VEI). VEI level 8 is over 1000 cubic kilometers of material, and the greatest volcanic eruptions known on earth. Each level below that is an order of magnitude less, i.e., VEI level 7 is 100-1000 km^3, etc. The greatest single volcanic eruption in the last 25 million years occurred 74,000 years ago at Lake Toba in Sumatra, producing 2800 km^3 of material and an earth changing event in terms of destruction and disruption of ecosystems and species. The Yellowstone supervolcano has produced at least 4 VEI 8 eruptions and 2 VEI 7 eruptions.

Collins then focused on the hot spot which produced the McDermitt Caldera, the Snake River Volcanics in Idaho and

the Yellowstone Supervolcano. He found information that it was located 55 million years ago on the Farallon tectonic plate, now mostly subducted under the North American continent. Its eruptions in Oregon began 29 million years ago in the Clarno eruptions, including the Tower Mountain and Crooked River volcanoes. Then about 17 million years ago a massive quantity of basalt magma was produced through three series of sheet dike complexes: Steens, located at Steens Mountain in Oregon; Chief Joseph in Oregon, Washington, and Idaho; and Monument near John Day, Oregon. These fissures produced thousands of cubic miles of liquid basalt lava that covered much of what is Oregon and Washington today. We know these lava flows today as Steens Basalt and Columbia River Basalt, and it has been shown that they share the same chemical signature which denotes a common origin. In addition to the basaltic magma, the hot spot also produced the very violent rhyolitic eruption at McDermitt Caldera at about the same time as the nearby Steens. A series of eruptions then tracked east across Idaho with progressively decreasing age dates to the Yellowstone Volcano, which last erupted 640,000 years ago.

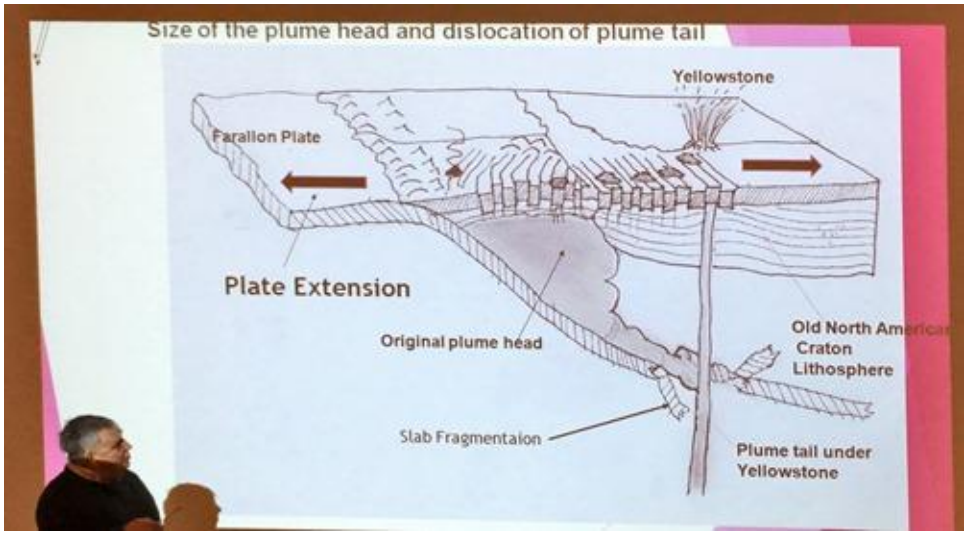


Collins likes to put the reader "in the picture".



Near the end of his talk Collins described some of the magma, the subducting Farallon tectonic plate, and crustal extension, thinning, and fracturing that has contributed to this volcanism. Much of this mystery has been largely conjecture in the past as scientists were able to discover facts about the earth's mantle (liquid rock surrounding the earth's iron core) through surface lava chemistry and crude seismic imagery. With increasing computational power and expanded seismic networks, seismic imagery and

tomography has greatly improved our understanding of the mantle and will continue to improve. Collins showed cutaway sections of a current model for the interaction of the Yellowstone hotspot and also some current seismic images of the pieces of the subducting Farallon plate and gaps between the pieces.



In addition to its tracking eastward across the Snake River Plain in Idaho presumably as the North America tectonic plate has passed over its position, the Yellowstone hot spot may also have been responsible for a series of bimodal eruptions (with two very different magma compositions) across the Brothers Fault Zone in Oregon. Oddly enough these eruptions track westward to today's Newberry Volcano near Bend. Collins has found in his studies that these may be produced by the expanding head of the hot spot plume. Our GSOC talk scheduled for April may shed some light on this topic as it focuses upon this area.

In his talk to the GSOC group, Collins covered material in the first 7 chapters of his manuscript. He has also researched geology of the western states south of Oregon from the Pacific to the Teton Mountains and includes this information with illustrations in the work. We encourage him to find a publishing outlet for his work.

Additional Reading

CRB Plume article on Mantle Plumes website.

Seismic tomography page from Wikipedia.

Toba catastrophe theory from Wikipedia.

Supervolcano from Wikipedia.

WELCOME NEW MEMBERS!

Laurie Feinswog
Nathaniel and Lacey Sortman
Kimberly McCreedy
Kathleen Kerner
Tricia Knoll and Darrell Salk
Kate Ely

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907

The Geological Newsletter

News of the Geological Society of the Oregon Country

May/June 2017
Volume 83, Number 3

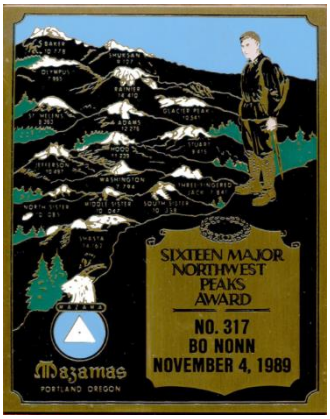
The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

Cascade Geology from the Top Down

by Carol Hasenberg

GSOC Past President Bo Nonn delivered the 82nd Annual GSOC banquet speech on March 12 to a fascinated crowd at Ernesto's Italian Restaurant in Beaverton. He has a unique perspective on the geology of the Cascade Mountains: he has witnessed it in person by climbing all 16 Cascade peaks more than once, and has received several certificates of achievement from the Mazamas, as well as being a climbing instructor with that organization.

see Cascade Geology, Page 20



Nonn demos his bona fides.

Calendar

Friday Night Lecture

May 12, 2017, Cramer Hall, Portland State University

Speaker Dr. William Orr, Director of the Condon Collection, University of Oregon, will present "Thomas Condon- What we can learn about the man from his personal collections."

see Thomas Condon, pg 18

Friday Night Lecture

June 9, 2017, Cramer Hall, Portland State University

Speaker Dr. Paul Hammond, emeritus, Portland State University, will present "The Western Margin Of North America"

see North American Margin on Page 18

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Free parking is no longer available at Portland State University. Hourly rates for parking are available in some parts of PSU parking structures. PSU Parking Structure #2, 1724 SW Broadway across from Cramer Hall is $5.00 flat rate in the evening. Park in permit (NOT reserved) spaces and pay at the kiosk by entering your vehicle license number. There is also on street pay parking, and many mass transit options. More info available here.

2017 - 2018 Administration:

President Rik Smoody – science@smoo.com

Vice-President Sheila Alfsen – 503/939-6003 shealf@viclink.com

Secretary Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708 dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342 martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635 lkpurchase@q.com

Carol Hasenberg (3 years) – 503/522-4249 csh727@comcast.net

Past Presidents:

Bo Nonn – 503/235-9135 bononn14@q.com

Janet Rasmussen – 541/760-7846 jkayerocks@yahoo.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249 csh727@comcast.net

Website Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen – 503/939-6003 shealf@viclink.com

North American Margin

June 9, 2017, lecture from the GSOC Calendar

Dr. Hammond received his geologic training at four universities—Brown University in Providence, RI, University of Colorado at Boulder, UCLA, and University of Washington at Seattle. He was introduced to the Pacific Northwest mapping for the Northern Pacific Railway. He taught geology at PSU for 31 years, retiring in 1994. After retiring he continued mapping in the Washington Cascades until 2004. Since then he has been completing his mapping reports and giving talks on geologic topics.

Two directions or forces at about right angle in the mantle have developed a network of structures in the W margin. The earlier movement, in the breakup of Pangea, is forcing NA to drift westward in enlarging the basin of the Atlantic Ocean and establishing a series of E-W striking faults in the margin. The younger movement, originating in the early Cenozoic, has developed thousands of north striking, earthquake prone faults scattered over the entire margin.

Thomas Condon

May 12, 2017, lecture from the GSOC Calendar

Bill Orr was trained as a geologist specializing in paleontology. Awarded his degrees from Oklahoma, California and Michigan, his career spans 50 years. In his 30 year career at the University of Oregon (1967-1997) he did two tours at the National Science Foundation as program officer and participated on the Deep Sea Drilling Project as shipboard scientist on three tours. He has written some 20 books on diverse subjects, including the standard references in the Pacific NW and Oregon on Geology and Paleontology. In 1982 he was appointed director of the Condon collection at UO and continues in that position today.

Thomas Condon, Frontier Missionary and Oregon's First State Geologist, came to the Oregon Territory in 1852 and soon became interested in its remarkable fossil assemblage. Collections made by paleontologists impart an enormous amount of information about the ideas and motives of the individual. Condon's personal collection of Oregon plant and animal fossils reflect not only his science but his travels and associates as well. Dr. Orr will examine these aspects of his life as well as the nature of his work and achievements.

GSOC Board Meeting Notes

April 15, 2017

President Rik Smoody called the meeting to order at the home of Paul and Peregrine Edison-Lahm. Board members present were Rik, Paul, Dawn Juliano, and Larry Purchase — two members short of quorum. Other members present included Dave Olcott and Peregrine.

EVENTS

Friday night lectures

Last night's lecture by Dr. Anita Grunder was a great success! We had over 90 in attendance, including members of the Association of Women Geoscientists, PSU students, and our Meetup outreach. We brought in $125 in donations and sales — and the speaker tore up her honorarium on stage! Also we collected a dozen emails from last night's new members.

Upcoming speakers: Dr. Orr will speak in May and Dr. Hammond in June.

Servicing broken digital projector: Dave has researched the potential costs for fixing the color problem with our projector and reports that shipping and repair would be upwards of $209. This discussion was tabled for a board decision at the next meeting.

Parking: Sheila has confirmed that free parking will not be reinstated by PSU. The convenience of parking for elder members was discussed and the consensus was that we need to do a better job of publicizing the availability and convenience of paid parking. Paul will make the maps and parking procedures more prominent on our website.

Snack committee (Marty) — discussion postponed.

Annual Banquet Recap

Gifts for outgoing President: Larry will research the process of getting the traditional hammer for the outgoing president. Dawn requested that a committee be formed to plan next year's banquet: Rik, Janet, Clay, Dawn were nominated. A planning committee is also needed for this summer's annual picnic, which by consensus will be in July. Dawn will investigate Mt. Tabor as a possible picnic site.

Field Trips

Downtown Tours: Paul has two Downtown Building Stone Tours planned for June 24th (South Tour) and October 7th (North Tour). Cris Morgante and Paul will be guiding — and any of our other past guides who are interested. Paul is working on creating website documentation of the two tours.

Quarry Tour: Larry is working with Bill Montgomery and will be doing reconnaissance with Bo. Tentative date is June 17.

Eclipse/President's Trip: We will be camping on private property in Mill City and exploring the Western Cascades, Friday to Monday (the eclipse is on August 21). Rik will be doing tour recon soon. He is waiting on owner to evaluate parking capacity before we announce attendance limits.

Johnson Creek Watershed Tour: Paul and Sheila are working with Johnson Creek Watershed Council for a September tour and science pub. Paul and Sheila will be doing more recon with Terry Tolan.

