MONTANA GEOLOGICAL SOCIETY NEWSLETTER

March 2017

Vol. 61 No. 6

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Upcoming Events:

March 31 - Past President's Dinner, 2017
April 20 - Luncheon talk by 2016 MGS Scholarship Award Recipient Crystal Nielsen (tentative)

(TBD) - Beer30 Hawaii Volcanoes by Jack Warne

Contact Us:
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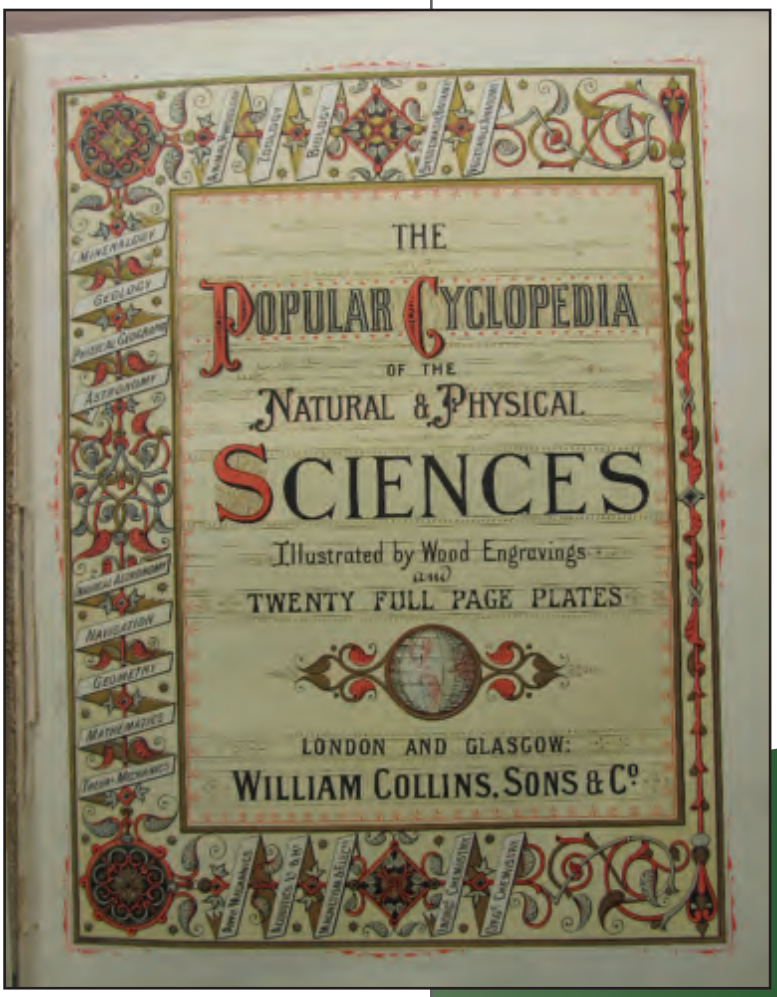
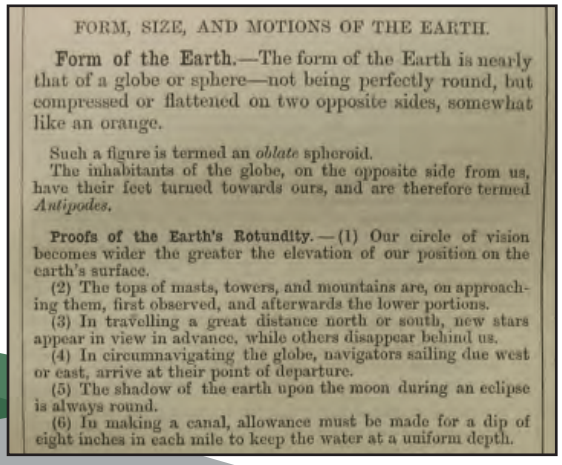
Add our email address to your contacts so your Newsletters & Luncheon announcements don't end up in Spam!

President's Letter

Dear Membership,

I hope March finds you in good health and with renewed exuberance for the longer days and warmer temperatures. Along with fossils, landforms, and rocks, I find joy in old science and engineering books. I enjoy reading the observations from the past and comparing them to theories of today. One of my favorite old books is my "Cyclopedia of the Sciences" from the 1890's. The book was given as an award to a student in England in 1894, but I couldn't find a publish date. I thought I would share a few observations from the Physical Geography chapter. To set the stage of scientific arguments 130 years ago, I offer the discussion of the shape of the earth. In this "post-truth" time we now live in, this debate may resurface. I fear not for I have my list of "Proofs of Earth's Rotundity".





FORM, SIZE, AND MOTIONS OF THE EARTH.

Form of the Earth.—The form of the Earth is nearly that of a globe or sphere—not being perfectly round, but compressed or flattened on two opposite sides, somewhat like an orange.

