



NMSR Reports

The Newsletter of the
New Mexicans for Science and Reason

NMSR Reports, David E. Thomas, Editor, 801 Fitch Ave., Socorro, NM 87801 © 2017

OCTOBER MEETING: NEW MEXICANS FOR SCIENCE AND REASON WILL SEE THE ILLUSIONS OF Bill Fienning

AND HEAR Dave Thomas
on the Flat Earth Movement
7:00 PM October 11th, 2017

==>**CNM MAIN CAMPUS,
Student Resource Center**<==

==>Room 204<==

Bring a friend!

FUTURE MEETINGS ANNOUNCED

October 11th, 2017 NMSR Meeting: A Double Header, Fienning and Thomas!

At our October 11th meeting, our resident master of macabre magic, Bill Fienning, will perform a couple of his most diabolical and cunning effects. Dave Thomas will follow up with an update on the surprising growth of the Flat Earth Movement. Check out this month's Bonus Puzzle for a sneak peek at Flat Earth Theory. 7 PM Wednesday October 11th, CNM Main Campus, Student Resource Center, room 204 (@ Richard Barr Boardroom).

November 8th, 2017 NMSR Meeting: Kim Johnson & Jesse Johnson, on "The NM Science Standards Kerfuffle"!



At our November 8th meeting, longtime NMSR members Kim Johnson and Jesse Johnson will discuss the latest regarding the NM PED's proposed science standards, which have been criticized roundly for their removal of important, "controversial" science topics. (SEE STORY, PAGE 3).



Kim and Jesse will discuss what really happened behind the scenes at PED, legislative remedies, and more.

ELECTION OF OFFICERS COMING!

Our esteemed treasurer Nancy Shelton is retiring! We will have a vote on a board change at the October meeting. The proposed new slate consists of the following: Dave Thomas, President; John Covan, Vice-President; Debbie Thomas, Treasurer; Eddy Jacobs, Asst. Neutron Generator.

New Mexicans for Science & Reason (NMSR)

NMSR is a non-profit group with the goals of promoting science, the scientific method, rational thinking, and critical examination of dubious or extraordinary claims. NMSR meets at 7 PM on the second Wednesday of each month, in Albuquerque, New Mexico, at CNM's Student Resource Center, room 204 (@ Richard Barr Boardroom). NMSR Reports is its official newsletter.

NMSR officers:

Dave Thomas, President

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Kim Johnson, Industrial Physicist

kimber@comcast.net

Marilyn Savitt-Kring, Science Mom

Harry Murphy, Physicist, Medical Quackery

Membership: \$20/year, includes newsletter, make your check payable to NMSR, send to treasurer (Shelton). Newsletter available in hard-copy and downloadable PDF.

NMSR Advisors:

- **Mark Boslough,**
Physicist (Impacts, Climate Change, Global Warming). Sandia National Labs.
- **Kendrick Frazier**
Editor, Skeptical Inquirer
- **John Geissman**
Professor of Paleomagnetism, UNM
- **Alan Hale**
Southwest Institute for Space Research
- **Randy Thornhill**
Professor of Biology, UNM

Cyber-Cypher Clue: P = J, Q = B.

Bonus Puzzle Clue: Keep looking out!

WANTED: READER ARTICLES & COMMENTARY

Got something to share with NMSR members? Send it in! ATTN: Dave Thomas, Editor, NMSR Reports.

REMEMBER, our next NMSR meeting is at 7 PM on **WEDNESDAY, OCTOBER 11th, 2017,** at Student Resource Center, room 204 at CNM!

PUZZLE TIME!

[Please send solutions to Dave Thomas at: nmsrdave@swcp.com, or at 801 Fitch Ave., Socorro NM 87801.]

Cyber-Cypher: OCTOBER PUZZLE

(Submitted by Dave Thomas)

The following letters are a simple substitution cypher. If R stands for L, R will stand for L everywhere. Your Cyber-Cypher Clue: Clue? Oh, well - if you must, see p. 2.

" D ' A V G C H B D F U L F E H J E D F J
 H E A E W G B X D J X - H G V X
 V E A S B F L X G C G , Q G V B K T G
 D ' A F E H J E D F J H E J G H B
 T V D G F H D Z D V B U U L G R K V B H G R
 S E S K U B H D E F . " - Y D A
 P E X F T E F , E F S C E S E T G R F A
 T H B F R B C R T

SUPER SECRET WORD!