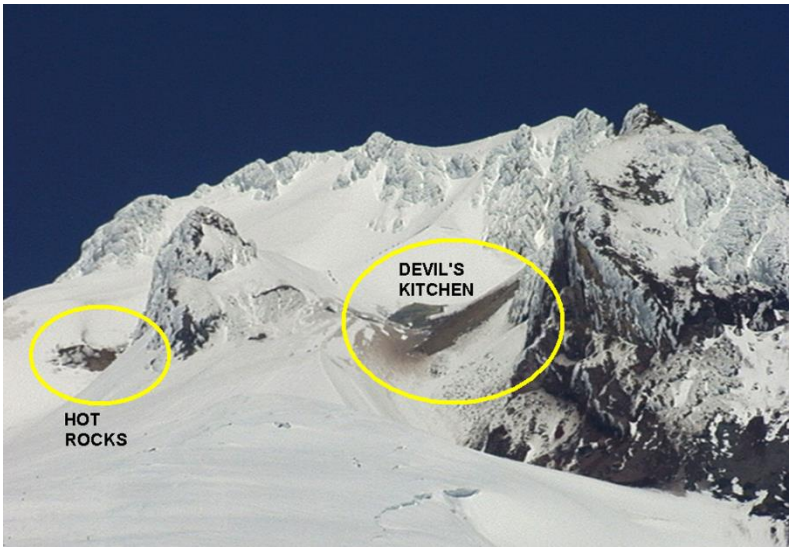
OLD AND NEW BUSINESS

Items from last board meeting were tabled until the upcoming May board meeting.

Next board meeting will be at Paul and Peregrine's on May 13, 2017, 10:00 a.m.

Cascade Geology

Synopsis of 82nd Annual GSOC Banquet talk given on March 12, 2017, with speaker GSOC Past President Bo Nonn, *continued from page 17*



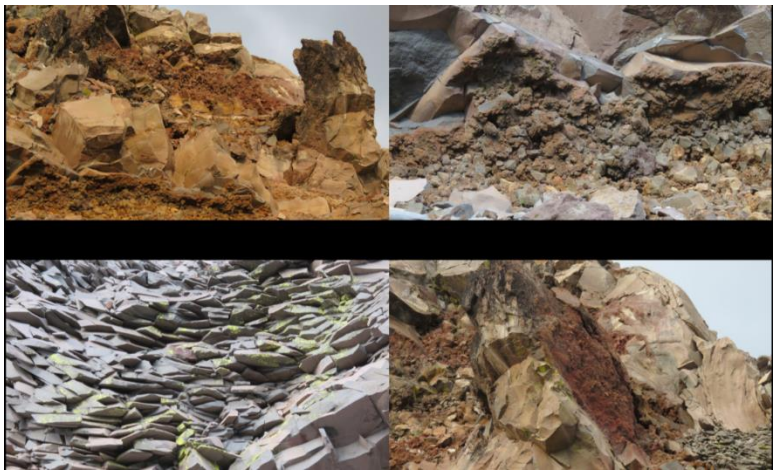
Mt. Hood—hot areas near Crater Rock.

Nonn's talk focused on the interaction of the geology and the climbing experiences of 19 Pacific Northwest peaks, 3 of which are not High Cascades peaks, but are interesting geologically (see map, pg 17). He began the talk by reviewing the process which produces the Cascade Mountains—the subduction of the Pacific plate under the North American plate. After showing the basic slide of subduction in the Pacific Northwest, he discussed how the composition of the magma producing the volcanoes can change, depending on how much melting of the continental crust occurs, mixing with the basaltic magma coming up from the subducting oceanic plate below. This is why the Cascade volcanoes were built from a variety of lava types, depending on the environment and pathways of the magma at the time it was produced.

Mt. Hood—Bergschrund (crevasse) up the Cloud Cap route.

Nonn began his talk with Portland's Guardian Peaks. First Cascade peak on the plate was of course Mt. Hood, the highest peak in Oregon and the closest to Portland. Nonn went through a few slides of the climb on the smooth south face route via Crater Rock to the top. There are not a lot of rocks showing in the typical climb because it occurs when the snow is present. More slides showed why this is so—the underlying material is barely consolidated debris which is probably frozen in place. No wonder as it was produced in the Old Maid Eruptions about 230 years ago. A notable except to the no exposed rocks rule occurs in two places—Hot Rocks and Devils Kitchen—where climbers have been known to be burned by the rocks. It's well to remember that Mt. Hood is an active volcano and these hot spots and sulfurous fumes they produce are there to remind you of the fact. Nonn does not recommend packing egg salad sandwiches in your lunch bag for the climb.

Nonn went on to describe the other sides of Mt. Hood. At the summit ridge climbers look nearly straight down to the north along the headwall of Eliot glacier and the greatly eroded north side of the mountain. To the east is Cloud Cap and Cooper Spur and another route up the mountain, which was probably more popular back in the day when there was a fixed line to the top. Nonn also showed a few slides of the GSOC field trip to the Eliot Glacier moraine from a couple of years ago. He also showed slides of what he believes to be a volcanic vent at Cloud Cap at about 1.5 million years in age. The western side which we Portlanders are all familiar with contains rock exposures up to 1.6 million years in age and is quite eroded.



Mt Hood—vent at Cloud Cap.

Nonn next took the banquet attendees to Mt. Adams, which is the second largest peak in Washington state. It is actually the third mountain that has been built on the site, and is a compilation of several peaks. The false summit near the top is one of the summit cones, and the real summit is another. The southeast climb up Mazama glacier is really spectacular. On the way up Nonn photographed some glacial striations in pyroclastic breccia and mountain goats. The base camp for the climb was located at toe of Mazama Glacier, in its terminal moraine. While trying to get a little shut-eye for the 1:00 am start, climbers are kept awake hearing large crashes in the nearby Klickitat Glacier Ice Fall. The next day the climb precedes straight up the glacier. Climbing the north side of Mt. Adams is very different. The climb goes up a rocky spur, and climbers continuously dodge rocks broken loose by their predecessors. It is not pleasant to climb.

Mt. Adams—top is overlapping craters.

Below: Mt. Adams—climbing the north side.

For the next peak Nonn tricked the audience by showing a slide and asking them if they knew where this mountain was. Of course it was a 1979 picture of Mt. St. Helens, which has changed quite a bit since then. Nonn climbed the mountain then and had some great pictures to show of the old mountain and Spirit Lake. In contrast to the lovely symmetrical cone of old, climbers now go up the south face on the lateral moraines of vanished glaciers to the truncated top of Monitor Ridge. Climbers

Mt. St. Helens—view to top in 1979.

Below: Mt. St. Helens—Rhyolite erupting out of the dome vent in 2006 forms "whalebacks".

are not allowed in the blast crater, and only 100 per day are permitted to climb to the top of the ridge. Nonn had some interesting slides of the changing appearance of the interior lava dome, as he has climbed the mountain multiple times since the 1980 eruption (1988 and 2006). Also, the walls of the crater provide a cross sectional view through the geology of Mt. St. Helens.

The GSOC audience were then treated to a brief stop on Mt. Jefferson, and Nonn started by showing a cross sectional slide of the stratovolcano, which has a huge basaltic pediment and a more silicic top cone. Nonn showed slides of the climb up the south ridge to the red saddle, skirting around the west face and up the north side of the summit ridge, which is eroded, steep and rocky. Jefferson is likely an extinct volcano, and has not erupted for thousands of years.

Nonn next described three other extinct volcanoes that are quite similar in their craggy appearance—Mt. Washington, Three Finger Jack, and Mt. Thielsen near Diamond Lake. Despite similarities of appearance, each climbing experience is different. Nonn described the summit of Three Finger Jack as "crumbly andesitic lavas and pyroclastics, barely held together by basalt dikes and sills." The very top is shaky underfoot. Mt. Washington, however, is capped by the solid andesitic feeder vent that makes a good climbing substrate. Looking south from both Mt. Washington and Mt. Thielsen one sees volcanic features that are quite young, right next to these extinct peaks.

Left to right: Three Finger Jack, Mt. Washington, and Mt. Thielsen.

In contrast to these aged peaks, the Three Sisters are proper, young mountains. As in Mt. Jefferson, South Sister sits on a Pleistocene basaltic pediment. The main andesitic/dacitic main cone is surmounted with a basaltic/andesitic summit cone, which was fed by a different conduit. Bimodal later eruptions (rhyolite and basalt) festoon the flanks of the cone. Volcanic bombs are a common sight on the climb. Nonn treated the audience to some vistas looking southeast and southwest from the South Sister climb showing various rhyolitic eruptions in the near distance. Looking down from the summit one sees a beautiful little blue lake perched in a depression in the glacier. Nonn went down to it once to fill his canteen and discovered that it was solid ice.

Middle Sister has a youthful conic appearance on its western side but the eastern side has been heavily eroded by glaciers, leaving a steep cliff at the top. Nonn has climbed up the east side on Hayden Glacier to the saddle which delimits the edge of the glacial erosion and thence to the top.

The North Sister has more glaciation than the others, as the lava supply got shut off about 100,000 years ago. Oddly enough there is a young shield volcano, Belknap crater, located directly to the north of North Sister. Collier Cone is very close to the mountain, and during the Little Ice Age, Collier Glacier butted up against the cone, but as the 20th century progressed the glacier retreated. GSOC Past President Ruth Keen took many of the glacial retreat photos of this area, archived by the Mazamas. North Sister is much more dangerous to climb than the other Cascade peaks due to erosion. Not only is the material very rubbly and loose, but there are some very steep areas that must be traversed.

Top: Youthful South Sister.

Middle: Middle Sister with climbing route marked.

Bottom: Climbing scary North Sister.

Heading south from the Sisters area one encounters one of the most picturesque of the Cascade peaks, Mt. McLoughlin. Its almost perfect conic profile is marred by some erosion on the northeast corner, exposing a pyroclastic core overlain by andesite flows.

Mt. Shasta in northern California is the second most active Cascade peak, and the most massive. It is a compilation of four different cones, with Shastina on the south side the most recent. Shastina by itself would be the third tallest Cascade peak. Because it is so far south its glaciers have only one-tenth the area of its rival Mt. Rainier to the north. Shasta's glaciers are also very responsive to snowpack. The north side is Nonn's favorite climbing route. The top is very young with pool of sulfurous water at top.

The Lassen Peak area, also in northern California, is active both volcanically and hydrothermally. The first peak to form in the area, referred to by Nonn as "Mt. Brokeoff," formed about 600,000 years ago but has since been eroded by glaciers and hydrothermal action to a remnant ring. Lassen peak itself is a dacite cone, and the only Cascade peak over 10,000 feet that is not a composite cone. Lassen Peak's last eruption was in 1915. Jagged black dacite lumps from the 1915 eruption can be seen near the top along the trail. The dacite was too pasty to flow down the mountain. Feldspar phenocrysts can be seen in the dacite rocks. Bumpass Hell is a nearby very active hydrothermal area. Colorful ashfall deposits are sprinkled about the numerous cinder cones in the park. Multimodal eruptions are also present—there are basalt eruptions as well as dacite.

Top: Mt. McLoughlin

Middle: Mt. Shasta—view from the freeway. Shastina is the peak on the right.

Bottom: Lassen Peak.

Mt. Rainier in Washington State is the tallest of the Cascade peaks and the one posing the most danger to human life, as lahars from previous eruptions have travelled as far as present-day Tacoma. The Nisqually climbing route on the south side of the peak is the route taking by many climbers. Nonn prefers to climb the northeast side on the Emmons glacier. It is a very steep route but you get a view of the sunrise. Only about half of the climbs on Mt. Rainier are successful, as the mountain tends to make its own weather and its size (14,000+ elevation) makes for a very long climb. The structure of Mt. Rainier is a bit different from the Cascade peaks to the south, as it is built upon granodiorite basement rocks rather than a pre-cone stage basalt pediment. The lava conduits lead up to two overlapping summit craters. Lots of hydrothermal activity in the craters create ice caves, which in the past have sheltered climbers. The hydrothermal activity increases the hazards posed by the mountain, because the weakened rock near the summit can trigger landslides without an eruption or earthquake to set it off.

Mt. Rainier—Nonn's favorite route is up the Emmons Glacier.

Below: Mt. Rainier—Hydrothermally altered rocks can fail, creating massive debris flows that can endanger nearby populations.

