


March 2018



MONTANA GEOLOGICAL SOCIETY NEWSLETTER

Vol. 62 No. 5



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P2 / PRESIDENT'S LETTER

Our President discusses
the answer to last
month's riddle -- which
door would you choose?



P5 / EDUCATION

Applications are out for
the MGS 2018 Teacher
of the Year Award, &
we're accepting photos
from the Science Fair.



P6 / EASTER

Wondering how to
celebrate Easter this
year? Look no farther
-- we have the answer!



P8 / LUNCHEON

Mark your calendar for
the next MGS
Luncheon, to be held at
the Petroleum Club.

Upcoming Event:

April 12 - MGS Luncheon; Christopher Scholz (*see page 8*)

Contact Us:
mtgeo.org / montanageologicalsociety@gmail.com

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

PO Box 844
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President's Letter

Membership,

I'd like to start this month's letter by congratulating the 2018 MGS Scholarship winners!

Christopher Steuer is working on his Master of Science in geology at Montana State. His project intends to develop a sequence stratigraphic framework of Upper Devonian strata of western and central Montana to better understand controls on deposition of the Maywood-Jefferson Formations in south and the Souris River-Duperow-Nisku Formations in the north.

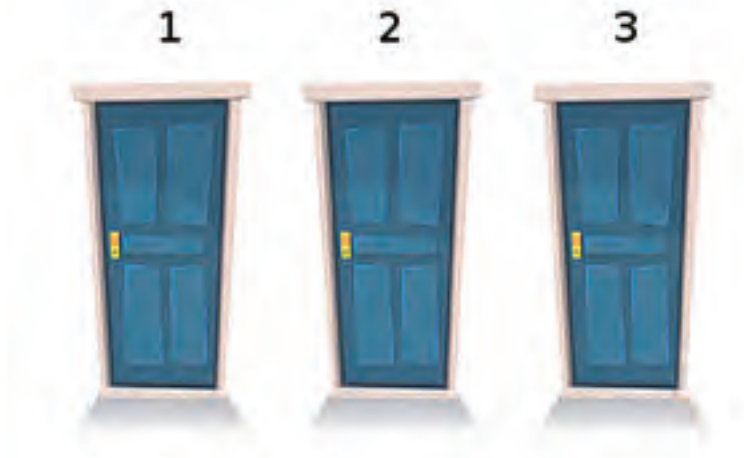
Sara Magallón is a M.S. Candidate in Geosciences & Geological Engineering at Montana Tech. She will be comparing experimental and numerical results of cyclic loading of blocky rock systems.

Congratulations to each of you and good luck on your respective projects.

Thank you to those who attended the lecture by Thomas Ewing. The last AAPG Distinguished Lecturer of the season will be Chris Scholz on April 12th. Look for the invite coming soon.

And now the solution to last week's riddle! As a reminder, here is the question as it was stated:

Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you, "Do you want to change your choice and pick door No. 2? Is it to your advantage to switch doors?"



Clarification: The host will always open a door with a goat; will always offer a switch; and will choose randomly between the remaining two doors if both are goats.

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Answer: You should switch.

This is a problem of conditional probability that can be solved using Bayes Theorem, which describes the probability of an event given that another event has occurred. You can also arrive at the result like this:

- If you always stay, your chance of winning is the chance you pick the door with the car (1/3)
- If you always switch, the possible outcomes are:
 - o You choose the door with the car (happens 1/3 of the time). If you switch, you will always lose.
 - o You choose a door with a goat (happens 2/3 of the time). If you switch, you will always win.
 - o Therefore if you always switch, you will win 2/3 of the time

Another way to think of it is that the host is giving you the option between your door (1/3 chance to be correct) or both of the remaining two doors ($1/3 + 1/3 = 2/3$ chance of being correct). It might help to imagine a similar game but with 100 doors:

- You choose a door (1/100 chance of being right)
- The host then opens 98 of the remaining doors and gives you the option to switch to the last door.
- The chance that the car is in one of the 99 doors you didn't choose is $1 - (\text{chance you were right})$ or $1 - 1/100 = 99/100$

This problem is very interesting to me because an overwhelming majority of people end up getting it wrong since it is extremely counter-intuitive, even Nobel Prize winners. There is a long history of this problem, with a version of it existing as early as 1889. It has been the source of media furor in the past, even between mathematicians. It has been said by cognitive psychologist Massimo Piattelli-Palmarini that “no other statistical puzzle comes so close to fooling all the people all the time.” I found myself spending hours reading the Monty Hall Problem Wikipedia page and following the rabbit hole. If this piqued your interest, I recommend checking it out.

Thanks for reading,

Felipe Pimentel
MGS President

Call for Photos!

Do you have photos of past MGS events,
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If so, we'd like to see them!

For a chance to have your photo featured in
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*Watson: Holmes!
What kind of rock is
this!*

*Holmes:
Sedimentary,
my dear Watson.*



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Focus on Education

*Now Accepting
Applications!*

K-12 Earth Science Teacher of the Year Award

If you teach and promote Earth Science in your classroom or in the outdoors, the MGS encourages you to apply for the TOTY Award. Visit the MGS website at mtgeo.org for an application. The 2018 Application Deadline is May 31, 2018.

2018 Science Expo

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March 23-24, 2018

*Did you participate in this year's
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next month's newsletter!



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<https://www.forbes.com/sites/trevornace/2016/03/25/easter-sunday-2016-swap-egg-thunder-egg/#40c4f0c07682>

Swap the chocolate bunny for trilobite cookies...

Almost too good to eat, huh?

For the recipe, visit:

<http://www.georgehart.com/trilobites/trilobite.html>



or, visit Easter island.

This is sure to make a memorable Easter this year.

To read up on the petrology & geology of Easter Island, consider this GSA article:

<https://pubs.geoscienceworld.org/gsa/gsabulletin/article-abstract/48/1/1589/3544/geology-and-petrology-of-easter-island?redirectedFrom=fulltext>

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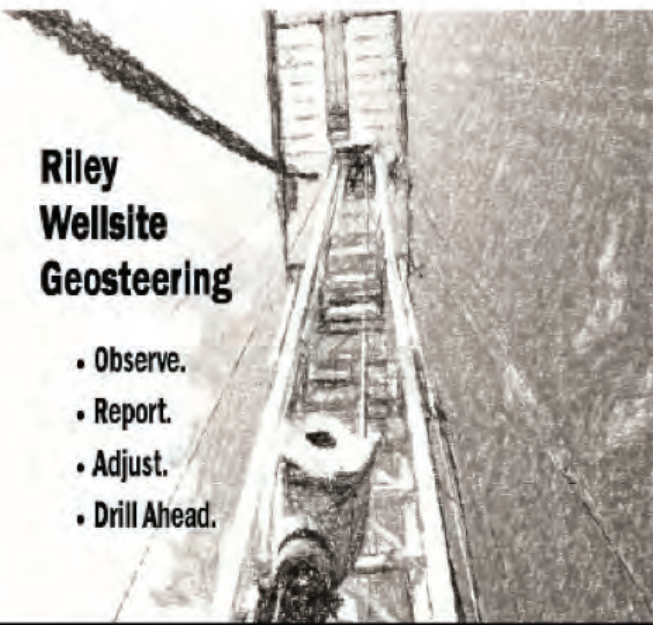
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MGS Luncheon Meeting
Thursday, April 12th
11:45 AM PM Billings Petroleum Club

Save the Date!

- Lunch is \$10 for MGS members, \$17 for non-members
- Talk is always free

RSVP – montanageologicalsociety@gmail.com



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