However you prefer to do the cypher itself (above or below), simply duplicate those actions on the alphabetized row of cypher letters below. You'll build an answer key, and you'll also reveal - the Super Secret Word!

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

SEPTEMBER CYPHER SOLUTION

"IT'S EASIER TO ASK FORGIVENESS THAN IT IS TO GET PERMISSION." - COMPUTER SCIENTIST AND UNITED STATES NAVY REAR ADMIRAL GRACE HOPPER

Esteemed September Code Crackers: Mike Arms*, Allen Robnett, Terry Lauritsen*, Austin Moede* and Jonathan Richardson*.

*Secret Word: "FLUID STENOGRAPHY"

Need more Secret Word Cryptograms?

SOCORRO STUMPER New puzzles every week at

www.nmsr.org/SocorroStumper.htm

October Bonus: “How Far the Horizon?”

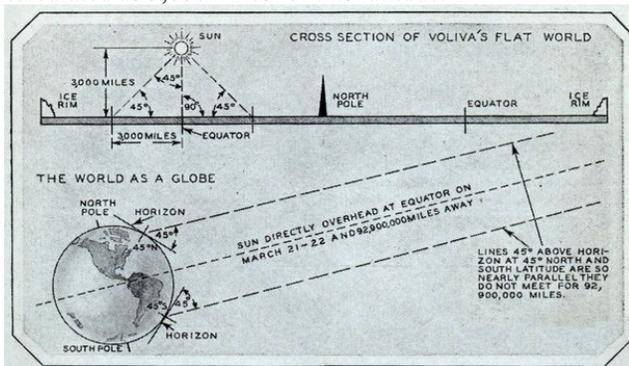
Submitted by Dave Thomas

Derive the approximation for the distance **d** to the horizon for an object at height **h** above the earth, $d \approx \sqrt{(2hR)}$, where **R** = radius of Earth (~ 3960 miles), and also for the angle of dip of the horizon, $d/R \cdot 180/\pi$ in degrees.

The October Bonus: Assuming Mt. Wahdoo-ainoh is five miles above the surrounding terrain, what is the distance to the horizon from its summit? And the Dip Angle of the horizon?

The September Bonus:

The diagram below indicates a method whereby one could use measurements of the sun’s elevation on the vernal or autumnal equinox to calculate the height of the sun above the earth in Voliva’s flat earth model. In this diagram, an observer at 45° latitude would see the sun at that same angle above the horizon, and will be 1/8th of the 24,000-mile diameter of the flat earth away from the equator, i.e. 3,000 miles. The “height” of the sun would be calculated as 3,000 miles for this latitude.



The spring and autumn equinox as seen from 45° North and South Latitude on either a flat or spherical earth. Voliva’s world is a disc 24,000 miles in diameter. On March 21-22 the sun is directly above the equator and is seen at 45° above the horizon at 45° North and South Latitude. The distance from the equator to either 45° North or South Latitude is one-eighth of the earth’s diameter, or 3000 miles, therefore the sun must be 3000 miles away. With the spherical world the same reasoning would place the sun 92,900,000 miles away. The diagrams explain both theories.

The September Bonus: What would the following people, using the method above, calculate for the height of the sun above the flat earth, as seen on the autumnal equinox? (A) A resident of Albuquerque, NM (latitude 35°), (B) A

resident of Eureka, Nunavut, Canada (latitude 80°).

ANSWER: (A) 3332 miles. (B) 940 miles.

Congrats: Paul Braterman (UK), Harold H. Gaines (KS), Brian Pasko (NM), Gene Aronson (NM)!

STANDARDS UNDER FIRE BY PUBLIC EDUC. DEPT.

New Mexico's Public Education Department, which replaced the State Board of Education years ago, has actually proposed several modifications to state standards up for adoption which once again serve to downplay the science behind evolution and global warming. Mother Jones had a detailed informative report on September 14th, “New Mexico Doesn’t Want Your Kids to Know How Old the Earth Is, Or why it's getting warmer.” Since then, a veritable deluge of organizations and individuals have strongly opposed the changes to the original version of the standards, which was based on the Next Generation Science Standards being adopted nationally.



The PED ignored the recommendations of teachers, science groups, and the legislature to adopt the NGSS un-altered, and instead, introduced a version of the standards which do not mention “evolution” or the age of the Earth, and which minimize global warming with the euphemism “Climate Fluctuations.”. The developers of the NextGen national standards themselves strongly discourage such tinkering with the standards.