From Mt. Rainier onward, Nonn's talk started to diverge along a couple of different tracks. This is in keeping with the geology in Washington. The origin of Cascade peaks in Oregon is fairly straight forward – they're all volcanic and owe their origin to the subducting plate melting beneath, but not all the Cascade peaks to the north are even volcanoes. Nonn described mountains that were intrusive body remnants, mountains containing ophiolite sequences, and mountains formed by accreted terrain uplifting. All the peaks that Nonn himself has climbed. For this article we will finish with descriptions of three volcanic peaks north of Rainier that Nonn described in his talk.

Glacier Peak, just 70 miles from Seattle, is nevertheless almost completely hidden from the ground. It is tucked in between high mountain ridges. Nevertheless it is one of the most active volcanoes in the state of Washington, and ash from its several eruptions since the Pleistocene are used as dating markers similar to Mt. Mazama or Mt. St. Helens ash.

Majestic Mt. Baker is ice and snow covered, so it's hard to see the andesite rock underneath. The glaciers are heavily crevassed and difficult to climb. Sherman Crater not far below the summit became active in 1975 and contained a pool of hydrogen sulfide in meltwater that has since drained to the relief of those keeping tabs on its hazards.

Mt. Garibaldi is a Cascade peak in Canada, tucked into some lesser peaks. It is underlain by Jurassic plutonic complexes with a dacite peak forming above. Nonn's attempt to climb Garibaldi was not successful as the approach over the real Canadian ice field took too long. Instead, the weary hikers turned back down and headed into the setting sun.

Our thanks again to Bo Nonn for sharing these wonderful memories. All the photos from this article were by Bo Nonn.

Top: Glacier Peak.

Middle: Mt. Baker—Active Sherman Crater.

Bottom: Mt. Garibaldi in British Columbia

WELCOME NEW MEMBERS!

Peter and Tricia Guarisco
John Riutta
Tricia Knoll and Darrell Salk
Amanda Tumidalsky
Kate Ely

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907

The Geological Newsletter

News of the Geological Society of the Oregon Country

July/August 2017
Volume 83, Number 4

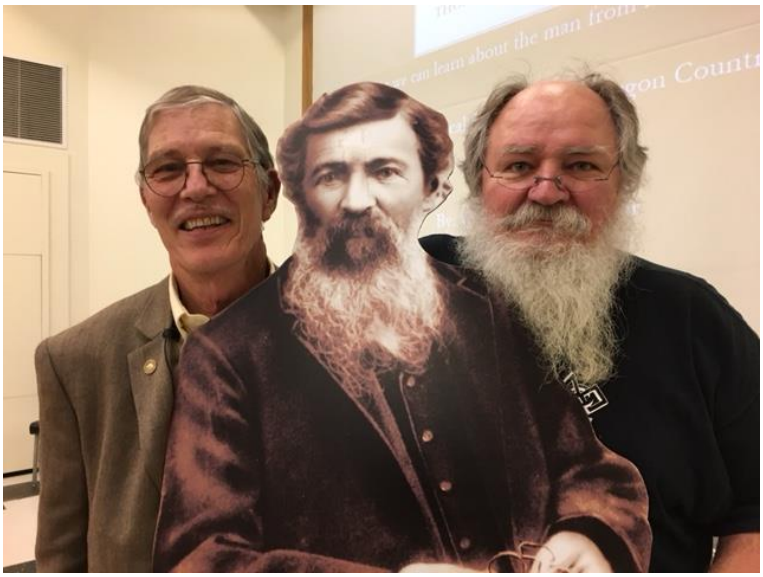
The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

Thomas Condon's Fossils

by Carol Hasenberg

Professor Emeritus and Condon Collection Curator Dr. William Orr spoke to GSOC on May 12 about Thomas Condon's fossils. This collection was assembled for teaching and reference and ranks with the best collections for stratigraphic continuity and taxonomic breadth. Many specialists from around the world come to the University of Oregon to study its fossils.

see Condon's Fossils, Page 32



Thomas Condon with his pals Bill Orr (left) and Rik Smoody (right).

Calendar

Friday Night Lecture

September 8, 2017

There will not be a GSOC Friday Night Lecture in July or August. September speaker Frank Hladkey will present "Getting the Science Right--Teaching and Doing Geology in Southern Oregon".

GSOC Annual Picnic

July 16, 2017, 12:00 noon – 3:00 pm, Rasmussen Farm in McMinnville

GSOC Annual Picnic is open to GSOC members and their guests. It will be held at a private farm in McMinnville.

see GSOC Annual Picnic, pg 30, and GSOC website, www.gsoc.org, for more information and updates

GSOC President's Field Trip

The Eclipse! and More, August 18-21, 2017

This field trip, organized by GSOC President Rik Smoody, will focus on the geology of the Cascades and will culminate in the total eclipse of the sun on the morning of August 21. It will be held at a private property in Mill City, Oregon.

see PFT, page 30, and GSOC website, www.gsoc.org, for more information and updates

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Free parking is no longer available at Portland State University. Hourly rates for parking are available in some parts of PSU parking structures. PSU Parking Structure #2, 1724 SW Broadway across from Cramer Hall is $5.00 flat rate in the evening. Park in permit (NOT reserved) spaces and pay at the kiosk by entering your vehicle license number. There is also on street pay parking, and many mass transit options. More info available here.

2017 - 2018 Administration:

President Rik Smoody – science@smoo.com

Vice-President Sheila Alfsen – 503/939-6003 shealf@viclink.com

Secretary Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708 dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342 martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635 lkpurchase@q.com

Carol Hasenberg (3 years) – 503/522-4249 csh727@comcast.net

Past Presidents:

Bo Nonn – 503/235-9135 bononn14@q.com

Janet Rasmussen – 541/760-7846 jkayerocks@yahoo.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249 csh727@comcast.net

Website Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen – 503/939-6003 shealf@viclink.com

GSOC Annual Picnic

July 16, 2017, 12:00 noon to 3:00 pm

This year's GSOC picnic will be held at the farm belonging to GSOC Past President Janet Rasmussen and her husband Doug Rasmussen. It is open to GSOC members only. It will be held at 5401 NE Riverside Drive, McMinnville, Oregon. If you are coming, bring $5 a head to offset production costs, your favorite picnic chair, your favorite beverage and a side dish or dessert. Janet will be providing hamburgers and veg hamburgers, buns and condiments. Games will include croquet and billiards.

President's Field Trip (PFT)

August 18-21, 2017

This trip will harken back to the good ol' days when they called them the President's Camp Outs. Participants will stay on the private property of a GSOC member in Mill City. We will be enjoying the fascinating local geology with limited amounts of driving. We may visit hot springs and swimming holes – both products of the area's outstanding geology – so pack your swimming suits. Also your hiking boots, sunscreen and bug spray. Onsite accommodations will be tent camping only. Motel rooms will be extremely scarce in the areas near the path of the total eclipse on Monday morning.

Cost of the trip will be $80 per head and participation is limited to 48 GSOC members and 12 cars. Tents and meals will not be provided so participants need to bring their own food, tents, bed rolls, eclipse observation gear, etc. Porta potties will be provided. Registration will be available online soon, so check the GSOC website frequently in the next two weeks for the signup page.

GSOC Field Trips are limited to GSOC members and their guests. Please register as a GSOC member if you wish to participate.

GSOC Board Meeting Notes

May 13, 2017

President Rik Smoody called the meeting to order at the home of board member Marty Muncie. Board members present constituting quorum were: Rik Smoody, Sheila Alfsen, Dawn Juliano, Paul Edison-Lahm, Larry Purchase, Marty Muncie, and Bo Nonn.

Also present were Dave Olcott and 187 antique dolls. The minutes from our May meeting were approved. The Treasurer's report was approved.

EVENTS

Friday night lectures

Greeting committee: thanks to everyone who helped in welcoming new the Meetup attendees last night at Pizzicato and afterwards. The printed Meetup list is very helpful for this, so Larry will ask Wes to provide him with the list of Meetup attendees before the lecture.

Upcoming speakers: after a two month break for July and August, Sheila has speakers lined up through the fall.

Projector servicing: Dave estimates $300 for servicing and will proceed with servicing unless the cost is greater.

Carol Hasenberg's proposal for purchase of an Audio 2000s Dual Channel Wireless Portable PA System (link here.) was approved. The portable PA system can be used at our meetings or in the field.

Snack committee: Marty is looking for more snack providers for the Friday night meetings. This is a great volunteering opportunity for new members.

83rd Annual Banquet

2018 Speaker: Rik has not had time to take action on this yet.

Hammer: Larry will take it to Bart's engraver.

Field Trips

Downtown Tours: Paul has two Downtown Building Stone Tours planned for June 24th (South Tour) and October 7th (North Tour).

Eclipse/President's Trip: We will be camping on private property in Mill City and exploring the Western Cascades, Friday to Monday (the eclipse is on August 21). There will be room for at least 12 cars, so trip will be capped at 48 people and car pooling will be required. Total price will be $80 and registration will be open as soon as possible. Porta potties have been ordered. Bring swim suits for river swimming. Rik will order sun goggles. Tentative plans for Saturday include focussing on hydrology and biology. Rik is looking for a geological expert and working on "Plan B" for Sunday to minimize use of roads.

Johnson Creek Watershed Tour: Terry Tolan has been tremendously helpful in researching the trip, however given the lack of suitable outcrops, it's unclear whether this can be wrestled into a field trip by September. Sheila and Paul will keep working on it with Terry and may need to branch out geographically beyond the watershed in the East metro area.

Helicopter tour of Mt. St. Helens: Sheila reports that she is still looking into the possibility of having this trip and will report back later.

Camp Hancock/John Day trip: Paul proposes a trip centered on a stay at Camp Hancock for 2018.

GSOC Picnic

The picnic will be held at Doug and Janet's farm on July 16 and will only be open to GSOC members. There will be no speaker.

BOARD MEETING NOTES

continued from Page 31

OLD AND NEW BUSINESS

Communications Report: Paul ran a $20 Facebook event boost for June's lecture and will run several $20 lecture event boosts in the Fall and report back on how successful the response is. Bo will look into putting up a GSOC poster in the PSU geology department.

Bylaws: Janet's proposal to change "Junior" member to "Student" was approved by the board. [Paul will recirculate the amended bylaws.]

Membership Committee: Paul circulated a volunteer sign-up at the meeting and suggested that we need a better system for organizing volunteers.

Member Database Committee (Paul/Janet/Rik/Peregrine):

- Rik will be working on the spreadsheet cleanup and will spearhead further action.
- Database software research: Paul has proposed MemberPlanet member management software at $300/year, but a consensus did not emerge for pursuing this further.

The next board meeting will be on the President's Field Trip, Sunday August 20, after dinner at Dennis Chamberlin's. The October 14th board meeting will be at Marty's.

Notes compiled from board meeting minutes submitted by GSOC Secretary Paul Edison-Lahm.

Condon's Fossils

Synopsis of the GSOC Friday night lecture given on May 12, 2017, with speaker Dr. William Orr, curator of the Condon Collection, continued from page 29

Thomas Condon, 1822-1907, Frontier Missionary and Oregon's First State Geologist, came to the Oregon Territory in 1852 after a childhood spent in County Cork, Ireland and New York State. He quickly became interested in the fossils to be found around the state of Oregon. In the course of his lifetime he lived in St. Helens, Forest Grove, Grand Prairie, Albany, Grande Ronde, The Dalles, and Eugene. His fossil collection contained over 100,000 marine and terrestrial fossils, and it was sold to the University of Oregon in 1907 for $15,000. No exact dollar figure is attached to it today – it is not insured because it is simply irreplaceable.

Condon collected fossils from all over the state of Oregon, but he collected more fossils from areas where they were more abundant. Each locale had fossils particular to the age and environment that is represented in its fossiliferous strata. These include the Willamette Valley with its Ice Age mammals, the John Day Basin with its early and middle Tertiary animals and plants, the marine fossils and exotics of the Wallowa mountains, late Tertiary mammals of Eastern Oregon basins, Ice Age lake fossils, and marine fossils of the Klamath Mountains and the Oregon coast. Condon color coded and numbered his fossils according to the age of the fossil--Paleozoic, Mesozoic, Tertiary, and Pleistocene. This coding, painted right on the fossils, came in handy when Orr needed to identify the collection from a storage area where the collection was mixed with other fossils, enabling Orr to rescue some 95% of the collection when the University of Oregon was ready to house it in the storage and research area that was built on campus.