Such a figure is termed an *oblate* spheroid.

The inhabitants of the globe, on the opposite side from us, have their feet turned towards ours, and are therefore termed *Antipodes*.

Proofs of the Earth's Rotundity.—(1) Our circle of vision becomes wider the greater the elevation of our position on the earth's surface.

(2) The tops of masts, towers, and mountains are, on approaching them, first observed, and afterwards the lower portions.

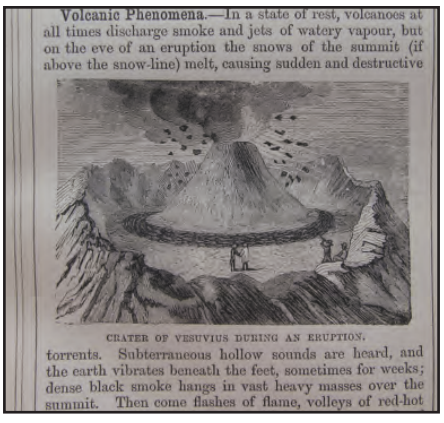
(3) In travelling a great distance north or south, new stars appear in view in advance, while others disappear behind us.

(4) In circumnavigating the globe, navigators sailing due west or east, arrive at their point of departure.

(5) The shadow of the earth upon the moon during an eclipse is always round.

(6) In making a canal, allowance must be made for a dip of eight inches in each mile to keep the water at a uniform depth.

The discussion of volcanoes, their structure, and their distribution around the globe was also interesting. At the core of the subject was the disputed theory of "central heat of the earth" where the "interior of the earth is an immense seething cauldron of fire". The illustration shows how brave the volcanologists of the late 1800's were, and that gender equity was in place then. The dark ring around the active cone must have been a safety feature marking the safe distance for observations.

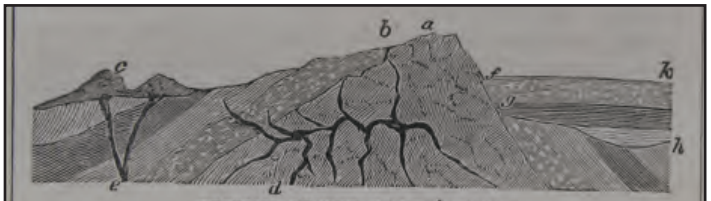


Volcanic Phenomena.—In a state of rest, volcanoes at all times discharge smoke and jets of watery vapour, but on the eve of an eruption the snows of the summit (if above the snow-line) melt, causing sudden and destructive

CRATER OF VESUVIUS DURING AN ERUPTION.

torrents. Subterraneous hollow sounds are heard, and the earth vibrates beneath the feet, sometimes for weeks; dense black smoke hangs in vast heavy masses over the summit. Then come flashes of flame, volleys of red-hot

Other illustrations and discussions show how the law of superposition was more universally accepted. I think the figure below is where many of today's concerned citizens gained their conceptual models of hydraulic fracturing. I have seen similar images on the internet where the giant fractures from fracking protrude all the way to the surface, and may even swallow up a stray cat or lost child. In my old book, the fractures were created from earthquakes and "similar convulsions" and then filled with "subterranean treasures". Would there be such concern if the fractures were shown to scale and people appreciated the treasures? I looked around for any mention of oil in the discussion of natural resources. Way at the bottom of the table titled "GEOGRAPHICAL DISTRIBUTION OF CHIEF MINERAL PRODUCTS" I found petroleum. However minor the listing, it was before the discussion of geothermal energy. I also found the discussion of glaciers interesting. The ideas of how they form and shape the landscape has changed little, but comparing the 1890's glacial extent to the Alps today clearly shows the change. They estimated the Alps glaciers covered 1,400 square miles then, and now? Without science and recorded observations, we have no basis for comparisons. Be a voice for science and reason. We will surely need your voice in the future,



SECTION OF THE EARTH'S CRUST.

The actual state of the earth's crust will be best understood by a reference to the accompanying illustration. At *a* the igneous rocks are on the surface. The earliest or lowest strata begin to appear at *b*, and the edges of others are passed over in succession as we proceed towards *c*. The same strata occur, with a still greater slope, between *g* and *h*; but here they are covered by later formations (*f*, *k*), whose horizontal position shows that they must have been deposited *after* the forces by which the surrounding rocks were upheaved had ceased to operate. The eminences at *c* are formed of volcanic matter, ejected through the opening seen at *e*; and the dark lines between *b* and *d* represent fissures in the various rocks, produced by earthquakes and similar convulsions, and then filled up, from subterranean treasures, with metallic ores and other substances in a state of fusion. It is from such fissures, usually called veins, that most of the metals and their ores are obtained.

PETROLEUM.