Even the Albuquerque Journal has stated opposition to the standards, and had this to say on Sept. 26th: “Whether [Education Secretary Designate Chris] Ruzzkowski is bowing to political pressure to water down the science curriculum that New Mexico teachers will deliver to students – or simply doesn’t believe in

climate change, evolution or scientific dating processes – his recommendations are deeply troubling and take New Mexico in the wrong direction for education and the new economy.”

There will be a Public Hearing on October 16, 2017 from 9:00 a.m. to 12:00 p.m. (MDT) at the Jerry Apodaca Education Building, 300 Don Gaspar Ave. in Santa Fe.

If you can't attend the hearing, consider sending a statements to PED. Interested parties may provide comment on the proposed repeal and replacement of this state rule at the public hearing or may submit written comments, or both, to Jamie Gonzales, Policy Division, New Mexico Public Education Department, Room 101, 300 Don Gaspar Avenue, Santa Fe, New Mexico 87501, or by electronic mail at rule.feedback@state.nm.us, or fax to (505) 827-6681. All written comments must be received no later than 5:00 p.m. (MDT) on the date of the public hearing. The PED encourages the early submission of written comments. The public comment period is from September 12, 2017 to October 16, 2017 at 5 p.m. (MDT).

The Santa Fe school board has called for "teach-in" on August 13th, a few days before the PED standards hearing. According to the Journal, "Board member Steven Carrillo said the idea is to present several science lessons to demonstrate to the PED that science matters. The teach-in is scheduled for 3:30 to 5 p.m. on Oct. 13 at the Jerry Apodaca Education Building, 300 Don Gaspar Ave." Dave Thomas is scheduled to discuss the Age of the Earth at this event.

September 13th NMSR Meeting: Matthew Lee Loftus on GMO Fears

Our September 13th speaker, Matthew Lee Loftus, talked on "Genetically Engineered Food Opposition: the Gap between Science and Public Perception." Matthew blogs as "The Real Credible Hulk," and can be found on Facebook at

www.facebook.com/therealcrediblehulk/.

Matthew gave several reasons regarding "Why is the GMO Food Debate a Great Topic for Skeptics?" It's a mainstream topic (not fringe); it has important implications for society; it involves an overlap of many complex logical, social, and scientific issues to sort through; and, it is rife with misinformation, vehemently polarized opinions, and motivated reasoning.



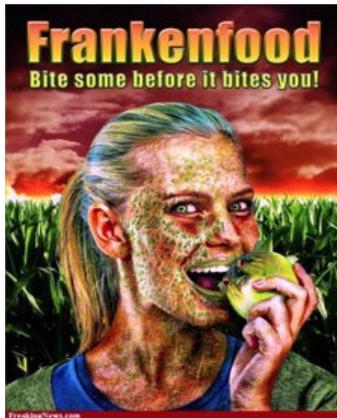
Loftus pointed out that there are numerous ways to alter genomes, and only a few of these are called "Genetically Modified Organisms." The non-GMO methods include cross breeding, mutagenesis, polyploidy, and protoplast fusion. Curiously, the practice of mutagenesis (use of mutagens like radioactivity to produce genome-altering mutations) is regarded as "normal," and is not subject to the great scrutiny and regulation applied to GMO foods.



The three main categories of Genetic Engineering (GE) include Transgenic (transfer of genes from distant species), Cisgenic (transfer of genes from sexually compatible, closely related species) and Intragenic (direct modification of genes or the expression of genes). GMO has many benefits, such as Insect Tolerance (i.e. Bt Corn), Herbicide Tolerance (i.e. glyphosate-resistant Soy), Virus Resistance (i.e. ringspot-resistant papaya), Extended shelf

life (i.e. delayed browning in arctic apple), Drought Resistance (drought-resistant corn and sweet corn), and Biofortification (golden rice).

The Golden Rice project is an effort to use Vitamin A fortified GE rice to combat Vitamin A deficiency, which blinds hundreds of



thousands of children per year. Golden Rice licensing agreements are free for humanitarian purposes.

Agricultural Biotechnology provides us with tools for coping with climate change. As climate change progresses, GE traits conferring resistance to heat, drought and salinity will likely become increasingly important. Matt emphasized the importance of "Consilience of Evidence." Thousands of studies underlie the scientific consensus on GE foods. All currently approved GE crops have been tested on a case-by-case basis, and the weight of the evidence suggests they are at least as safe as their closest non-GE counterparts. Nothing about the process makes unpredicted dangers any more intrinsically likely with modern molecular GE techniques than with other methods of altering an organism's genome.