Bill Orr, a biostratigrapher, is concerned how fossils tell us about the environment or the age they lived in. He often has been involved with biodating strata according to the fossils found in it and has found the Condon collection very useful to this endeavor. He explained that there were some characteristics of the collection that made it extra valuable. For example, if one considers that animals may look very different in different stages of their lives, and males and females of the same species may also differ in looks, then to be valuable in identification the collection will not only need the HOLOTYPE, or paragon, of any

species but the PARATYPES, or other less stereotypical forms of that species. Condon was conscientious of collecting male, female, and juvenile versions of any fossil species.

Orr then discussed other ways in which fossils are used to identify species and the value of the Condon collection to these situations. Often only a small part of an animal survives the burial and fossilization process and a trained fossil expert will look for these PARATAXONS to identify and indicate the presence of certain animals in the fossil record. Orr gave the examples of stem segments of crinoids, the boney ossicles armoring the hide of the giant Harlan groundsloth, mastadon molars and shark's teeth. Parataxons are also used to extrapolate the appearance of an entirely new species from a tooth or other fragment of the creature; however, this process can be misleading in some cases. Orr gave an example from the collection of a distant cousin to horses and rhinos called a Chalicothere, where paleontologists gave it feet like those of a rhino, but it is believed now to have had huge claws.

Crinoid stem section from the British Geological Survey website. This site has some very good fossil descriptions. In the Middle Ages in England these fossils were given names based on their shapes from St. Cuthbert's beads to fairy money.

Orr then gave examples of fossil animals that carries its younger self with it, as it grows to maturity. Ammonites (extinct sea creatures resembling the chambered nautilus) grow outward from their center and always look like ammonites. Other animals go through the process of ECDYSIS, or molting--some creatures grow by shedding a potential fossil behind. Trilobites are great examples of creatures whose stages produce another segment.

TAPHONOMY, or the history of the fossil from the creature's death to discovery, also can tell paleontologists a great deal about the environment which produced the fossil. Condon took great care to record evidence of the taphonomy of his fossils.

Condon dated his fossils from comparing with guide fossils in the literature. Rodent fossils are good GUIDE FOSSILS for their cheek teeth, which are hard and fossilize well, and the creatures undergo rapid evolution. Ants bring up the cheek teeth and put them on top of their hills.

Orr wrapped up the talk by discussing one of the most useful and famous fossils of the Condon Collection. The humble Venericardia, a thick-shelled clam, is a FACIES FOSSIL, or one only found in specific environments. Researchers used this characteristic to connect the dots to find the shoreline of Oregon during the Eocene.

Venericardia homii

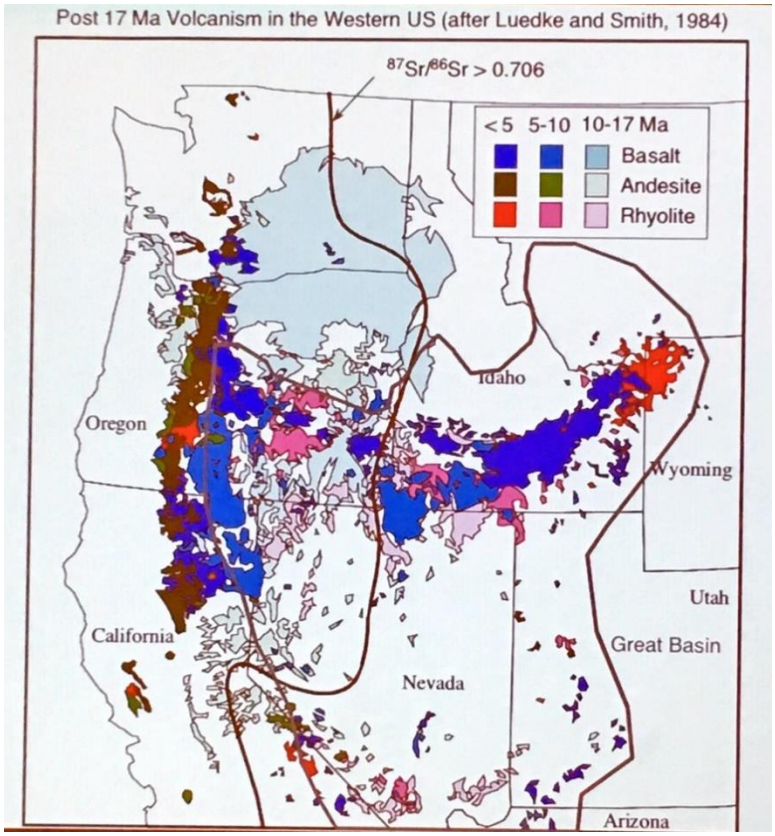
Thick shelled clam from the Eocene that delineated the shoreline of ancient Oregon. From "Fossil Localities of the Eugene Area, Oregon," by Margaret L. Steere, Published in the Ore Bin, Volume 20, Number 6, June 1958. This publication is available online on the DOGAMI website.

ADDITIONAL READING

View some of the fossils of the Condon Collection at the University of Oregon's Museum of Natural and Cultural History.

New Info on the Origin of Bimodal Volcanism on Oregon's High Lava Plains

Synopsis of the GSOC Friday night lecture given on April 14, 2017, with speaker Dr. Anita Grunder, Professor and Associate Dean for Academic Programs in the College of Earth, Ocean and Atmospheric Sciences, Oregon State University



Volcanism illustration used in the lecture. Recent basalts are shown in a darker blue, and recent rhyolites in red. Older outcrops are faded in color. Miocene flood basalts are light blue. The browns are the andesite lavas mostly found in the Cascade Range.

April's Friday night lecture was given by a truly distinguished Oregon geologist and highlighted recent research into an area that has long intrigued geoscientists about Oregon. Dr. Grunder has led a team of researchers, including PSU's Martin Streck, exploring the possible origin of the magma that has peppered Oregon's High Lava Plains geologic province in the last 12 million years. This magma includes both rhyolite and basalt eruptions in a swath of territory between Steen's Mountain region to the southeast and Newberry Volcano to the northwest.

The High Lava Plains (HLP) is a geographic area of low relief that is paved by basalt. It is separated from the Snake River Plain that extends into Idaho by the Steens escarpment. To the south of the HLP lies the northwestern region of the Basin and Range Province. The HLP contains episodic eruptions of silicic rhyolite magma that get progressively younger to the west. Some of the more well known of these eruptions include the Devine Canyon Tuff (9.63 ma), the Rattlesnake Tuff (7.09 ma), the Hampton Tuff (3.80 ma), and the eruptions from Newberry Volcano (fairly recent). Also peppered along this track of rhyolite is a track of basalt eruptions that are not time-trending but occur in pulses across the province.

Further muddying the waters is a track of basalt and rhyolite that is time-trending in the opposite direction from the Steens region east across Idaho and culminating today in the Yellowstone Volcano. It is believed by many

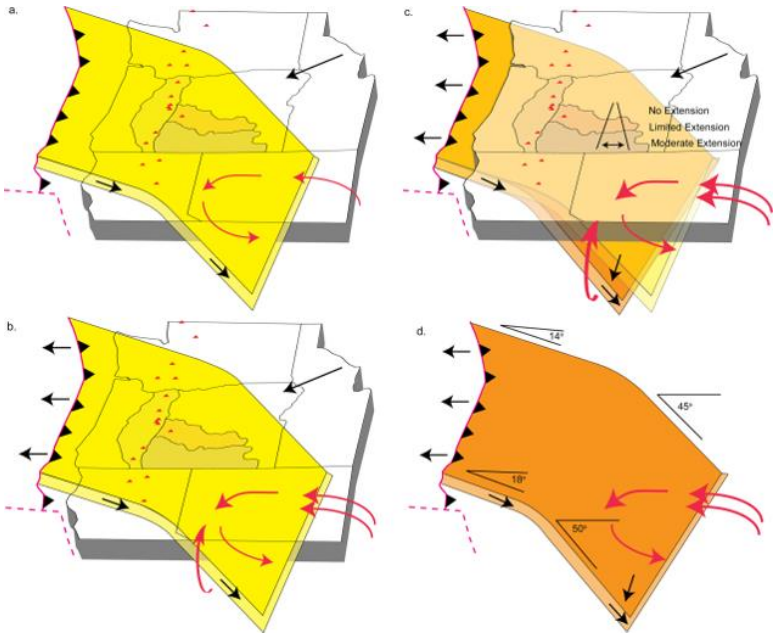
geoscientists that this track, originating with the Steens and Columbia flood basalts in the Miocene, is the result of a magma plume over which the North American tectonic plate is travelling. This volcanic system is known as the Yellowstone-Snake River Plain volcanic system (YSRP). And yet a further complication is the Cascadia Subduction Zone to the west, creating the Cascade Mountains, and the oceanic plate subducting below the Cascade Range and points east.

So the picture of volcanic trends originating at Steens Mountain is a bit confusing, and geoscientists have long grappled with an explanation for the HLP track of volcanism trending in nearly the opposite direction from the main track of YSRP volcanism.

In steps Grunder's group to the fray. A big help in resolving some questions about the makup of the crust was a very dense array of seismometers emplaced by the many students employed in the HLP project. In addition to the crustal imaging made available by the array, the group took many samples of the basalt and rhyolite with which to analyze and compare with samples taken from other volcanic systems, including the YSRP, the Columbia River Basalt Group, the Cascades (North, Central, and South), and mid oceanic ridge basalt.

The chemical analysis of the HLP basalts were particularly insightful. They were like slightly enriched mid-oceanic ridge basalts in composition, typical of basalt originating from deep inside the mantle. They did not resemble either the Columbia River Basalt, Cascade Range or YSRP basalts. Accordingly Grunder's group surmised that there is an upwelling of asthenosphere right under the continental crust and subducting plate in this region.

The team still needed an explanation of the progression of the rhyolite magmas westward. The geoplacement of the eruptions plus the construction and analysis of various models of upwelling produced by various configurations of the subducting plate led the group to conclude that the oceanic crust subducting under the HLP is progressively steepening and the southeastern corner is tipping downward, allowing deep mantle magma to flow around it and up under the North American continent, where it erupts onto the surface in the HLP.



Schematic models (nearly to scale and with approximately no vertical exaggeration) of the processes that drive mantle upwelling and counterflow as a result of the subducting Cascadia slab. Plate motions are shown with black arrows and mantle flow with red arrows. Red triangles are the current day locations of Cascade volcanoes and the Cascades, HLP, and NWBR physiographic provinces are outlined (Figure 1). The position of the trench and transform faults (red dotted line) are also shown. (a) Limited corner flow associated with downdip motion only, before trench rollback commenced. (b) Slab rollback initiates a much stronger mantle flow as North America continues to advance on the trench. (c) The addition of slab steepening due to the southern edge of the slab being unsupported can further enhances this flow, which is concentrated under the HLP. Differing extensional rates in the continental slab (crustal factors) may also play a role in the volcanic expression. The current geometry of the Cascadia slab is shown in orange. (d) Simplified version of Figure 7c showing the current Cascadia slab only. Angles given are approximate and taken from McCrory et al. [2012] and Roth et al. [2008] and the slab steepens markedly at the volcanic front (~100 km depth) [Pavlis et al. 2012]. FROM
Bimodal volcanism of the High Lava Plains and Northwestern Basin and Range of Oregon: Distribution and tectonic implications of age-progressive rhyolites from Geochemistry, Geophysics, Geosystems Volume 14, Issue 8, pages 2836-2857, 8 AUG 2013 DOI: 10.1002/ggge.20175
http://onlinelibrary.wiley.com/doi/10.1002/ggge.20175/full#ggge20175-fig-0007

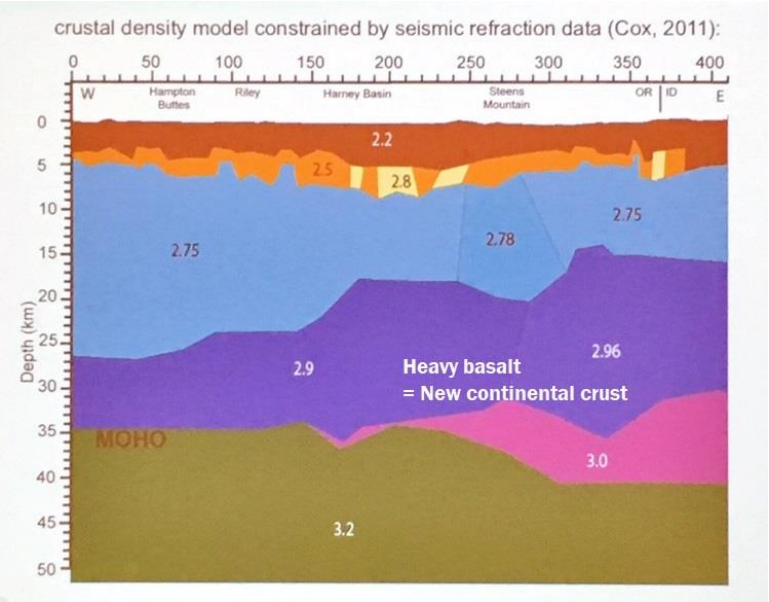


Illustration of crust model used in the lecture. Numbers shown in the crustal layers are the specific gravity found therein.