Europe—France, Italy.
Asia—Siberia, Shores of the Caspian, Persia, Burmah, Japan.
North America—United States (Pennsylvania, Virginia, Ohio), Canada.

66. Central Heat.—As we descend into the bowels of

Kevin Chandler
MGS President

by intense frost. The ice itself is of a blue-veined structure, due to great pressure; but although rigid in appearance, it is of a semi-fluid or viscous consistency.

GLACIER OF THE ALPS.

These ice-streams move more or less rapidly according to the temperature and moisture,—the maximum rate being thirty inches a-day in summer, and sixteen in winter; and, like rivers, the velocity is greatest at the centre.

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Have something geological to sell, give, or find? Place a free ad in our MGS Classifieds! Contact the Newsletter Editor for more information.

Past President's Dinner

Please join us in honor of past President Riley Brinkerhoff,
who will be digitally joining us at this year's Event.

Friday, March 31
6:00 p.m. - Cocktails
6:45 p.m. - Dinner & Ceremonies

Dinner is open to all MGS members & spouses/significant others.
The event is free, but we ask that guests make a small donation
to the MGS Scholarship Fund.

Please RSVP by March 27 to montanageologicalsociety@gmail.com,
along with your dinner choice of either
prime rib, chicken parmesan, or vegetarian.

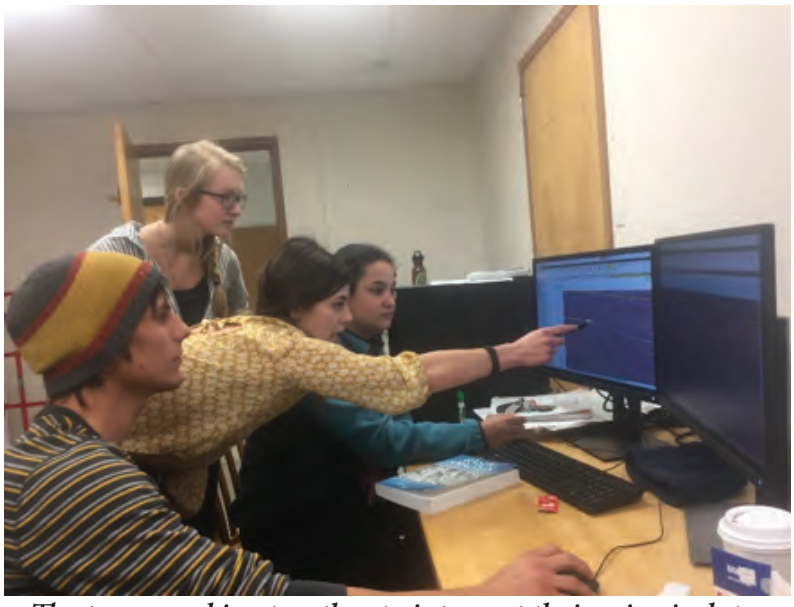
UM Geosciences Department Takes 3rd Place in 2017 AAPG-RMS IBA Competition

This spring, the University of Montana Geosciences Department fielded a team of four to compete in AAPG's annual Imperial Barrel Award Competition. The eight-week program tested the geological backgrounds of Isabellah von Trapp, Sara Stotter, Megan Mave, and Nathan La Fontaine, in their efforts to analyze the petroleum potential of Alaska's Bristol Bay Basin. The students had little prior experience in applied basin analysis, but quickly developed skills in areas such as seismic and well interpretation, gravity and geomagnetic map interpretation, geochemistry, subsidence modeling, and play and prospect evaluation. Their hard work was rewarded in Denver on March 4th, where they presented their findings to a panel of experienced industry geologists. Out of 10 teams representing schools from throughout the Rocky Mountain Section, the judges awarded the University of Montana team with 3rd place for their basin evaluation presentation.

Along with the technical and geological skills IBA instills in its participants, the competition is meant to provide an experience in which success can only be accomplished through effective team work. The UM participants learned this quickly, and divided their efforts to accomplish the different facets of the project. When challenges in certain aspects of the project arose, the team worked together to solve them and continued moving forward with their analyses. The team's friendship grew throughout the eight weeks, only strengthening the team bond and effectiveness.

All of the team members agree that the experience provided far more learning than is experienced in a classroom setting during an academic semester. The necessary, complete understanding of the petroleum system and all of its individual components provided the first time in which the integration of so many aspects of geology was required. Along with such a rewarding professional experience, each of the team members were granted 4 graduate course credits for their participation in the program.

The team's culminating experience in Denver was extremely rewarding, and they want to thank AAPG and the participating companies that contributed to making the competition possible. An icebreaker the night before the competition provided the opportunity to relax for a couple hours and socialize with fellow students and industry professionals. The team enjoyed networking over good food and beer, and were made quite comfortable during their stay with other teams at the Magnolia Hotel in downtown Denver. While there, the team entertained many confused passersby with their practice presentations in the lobby.