There have been numerous Systematic Reviews regarding genetic modifications. *All* known breeding methods are capable of resulting in off-target changes (Unintended Compositional Changes). A small portion of these may be undesirable. Importantly, *these occur at lower frequencies with GE*. In addition, for regulatory reasons, such rare cases are less likely to make it into the food supply with GE than with non-GE.

GE results in fewer off-target mutations than mutagenesis. Transgenesis resulted in an order of magnitude fewer off-target structural

changes to the genome than mutagenesis (Citation: Anderson, J. E., Michno, J. M., Kono, T. J., Stec, A. O., Campbell, B. W., Curtin, S. J., & Stupar, R. M. (2016). Genomic variation and DNA repair associated with soybean transgenesis: a comparison to cultivars and mutagenized plants. *BMC biotechnology*, 16(1), 41.)

Loftus pointed out more cases in which non-GMO breeding methods are actually worse than GMO. Expression of other genes is less affected by GE than by Mutagenesis. Composition and gene expression are impacted less by GE than by conventional breeding. There are harmful and/or undesired results from conventional breeding: lenape potato: excessive solanine; kiwi allergen; cucurbitacin poisoning from zucchini; and celery cultivars with high psoralens expression.

Total herbicide usage has increased in *both* GMO and non-GMO crops. However, it has increased more with non-GMO crops than with GMO crops. The *rate* of increase has also been greater in non-GMO crops.

Although the rise of glyphosate resistant crops coincided with an increase in glyphosate usage, it also corresponded in the reduction of several other herbicides, nearly all of which were far more toxic than glyphosate.

Matt also discussed Terminator Seeds. These would have made seeds impossible to save and reuse the next season (which licensing agreements would have prohibited anyway). They were never brought to market (due largely to complaints by activists). Interestingly, they would have prevented accidental cross-contamination, given the



chance.

Regarding the evolution of Herbicide Resistant Weeds, Matt said this was not unique to GE. It is more prevalent with herbicides associated with *non*-GE herbicide resistant crops than with GE. All forms of weed control have potential for the evolution of resistance: even hand tilling.

As for GE Crops and Biodiversity, Loftus said this is a general farming issue: not a GE issue. Biodiversity measures include genetic diversity, species richness, and various quantitative means combining species richness and relative abundances.

In conclusion, Loftus emphasized that GE is an important tool in our arsenal. Approved GE crops are as safe as non-GE, and the process poses no discernible unique risks. Widespread public mistrust persists, despite a robust international scientific consensus. Anti-GE arguments are invariably either fallacious, inaccurate and/or not unique to GE. GE has helped decrease insecticide use, has encouraged use of milder herbicides, and can potentially help combat many other challenges.

NMSR thanks Matthew Loftus for an illuminating talk. The slides are available online, at <http://www.nmsr.org/GE-Food-Opposition.pdf>.



Fall Skeptiverse Haiku! by Keith Thomas, October 2017

A haiku should be Seventeen syllables long And not too shallow.	Conspiracy tales: Can you find a follower Who follows just one?
Via satellite, Inane flat-earther e-mails Can circle the globe.	Pretentious pundits, Your confidence exceeds your Credibility.
Rare and noble gas, May Superman's tales bring you Eponymous fame!	How will Halloween's Horrors compete/With wreckless Late night White House tweets?

NANCY IS RETIRING! Please contact Dave Thomas if you are interested in becoming Treasurer.

DUES - check the date on your mailing label. If it's time for you to renew, or to make a contribution, please send a check to NANCY SHELTON, NMSR Treasurer, 11617 Snowheights NE, Albuquerque, NM 87112

Name _____

Address _____

Membership \$20 *per annum**

On the Net? Ask for the Paperless NMSR Reports! Send an email to nmsrdave@swcp.com "Dave Thomas"

**For Renewals that are above the \$20 annual amount, the excess will be applied to the NMSR budget. Thanks!*

The NMSR e-mail list is fun! It's an e-mail list with news announcements of interest to NMSR members, discussions about news of the times, and more. To join, send a request to nmsrdave@swcp.com.

Thanks to: John Covan, Eddy Jacobs, Nancy Shelton, Debbie Thomas, Keith Thomas, and all our Puzzlers!

**Wednesday, October 11th
Meeting! Magic with Bill Fienning, Flat Earth analysis with Dave Thomas**

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David E. Thomas, Editor (505) 410-0753
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**October Meeting
Magick
Flat Earth Movement
Weds., Oct. 11th
7:00 PM
CNM SRC 204**

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