The HLP basalts tested from various times have characteristic compositional groups, but all can be created from same source, i.e., the upwelling mantle magma. The basalt mixes with crust, and sits and gets loaded with more basalt below. Crystal fractionization occurs in the magma chambers, producing both basalt and rhyolite lavas which erupt separately. As the researchers test progressively westward towards Newberry Volcano, they find that the younger westward rhyolites become more basaltic. Also the basalts get more silicic as crust is being added to the basaltic magma over time. Grunder believes that this may be a similar mechanism to that of early continental growth.

But wait, they're not done yet! What should happen to the crust when you add all this basalt below? It sinks! The HLP group checked out the density using seismic wave analysis, and it does indeed. Using the imaging from the seismometer array, the group produced a crustal density model which includes a huge amount of material with basalt density at the base of the continent, showing all the basalt magma which is being added to the continent; a mechanism of continental growth. So in addition to explaining the origin of the magma, the group has weighed in on the question of whether the continents can grow or the amount of continental crust is constant over time.

ADDITIONAL READING

"Bimodal volcanism of the High Lava Plains and Northwestern Basin and Range of Oregon: Distribution and tectonic implications of age-progressive rhyolites," by Mark T. Ford, Anita L. Grunder, Robert A. Duncan, First published August 8, 2013, Available online at AGU Publications website.

"The Oregon High Lava Plains: Proof against a plume origin for Yellowstone?," by Brennan T. Jordan, Earth Sciences Program, University of South Dakota, and published on website MantlePlumes.org.

The above references are technical in character. If the above article assumes much more about geology than you are familiar with, then you would be advised to read the following references:

Oregon Geology (2012 edition) by William and Elizabeth Orr is a great introduction to the geophysical provinces of Oregon. Also, the introductory chapter of *Roadside Geology of Oregon*, second edition, by Marli Miller has a good, brief introduction to Oregon geology and the rest of its contents may spur you to do some exploring of our great state on your own.

WELCOME NEW MEMBERS!

Crystell Wise
Julie Demaree
Amber Kelleher
Kathy Fieldstad
Pat Martinelli
Maura Doherty
Steven Van Beek
Piyawee Ruenjinda
Bill Burgel
Tom Grant
Kathleen Stokes

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907

The Geological Newsletter

News of the Geological Society of the Oregon Country

September/October 2017
Volume 83, Number 5

The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

The Great Eclipse Camp-Out

by Carol Hasenberg

Twenty four GSOC members and their guests made it to the camp-out in Mill City, Oregon, hosted by GSOC member Dennis Chamberlin, and led by GSOC President Rik Smoody. The purpose of the field trip was to get a bunch of science-minded individuals together to observe one of the most accessible eclipses of this century, and enjoy a bit of geology and camping.

See Eclipse, Page 41

Dazzling photo of the August 21, 2017 total solar eclipse by GSOC field trip participant and member Charles Montross.

Calendar

Friday Night Lecture

September 8, 2017, Cramer Hall, Portland State University

Speaker Frank Hladkey will present "Getting the Science Right--Teaching and Doing Geology in Southern Oregon".

see Teaching Geology, pg 40

Mt. St. Helens Helicopter Tour

September 9, 2017, 10:00am

GSOC will host a one-day helicopter field trip of Mt. St. Helens, based at North Fork Survivors Gift Shop, 9745 Spirit Lake Hwy 504, Toutle, WA (about milepost 20.5).

see MSH, page 40, or the GSOC website, www.gsoc.org, for more information

Downtown PDX Geology Tour

Saturday, October 7, 2017,1:00 - 3:30 pm, in front of the Pioneer Courthouse (6th Ave side) 700 Southwest 6th, Portland

GSOC presents "Ancient Walls 2" walking tour of our city's buildings. Open to public, children under 12 must be supervised. Fee $10. This tour will focus on the north side of the downtown area.

see GSOC website, www.gsoc.org, for more information

Calendar is continued on page 41.

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Free parking is no longer available at Portland State University. Hourly rates for parking are available in some parts of PSU parking structures. PSU Parking Structure #2, 1724 SW Broadway across from Cramer Hall is $5.00 flat rate in the evening. Park in permit (NOT reserved) spaces and pay at the kiosk by entering your vehicle license number. There is also on street pay parking, and many mass transit options. More info available here.

2017 - 2018 Administration:

President Rik Smoody – science@smoo.com

Vice-President Sheila Alfsen – 503/939-6003 shealf@viclink.com

Secretary Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708 dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342 martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635 lkpurchase@q.com

Carol Hasenberg (3 years) – 503/522-4249 csh727@comcast.net

Past Presidents:

Bo Nonn – 503/235-9135 bononn14@q.com

Janet Rasmussen – 541/760-7846 jkayerocks@yahoo.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249 csh727@comcast.net

Website Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen – 503/939-6003 shealf@viclink.com

Teaching Geology

September 8, 2017, 7:30 to 9:00 pm

Frank Hladky, Oregon Registered Geologist and Geology Instructor will discuss "Getting the Science Right: Teaching and Doing Geology in Southern Oregon." Teaching geology to youth requires clarifying the philosophy of rational thought. Geology, like other sciences, relies on evidence to substantiate interpretations. Utilizing vignettes from geological field studies in southern Oregon, Mr. Hladky shows how multiple lines of evidence leads to an understanding of the natural world with greater clarity.

MSH Helicopter GeoTour

September 9, 2017. Registration deadline is September 1.

The helicopter tour of Mt. St. Helens is approximately 40 minutes of spectacular scenery as you fly over both the devastated area from the 1980 eruption and the crater itself. An educational presentation by GSOC VP Sheila Alfsen will precede your tour so that you can recognize and interpret the landscape in light of the greatest volcanic event in recorded U.S. history. In addition to Alfsen's thorough presentation, the pilot will point out places of special interest on the ride. Presentation begins at 10 am and flights will start leaving at 11.

The helicopter holds 3-4 people besides the pilot. The pilot will arrange the passengers according to his guidelines, but an effort will be made to keep couples and members with visitors together.

Plan accordingly for the weather. Wear comfortable clothes and shoes, bring a sweater as it is cooler up in the air than it is on the ground. Bring your camera and binoculars if desired. Wear sunscreen.

Hillsboro Aviation is interested in your satisfaction, so if the weather is too cloudy to get a good view, we will cancel and your money will be refunded. Sheila will consult with your pilot the day before we fly, and if he feels a weather cancellation is in order, you will be notified by email. Check your email before you head out on Saturday. If you have questions, call Sheila at 503-939-6003.

Please note: this trip is for GSOC members and their guests only.

GSOC Board Meeting Notes

August 2017

President Rik Smoody cancelled the August board meeting due to lack of quorum. We'll report on the next board meeting in the November/December newsletter.

A mistake was noted in the July/August newsletter in that the board meeting reported should have been June 10 and not May 13.

The Geological Newsletter Editor

Calendar, cont.

Friday Night Lecture

October 13, 2017, Cramer Hall, Portland State University

Speaker Jason McClaughry will present "Volcanism, Sedimentation, and Tectonism in the Middle Columbia Basin, North-Central Oregon".

See McClaughry, pg 41

McClaughry

October 13, 2017, 7:30 to 9:00 pm

Jason McClaughry is the Eastern Oregon Regional Geologist, Earth Science Section Supervisor, and coordinates the statewide geologic mapping program for the Oregon Department of Geology and Mineral Industries (DOGAMI). He has worked extensively across the state mapping and researching a number of volcanic provinces. Jason holds a M.S. degree in Geology from Washington State University and a B.S. degree in Geology from the University of Puget Sound.

The Middle Columbia Basin of north-central Oregon lies across the axis of the High Cascades volcanic arc, stretching from Cascade Locks east to Biggs and southward from the Columbia River to Tygh Valley. Ongoing Geologic mapping in the basin by the Oregon Department of Geology and Mineral Industries is providing new insight into the middle Miocene to present volcanic and structural development of the region. This talk will summarize local Columbia River Basalt Group stratigraphy, discuss new geochemical data and geochronologic constraints on late Miocene to Pleistocene Early to Late High Cascades Volcanic Rocks, and characterize the major structural trends in the region.

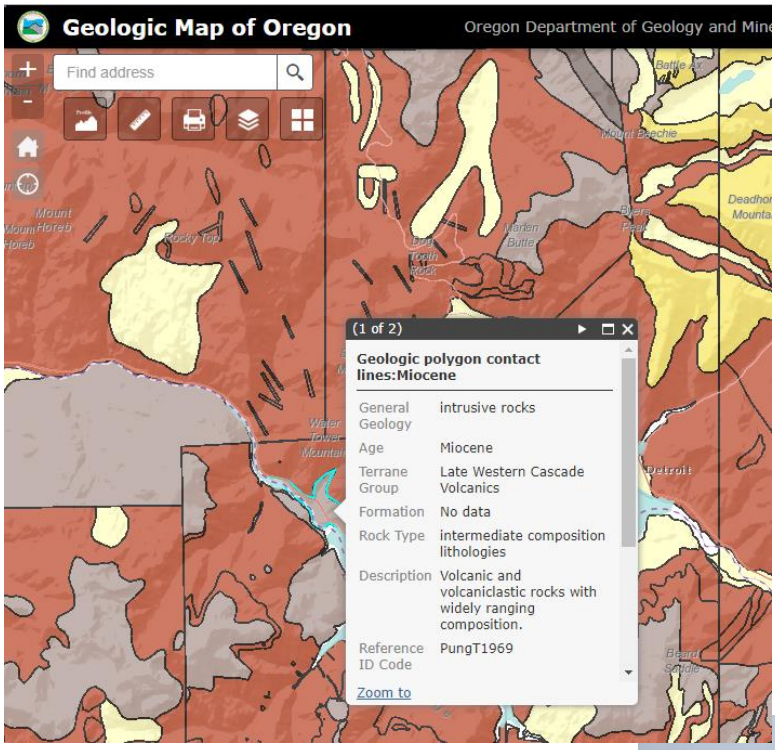
GSOC First Lady Barbara Smoody demos one use of the spigot setup.

Eclipse

Synopsis of the GSOC President's Field Trip, by Carol Hasenberg, continued from page 39

Campers started to arrive at the Chamberlin residence along the Santiam River in Mill City on Friday evening. The site was perfect for a campout. The host had rigged up a really nifty spigot system for the garden hose so the campers had access to water. GSOC provided the porta-potties.

Saturday traffic was not expected to be unreasonable, so President Smoody had planned a fun round trip tour to view some of the local geology in the Santiam Pass to McKenzie Pass area. Unfortunately the local fires dictated a shortened version of this, but the stops were still very interesting and did contain the prerequisite drive on at least one gravel road as required in the GSOC bylaws (just kidding!). The stops were (in order): Detroit Dam, Lost Lake, Metolius Spring, Little Nash Crater, Clear Lake, and the Sahalie and Koosah Falls trail.