The team working together to interpret their seismic data.

Spotlight on...
Billings Gem & Mineral Club

The Billings Gem and Mineral Club is a non-profit organization devoted to the enjoyment of mineralogy, geology, paleontology and lapidary arts with specific attention to the Montana/Wyoming/Dakotas region.

We meet on the 1st Thursday of the month at 7 PM, September through June, at St. Bernard Catholic Church, 226 Wicks Lane , Billings Montana. There is an annual picnic in August, a Christmas meal in December, and an annual Rock Show in May. We do not meet in July. Meetings usually include member sharing of recent "finds" and an educational offering. Since we are a member of the Northwest Federation and American Federation of Mineralogical Societies, there is also a business component to each meeting.

http://www.billingsgemclub.com/
Check them out on Facebook!

Call for Speakers!

Do you have a presentation that would be of interest to the members of the Billings Gem & Mineral Club?

They would love to hear from you!

Contact them via their website or Facebook for more information.

Upcoming Club Meetings

April 6, 2017
May 4, 2017
June 1, 2017

Meeting Location:
St. Bernard Billings Catholic Church
226 Wicks Lane
Billings, MT 59105
in the Church Basement.
(Board Meeting open to members 6PM to 7PM.
General meeting open to public 7PM - 8PM)

MGS will be participating in this year's Science Expo, and could use your help!

When: Saturday, March 25th
Where: MSU-B Lower Alterowitz Gym

If you're interested in interacting with students or helping with set-up/tear-down of the MGS booth, please contact Felipe at fp@sunburstconsulting.com. The entire event should be no more than 8- 3pm including setup and break down (10am-2pm open to the public/students). The number & time of shifts is dependent on the number of volunteers.

Wyoming Geological Association

Geology & Energy Resources of Northern Wyoming

September 8-11, 2017

NEW DATE!

Conference to be held in beautiful Casper, Wyoming

More details to come!

This year's conference will focus on all general (energy AND non-energy-related) geologic topics in the northern half of Wyoming.

Call for Papers

You are invited to submit a technical paper relating to this year's theme. Collected papers will undergo peer review and will be released in an upcoming WGA Guidebook. Submit papers to info@wyogeo.org by **JUNE 5, 2017**

Call for Speakers

In addition to papers, we are inviting people to present at a one-day technical session on topics related to this year's theme.

FOR MORE INFORMATION ON PAPER GUIDELINES OR SPEAKING, CONTACT:

Mike Mellin: 307-702-0813
mike.mellin@ur-energy.com

Jesse Self: 307-315-1891
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Rocky Mountain Section Annual Meeting

REGISTRATION NOW OPEN

RMS-AAPG

2017 JUNE 25-28

BILLINGS MONTANA

Early registration ends May 25

http://rmsaapg2017.com/

For more information contact:

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Degree #2 _____

Degree #3 _____

MONTANA GEOLOGICAL SOCIETY

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2006 Montana Oil & Gas Fields CD		$65.00		
2006 AAPG Datapages - MGS Publications DVD		$180.00		
2006 AAPG Datapages - MGS Publications DVD (MGS Member price)		$150.00		
2000 50th Anniversary Symposium		$125.00		
1998 8th Int'l Williston Basin Symposium		$55.00		
1998 8th Int'l Williston Basin Symposium Core Workshop		$30.00		
1997 Big Horn Basin Symposium		$50.00		
1997 MGS-TRGS: The Edge of the Crazies		$25.00		
1997 AAPG - Rocky Mtn. Section Meeting / Abstract Volume		$16.00		
1995 7th International Williston Basin Symposium - Core Workshop		$30.00		
1995 7th International Williston Basin Symposium		$100.00		
1995 Big Horn Basin Symposium		$40.00		
1996 AAPG - Rocky Mtn. Section Meeting / Abstract Volume		$25.00		
1993 Energy and Mineral Resources of Montana		$54.00		
1991 6th International Williston Basin Symposium		$55.00		
1991 Geology & Horizontal Drilling of the Bakken		$50.00		
1991 AAPG - RMS Field Trip: Beartooth Mountains		$7.50		
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1991 Sequence Stratigraphy of Eagle Sandstone		$7.50		
1990 Bakken Workshop Short Course Study Notes #1		$12.00		
1989 Geologic Resources of Montana		$80.00		
1986 Geology of the Beartooth Uplift		$45.00		
1985 Montana Oil & Gas Fields		$55.00		
1984 Northwest Montana & Adjacent Canada		$45.00		
1978 Economic Geology of the Williston Basin		$100.00		
1971 Stratigraphic Names of Montana		$10.00		
1957 BGS 2nd Annual Centrail Montana Field Conference		$12.50		
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