At Detroit Dam a couple of members opened some rock samples, and we were trying to decide whether the small white crystals in the surrounding grey matrix indicated whether we had extrusive or intrusive bedrock here. So, I looked up the site on the DOGAMI online interactive geology map (www.oregongeology.org/geologicmap/) and sure enough it says intrusive.

The best group picture of the weekend was taken at Lost Lake. Participants left to right are Jamie Meinecke, Taka Matsuda, Bailey Faber, Ken Severin, Dawn Juliano, Clay Kelleher, Cecily Cedilote, Barbara Fischer Smoody, Steve Haar, Charles Montross, Mark Anderson, Julia Lanning, Bill Stein, Susan Cole, Carol Hasenberg with her dogs Lucy and Trinity, Serena Skaates, Rik Smoody, Henry Rosales, Larry Jordan

Next the caravan drove to Lost Lake, and we were able to view one of the lava tube holes that drain the lake in action. The rangers we encountered there told us that the water in the lake travels for several years through underground lava tubes and fissures to end up in Fish Lake, then Clear Lake on the McKenzie Pass Highway. This was a very fun sidetrip and well worth the viewing.

Then the GSOC group traveled across the pass to the base of Black Butte, where the Metolius River springs forth from the ground.

The GSOC caravan next visited Little Nash Crater, a cinder cone that is currently being mined by ODOT for views of a weird moonscape and a cool view of the US 20/OR 22 intersection and the highway department maintenance depot. The forest fire haze ensured that we could see little beyond the immediate area.

Coming down from the heights, the group proceeded south down Oregon Highway 126 to Clear Lake. This beautiful spot collects the water we viewed at Lost Lake. Going farther south, the group then hiked alongside the McKenzie River to view Sahalie and Koosah Falls. The water was falling strongly through those features.

GSOC member Charlie Montross observes water draining from Lost Lake. Note the hazy background created by the forest fires in the Mt. Jefferson area.

GSOC members Charlie, Julia, and Mark perform a little hocus pocus in the taking of this panorama shot at Little Nash Crater.

On Sunday the GSOC group did not have a formal activity, but with such great surroundings at least two hiking groups formed to explore nearby trails. Others found peace and rest along the Santiam River at the campsite.

Then the big day arrived, Monday August 21. The eclipse was due to start around 9:00 am, with totality at 10:17. Prior to this we assembled and tested our solar protective viewers, cameras, and other equipment. During the partial phase we observed the changes we saw and felt, and were expressed in nature and manmade experiments. For example Clay discovered that a colander makes a pretty good camera obscura for inverting the image of the partially eclipsed sun.

For many of us this was the first total solar eclipse that we had witnessed, and the sight of this one did not disappoint; it was jaw-dropping. In addition to the corona, one could view solar flares along the disc with the naked eye. It was two minutes that passed by amazingly swiftly.

Pass by it did, though, and in the aftermath we were faced with the tasks of clearing camp and driving home through the traffic jam I have decided to dub the Post-Eclipse Apocalypse. But eventually we were home safe and sound.

Top: GSOCers view the partial phase of the eclipse through glasses.

Middle: The colander camera obscura.

Bottom: Another fine shot of the eclipse by Charles Montross.

Future Solar Eclipses in Oregon

by Clay Kelleher

I thought this might be of interest. We will never see another total eclipse unless we leave Oregon. The following website has links to small scale world maps, each showing paths all eclipses in a chosen 20-year interval, with the date of each:

https://www.eclipsewise.com/solar/SEatlas/SEatlas.html#3CE

If the above website yields a date you are interested in, use the following url with the exact date substituted for yyyymmdd. This will display a Google map with the eclipse path that you can zoom in on:

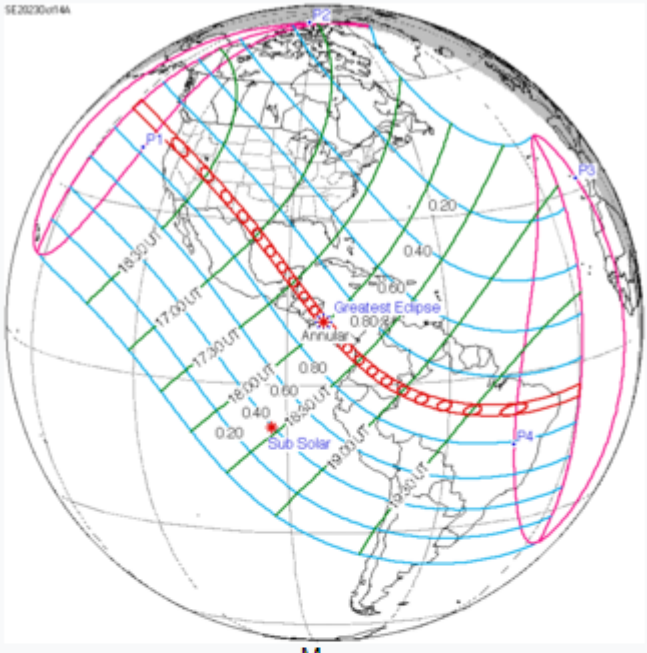
https://eclipse.gsfc.nasa.gov/SEsearch/SEsearchmap.php?Ecl=yyyymmdd

Using these I learned the following. There will be an annular eclipse visible over about a third of Oregon in 2023, but that's just a weirdly shaped partial eclipse, fun to watch through your eclipse glasses, but lacking the awe of totality. Refer to the Wikipedia illustration of this eclipse on the right. To see another total eclipse in the US "lower 48", there will be a path from Texas to Maine in 2024 and another one from northern California to Florida in 2045.

The next total eclipse visible anywhere in Oregon will occur as the sun is setting on Oct 5, 2108, visible on a thin zone along the coast from about Yachats to Taft. Our great great grandchildren can enjoy that if the weather cooperates. Other future eclipses will catch corners of the state in 2254, 2317, and 2345.

Future Oregonians will have to wait until 2618 and 2744 for total eclipses visible in the Willamette Valley. Each will have broad paths of totality covering about 2/3 of the state.

Solar eclipse of *October 14, 2023*



Map

Type of eclipse	
Nature	Annular
Gamma	0.3753
Magnitude	0.952
Maximum eclipse	
Duration	317 sec (5 m 17 s)
Coordinates	11.4°N 83.1°W
Max. width of band	187 km (116 mi)
Times (UTC)	
Greatest eclipse	18:00:41
References	
Saros	134 (44 of 71)
Catalog # (SE5000)	9560

WELCOME NEW MEMBERS!

Christina Sells
Taka Matsuda
Jamie Meinecke

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907

The Geological Newsletter

News of the Geological Society of the Oregon Country

November/December 2017
Volume 83, Number 6

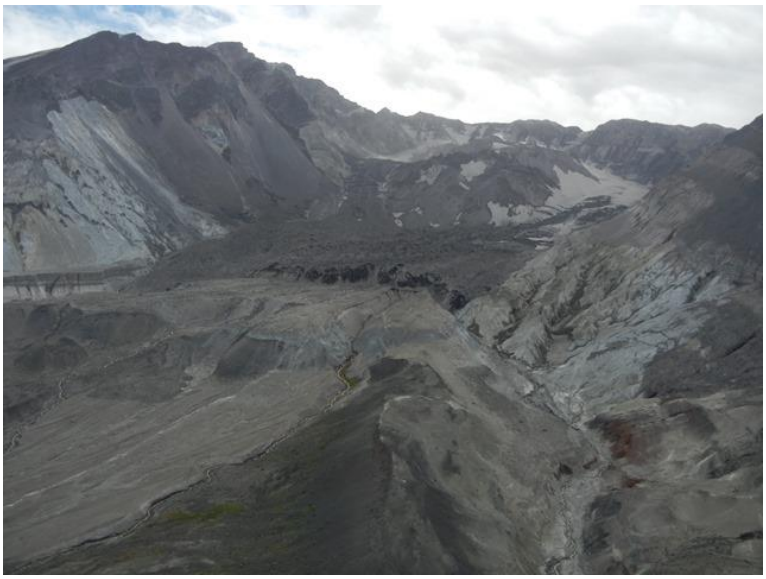
The Geological Society of the Oregon Country
P.O. Box 907, Portland, OR 97207-0907
www.gsoc.org

New View of Mt. St. Helens

by Carol Hasenberg

A small party of GSOC members braved the iffy weather on September 9, 2017, to take a new view of Mt. St. Helens, aboard a helicopter owned and piloted by Hillsboro Aviation Company, on a trip of geologic discovery organized by Sheila Alfsen. The flight was launched from North Fork Survivors tourist complex on Spirit Lake Highway east of Toutle, Washington.

See Mt. St. Helens, Page 50



This view of the mountain and its volcanic crater clearly shows the central dome, the toe of the surrounding glacier (world's fastest moving!), and red hydrothermally altered rock on Mt. St. Helens.

Calendar

Friday Night Lecture

November 10, 2017, Cramer Hall, Portland State University

Speaker Leslie Moclock, curator of the Rice Northwest Museum of Rocks and Minerals, will present "Oregon's Gems: The Geologic Stories Behind Beautiful Stones"

see Geologic Stories, pg 48

GSOC 9TH Annual Holiday Party

Saturday December 16, 2017, 6:00 pm – 10:00 pm, 614 NE 114th Ave., Portland

GSOC Members and their guests are invited to the 9th GSOC Annual Holiday Party and field trip slideshow.

There will be no December Friday night meeting due to the Holiday Party.

see Plans for GSOC Holiday Party, pg 56

Friday Night Lecture

January 12, 2018, Cramer Hall, Portland State University

Speaker Mike Collins will present "Connections II -How All Geologic Areas In The West Are Connected Below The Crust."

See you in the New Year! Please remember to **pay your GSOC Annual Membership dues** supporting geology education in the Pacific Northwest!

GSOC Friday Night Lectures are held the second Friday evening of most months, 7:30 p.m., Rm. 53, Cramer Hall, PSU, SW Broadway at SW Mill St., Portland, Oregon. Join GSOC members at Pizzicato Pizza, 1708 SW 6th Ave., at 6:00 p.m. before the lectures for an informal dinner and conversation. Check the GSOC website (www.gsoc.org) for more information and updates to the calendar.

Hourly rates for parking are available in some parts of PSU parking structures. PSU Parking Structure #2, 1724 SW Broadway across from Cramer Hall is $5.00 flat rate in the evening. Park in permit (NOT reserved) spaces and pay at the kiosk by entering your vehicle license number. There is also on street pay parking, and many mass transit options. Street parking is $2.00 an hour, but free after 7:00 pm. More info available here.

2017 - 2018 Administration:

President Rik Smoody – science@smoo.com

Vice-President Sheila Alfsen – 503/939-6003 shealf@viclink.com

Secretary Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Treasurer Dawn Juliano - 503/367-7708 dawnmj_2000@yahoo.com

Directors

Martha Muncie (1 year) –503/232-6342 martymuncie@gmail.com

Larry Purchase (2 years) – 360/254-5635 lkpurchase@q.com

Carol Hasenberg (3 years) – 503/522-4249 csh727@comcast.net

Past Presidents:

Bo Nonn – 503/235-9135 bononn14@q.com

Janet Rasmussen – 541/760-7846 jkayerocks@yahoo.com

Other Society Contacts:

Newsletter Editor Carol Hasenberg – 503/522-4249 csh727@comcast.net

Website Paul Edison-Lahm – 971/404-6064 pauledisonlahm@gmail.com

Public Outreach Coordinator Sheila Alfsen – 503/939-6003 shealf@viclink.com

Geologic Stories

November 10, 2017, 7:30 to 9:00 pm

Oregon's volcanic history has given us more than mountains. Come learn how sunstones and opals feature in our state's geologic past.

Leslie Moclock has been the curator at the Rice Northwest Museum of Rocks and Minerals since 2014. She holds a MS in Geology from University of California-Davis and a BA from Amherst College.

Don't Forget to Re-up!

GSOC Dues are Due Soon

GSOC members and prospective members, please remember to renew your memberships for 2018. Your membership benefits include:

- Helping serve GSOC's mission of promoting geology education in the Northwest, including PSU geology scholarships
- Welcome to join in all GSOC functions, including field trips, Holiday Party, Annual Banquet and Picnic, and more!
- A printed version of the GSOC newsletter if you choose
- A great time with all your GSOC friends!

See the last page of this newsletter for details, or visit our website www.gsoc.org. PS - If you joined the club after September 1, 2017, your dues are paid through 2018!!!

GSOC Board Meeting Notes

October 14, 2017

President Rik Smoody called the meeting to order at the home of Marty Muncie.

Other board members in attendance constituting quorum were Dawn Juliano, Sheila Alfsen, Marty Muncie, Bo Nonn, and Janet Rasmussen. Also in attendance was GSOC member Dave Olcott. The minutes of the August 21, 2017, board meeting were approved. The Treasurer's report was approved.

EVENTS

Friday night lectures

Members are encouraged to wear their name tags to Pizzicato and introduce yourselves to unfamiliar folks who may be new members or from MeetUp.

Sheila has speakers lined up for the next several talks. In November, Leslie Moclock of the Rice Museum will speak.

The board discussed strategies for purchasing a new digital projector.

Board discussed problems encountered getting the PA system to work at the October meeting. VP should set up talk early in evening while PSU's AV team is still available (before 7 pm).

Marty reported that she has snacks lined up for the November meeting.

Field Trips

Quarry trip was satisfactory. There were about 20 participants.

Downtown Building Stone Tour led by Paul and Cris Morgante, also about 20 participants and very pleasant. There are photos on GeoSociety Facebook page.

Eclipse Trip: Camping facilities were superb, Denny enjoyed hosting, the traffic was not as bad as expected.

Paul's Johnson Creek Science Pub at Eagle Eye Tavern was also a success with about 50 people in attendance.

Helicopter Tour: Eight people attended, as some had to cancel last minute! The venue was good, and has a small theater. Sheila and the board would be interested in a repeat of this offering next year, perhaps July or August, and maybe adding a small amount to cost for GSOC.

OLD AND NEW BUSINESS

Holiday Party

The party date is set for Carol Hasenberg's on SATURDAY, December 16, 2017

Annual Banquet

Members voted to return to Ernesto's for the 2018 GSOC Annual Banquet. Dawn has made a reservation for March 11. Janet will prepare place cards using photos from the Eclipse in place of rocks. Wes Mahan offered to do the programs. Rik will confirm speaker Ellen Morris Bishop and find a MC for the event.

Nominating Committee

All discussed the need for new officers, particularly a president. Sheila doesn't want to be president but will continue as VP if approved. Nominating committee names have yet to be determined.

PSU Scholarship

Dawn can send our usual scholarship of $1000. Sheila offered to write a letter of appreciation to the Geology Dept. secretary who reserves our lecture room for us.

Bylaws proposal

The Board voted to approve the change in Bylaws to replace "junior member" with "student member", and those student members would be anyone of any age attending school, including college.

BOARD MEETING NOTES

continued from Page 49

They may have voting privileges. It would be reasonable that members under 18 NOT have voting privileges, however.

Upcoming Field Trips

Dave Olcott brought a well-documented proposal for an Idaho trip in early June. We were all very enthusiastic. He has excellent leaders chosen, and the trip would run from June 2-8. It would include cultural as well as geological history, volcanics, fossils, a quartzite mine, and the fabled City of Rocks in SE Idaho, and a possible rafting trip.

Camp Hancock: many members expressed enthusiasm for a trip to the John Day Fossil Beds area to include the Condon Museum, Blue Basin and many other fascinating features of this area. Need leader, organizer, and logistics person to make this happen.

Next board meeting will be at Carol Hasenberg's at 4:00 p.m., December 16, prior to the Holiday Party.

Notes compiled by Carol Hasenberg.

Mt. St. Helens

A story in pictures of the September 9, 2017, Helicopter Field Trip of Mt. St. Helens by Carol Hasenberg

The following pictures are from the GSOC helicopter tour of Mt. St. Helens, September 9, 2017:

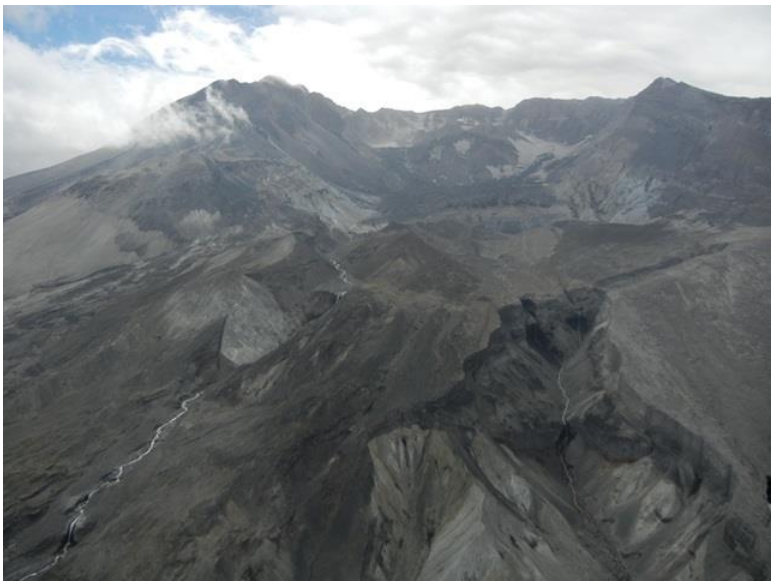
Takeoff from helipad from North Fork Survivors tourist compound. This is bigfoot country!

On the way up the Toutle River, we cross a recently built sediment dam.

Flying up the river we see that the most recent lahar passes through and has eroded past lahars.

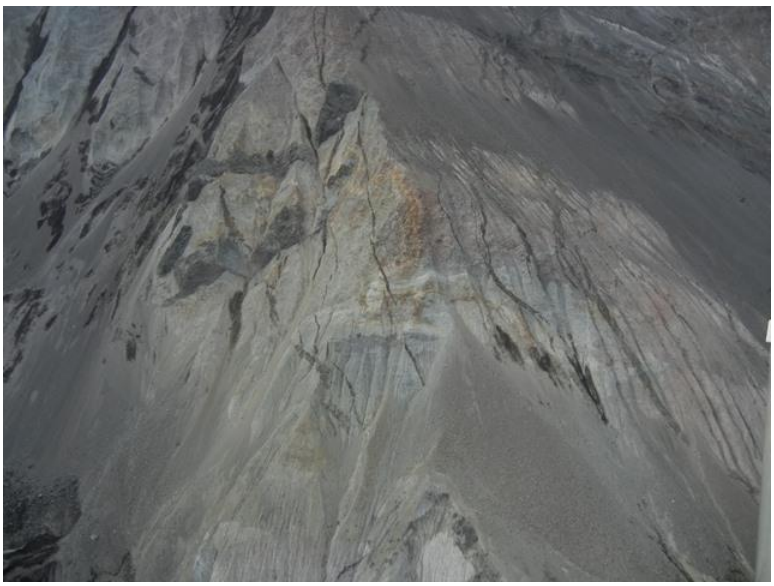
Up at Spirit Lake we can see how high the lake sloshed up on this protruding peninsula. The landslide which initiated the eruption in 1980 was soon overtaken by the lateral pyroclastic blast, which leveled the trees on the peninsula before the landslide hit the lake. The sloshing dislodged the flattened trees and those are the logs you see floating in the lake today. So, the areas on the peninsula not covered with logs are where the lake sloshed.

Looking up towards the mountain from Spirit Lake, one sees the landslide material which initiated the 1980 eruption.



Streams have made deep cuts in the Mt. St. Helens landslide

Cross sections through the structure of the mountain can be glimpsed from the helicopter



Cross sections reveal hydrothermal alteration in the rocks.

The glacier in the crater is sandwiched between the central cone, left, and the wall of the crater, right.

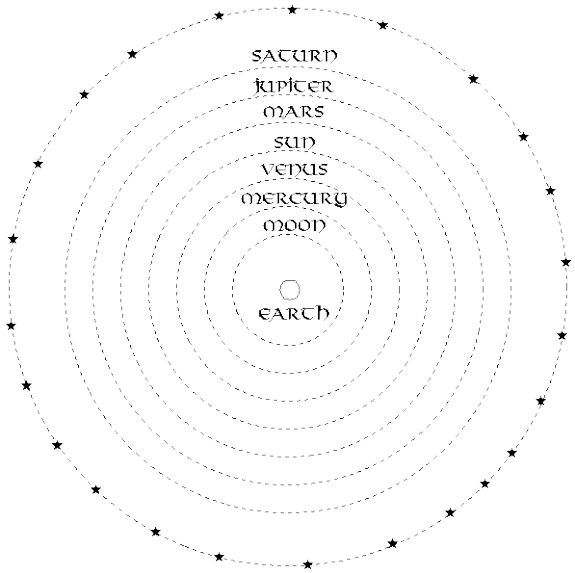
Recent lahar surface shows progress of growth and channel working that have been happening since the 1980 eruption.

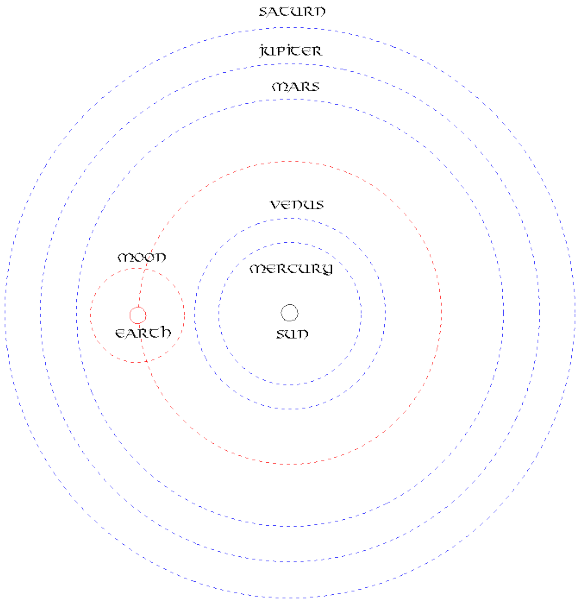
The GSOC field trip group poses with pilot Robert. Left to right are Steve Haar, Cecily Cedilote, Sheila Alfsen, pilot Robert, kneeling, Charles Montross, Anne Oneill, kneeling, Carol Hasenberg, Yumei Wang. Bo Nonn also participated in the trip.

High School Teacher Emphasizes the Scientific Method in his Geoscience Class

Synopsis of the GSOC Friday night lecture given on September 8, 2017, with speaker Frank Hladky, Oregon Registered Geologist and member of the National Association of Geoscience Teachers

by Carol Hasenberg





Aristotle's Earth-Centered Solar System Model (above) vs. Copernicus' Heliocentric Solar System Model (below). Illustrations from www.bluffton.edu.

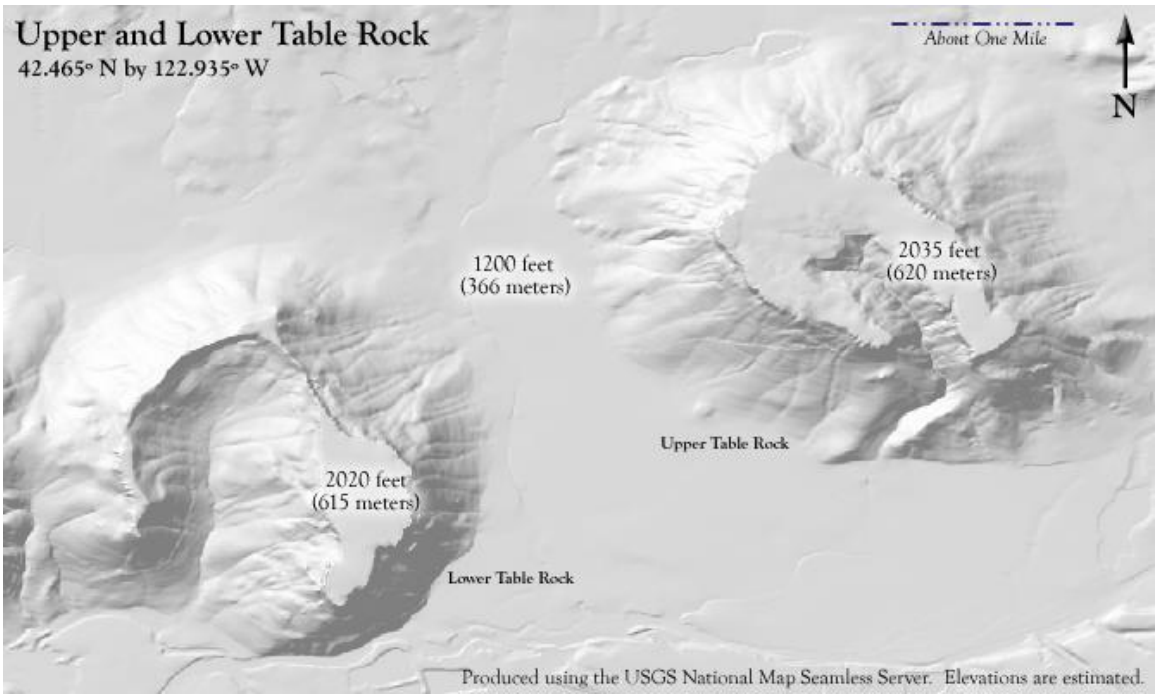
Frank Hladky, registered geologist who worked for DOGAMI(Oregon Department of Geology and Mineral Industries) for 22 years, came to talk to GSOC about how he used his geological background to transform himself into a high school science teacher. He has been teaching high school in southern Oregon for over a dozen years now and is a member of the National Association of Geoscience Teachers.

His teaching is firmly rooted in the history of science and the geological sciences. His students study the work of Copernicus, Nicholas Steno, Robert Hooke, William Smith, James Hutton, Charles Lyell, and other giants of science. Through these the students also study the development of the principles of geology: the Law of Superposition, the Law of Original Horizontality, that fossils are the record of life on earth, and the concept of deep geologic time. Fossils as the indicators of geologic time, the evolution of life, uniformarianism vs. catastrophism, punctuated equilibrium are additional topics explored in Hladky's class.

Hladky's students study the process of developing a model, or simplification of reality, to explain natural phenomena and how the model is tested using the principles of the scientific method. The example Hladky used in the lecture was the Aristotle model of the solar system, with the earth at its center, which held sway for 1800 years until Copernicus came forth with a better explanation for the motions the planets exhibit in the sky in his solar-centered model. Hladky's objective is to get the students to think for themselves and analyze the evidence. He reviews the Principle of Parsimony, or Occam's Razor, in which the simplest explanation is always preferred, or, the model which explains the most data with the least number of assumptions is better.

Armed with these analytical principals, Hladky then sets students to work in a real life geologic setting, and gather

evidence to model how the landform evolved. He showed slides from a student project whose subject was the landform evolution of Upper and Lower Table Rocks, Castle Rock and Sams Valley near Medford. Upper Table Rock is capped by younger lavas with Eocene age rocks below. Cap rock consists of 7.1 million year old trachyandesite, higher in sodium and potassium than any other Cascades lavas. It is found for about 40 miles heading northeast from Medford, coming from a shield volcano at Olson Mountain. The horseshoe shapes of both Upper and Lower Table Rocks appear to mimic those of river bends.



The topography of Table Rocks near Medford, Oregon. - Created by ZabMilenko using Fireworks MX 2004, and information from the USGS National Map Seamless Server.

Model 1 for the origin of Table Rocks is inverted topography with the horseshoe shapes following bends in the ancestral Rogue River.

Model 2 is a sheet flow model where bottom contact elevation varies, and the Table Rocks are not necessarily in the location of the ancestral Rogue River bed.

The first testing hypothesis Hladky's students used is that if Model 1 is true, then the capping lava should all rest on similar age gravel, and as access was problematic this test was inconclusive. Another test is the scale of the features - do the width of the Table Rock features agree with the expected flow of the river? The actual features seem to be much bigger than the modern Rogue River, more like the scale of the modern Columbia River. Another test for Model 1 is that one would expect water altered lava at base of flow if it occurs in water, and it was not found. So, Hladky's students concluded that Model 2 was more likely than Model 1.

,

Plans for GSOC Holiday Party

December 16, 2017, annual event from the GSOC Calendar

Paul Edison-Lahm lecturing about Johnson Creek at the Science Pub at the Eagle Eye Tavern

GSOC Annual Holiday Party and field trip slideshow is scheduled for SATURDAY, December 16, at 614 NE 114th Ave., Portland. GSOC Board Members will provide main dishes with protein of various sorts. Other members please bring vegetable, side dishes or desserts for 6 to share, plus beverage of their choice. Music program to be announced.

Schedule of Christmas Party activities:

-4:00 pm: GSOC Board Meeting

-6:00 pm: Set-up for party

-6:30 pm: Dinner buffet

-7:15 pm: Welcome presentation. Nominations for GSOC Board members for the 2018-2019 year will be open.

-7:30 pm: Dessert and musical program

The colorful pit crew from the Quarry trip: Left to right, Paul Edison-Lahm, Rik Smoody, Bill Montgomery, Teresa Meyer, Kent Snyder, Bill Burgel., Cris Morgante (hiding), Barbara Smoody, Bo Nonn, Ken LaCour, James Jarzabek, Luke Mahan, Bonnie Pringle, Wes Mahan, Larry Purchase.

-8:30 pm: This year's GSOC field trip leaders with present the "Year in Review" program with brief slide show summaries of their trips.

- Rik Smoody: “The Eclipse! And More…,” August 18-21
- Paul Edison-Lahm: “Johnson Creek Science Pub Lecture and Potential Tour,” Science Pub lecture synopsis from September 21, 2017, at Eagle Eye Tavern
- Larry Purchase: “GSOC Rock Quarry and Gravel Pit Field Trip,” June 11-12
- Sheila Alfsen, “Mt. St. Helens Helicopter Tour,” September 9

-9:30 pm: Clean-up

Donations will be accepted for party supplies. Send donations to Dawn Juliano c/o GSOC, P.O. Box 907, Portland, OR 97207, or give them to Sheila at the event.

The Snake River Plain And Albion Mountains - A Diverse Geologic Museum

Upcoming GSOC Field Trip, June 2-8, 2018

This car caravan/car pool field trip will focus on the **diverse geology of Idaho's Snake River Plain** and the granitic core and the exterior 'skin' of the Albion Mts./Middle Mt. region. The trip will be based in Boise for 3 nights (June 2,3,7) and Twin Falls for 3 nights (June 4,5,6). Participants will rendezvous in Boise the morning of June 3 after traveling from Portland the previous day. Some light walking/hiking will be on the agenda – maximum 1.6 miles one way - and moderate elevation gain (approx. 200 ft.). Most travel will be on paved roads but also there is about 46 miles of good quality gravel, 4 miles of graded dirt track, and 2 miles of a dirt track with a few patches of ruts and rocks, which is negotiable by normal clearance vehicles.

Bonneville Flood boulders on Walters Bar – Guffey Butte, a basaltic maar (in background)

Itinerary includes overview of Snake River Plain geology, Pliestocene shield volcanoes Kuna Butte and Initial Point and Hydrovolcanic vents - Sinker, Walters, White and Guffey Buttes, Bonneville Flood Melon Boulders on Walters Bar, Petroglyphs at Celebration Park, local Boise geology from Table Rock; fossil algal reef – hot spring limestone – former shoreline habitat of Lake Idaho, Bruneau Canyon and Dunes, Malad Gorge and Box Canyon, the Snake River Aquifer at Niagara and Crystal Springs, cold springs along the Snake and fish propagation – a connection between geology and the fisheries industry; economic geology of a premiere stone industry in Idaho, City of Rocks National Reserve with intrusive rocks dating 2.65 billion years; Shoshone Falls – a geologic window into the Central Snake River Plain, geologic art – rock sculptures of Black Magic Canyon of the Big Wood River, The Little City of Rocks – rheomagmatic rhyolites – Mount Bennett Hills, Camas Prairie, lavas of Black Butte Crater – the recent 'course adjuster' of the Big Wood River; Hagerman Fossil Beds National Monument – land sites and a rivers' perspective, rafting the Snake River through the Monument, natural dams on the Snake River – McKinney Butte Basalt (and Yahoo Clay) and the Bliss

Landslide. As you can see, this will be a week packed full of geologic wonders!

The trip will be **lead by GSOC members Dave Olcott and Bo Nonn**. Guest lecturers/leaders will include Dr. Terry Maley, retired distinguished geologist; Greg Osterhout, Vice President and CEO – Northern Stone Supply; and Shawn Willsey, Professor of Geology – College of Southern Idaho. If you wish to participate in this field trip, please contact Dave Olcott at (503) 695-5219 /daveolcott46@yahoo.com or Bo Nonn at (503) 691-4129 /bononn14@q.com. A formal registration form will be available online and in the newsletter starting in January 2018. Participation will be limited, and participants will be selected on a first come, first served basis. Payment of fees must be completed by the GSOC banquet on **March 11, 2018**. All participants must be GSOC members or a guest of a member. Trip fee is $100, and does NOT include transportation, lodging, meals and an optional rafting trip. Participants must arrange their own transportation, lodging and meals. An additional fee will be rendered for the geologist-guided raft trip through Hagerman Fossil Beds National Monument. An estimate for this fee is $50.00 per person. This fee will be paid directly to the outfitting company (details will be forthcoming).

Granite of the Almo Pluton – City of Rocks National Reserve, Albion Mountains – Jim Sage Mts. (dark ridge in background)

If you're planning to reserve your lodging early, here are some suggestions by Dave:

The following facilities permit tents: Boise/Meridian KOA – good access to the freeway, Boise Riverside RV Park, KOA Jerome – a few miles north of Twin Falls, and Oregon Trail RV (Twin Falls). In Boise we will establish a rendezvous site for morning departures near Motel 6 and Inn of America – in the same area there are other motels (i.e. Best Western, Quality Inn, Super 8, Holiday Inn, etc.). In Twin Falls, we will rendezvous at the Twin Falls Visitor Center. Your proximity to these two rendezvous locations will save you time in the mornings. The advantage of both sites is they have good access to freeways/main highways and will allow us to get into the field in a reasonable time frame.

WELCOME NEW MEMBERS!

John Stockham
Christopher Hugh
Chanel Hargrove
Cindy Bartlett
David Hoenig

The Geological Society of the Oregon Country (GSOC) is a non-profit organization based in Portland, Oregon. The society is dedicated to the study of geology in the Pacific northwest and is open to persons with all levels of education and professional backgrounds. GSOC was formed in 1935.

In addition to Friday Night Lectures, GSOC offers field trips. Schedules vary year to year for the field trips. You must be a GSOC member or guest of a member to attend most GSOC field trips.

Schedules for all GSOC events are available on the GSOC website, www.gsoc.org. Online payment is also available for most activities and membership.

GSOC also maintains a library at Rm. 69, Cramer Hall, Portland State University. Open 7:00 p.m. prior to meetings.

THE GEOLOGICAL NEWSLETTER (ISSN 0270 5451) is published bimonthly and mailed to members only at their request. Subscriptions are available to libraries and organizations only at $20.00 per year. Single Copies are available at $2.00 each. Order from:

Geological Society of the Oregon Country
P.O. Box 907
Portland, Oregon 97207

APPLICATION FOR MEMBERSHIP
THE GEOLOGICAL SOCIETY OF THE OREGON COUNTRY

Name_____ Spouse_____

Children under age 18_____

Address _____ City _____ State ___ Zip_____-_____

Phone (____)____-_____ Email address_____

Geologic Interests and
Hobbies_____

New member Renewing member (circle one)

Please indicate Membership type and include check for appropriate amount:

Individual $25.00 _____ Family $35.00 _____ Student $15.00 _____

Make Check Payable to: The Geological Society of the Oregon Country
PO Box 907