



# NMSR Reports

The Newsletter of the  
New Mexicans for Science and Reason

NMSR Reports, David E. Thomas, Editor, 801 Fitch Ave., Socorro, NM 87801 © 2019

## SEPTEMBER MEETING:

NEW MEXICANS FOR SCIENCE  
AND REASON will hear

**Ken Frazier**

on “From Darwin to Today:  
Thoughts on How We Honor Our  
Scientists and Thinkers”

**7:00 PM September 11<sup>th</sup>, 2019**

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

==>**Room 204**<==

*Bring a friend!*

council of Committee for Skeptical Inquiry (CSI), an international organization which promotes scientific inquiry. He is also the founder of New Mexicans for Science and Reason. Join us at **7:00 PM September 11<sup>th</sup>, 2019**, CNM MAIN CAMPUS, Student Resource Center, Room 204.

## October 9<sup>th</sup>, 2019 NMSR Meeting:

**Milton Vernon** on “US  
production of medical diagnostic  
isotopes”



Milton Vernon of Sandia will present a short description of the use of isotopes in medicine, the history of production, the collapse of present-day production, and current proposals for new production. He will then focus on local company Eden's proposed process, and where they are in their implementation.

## FUTURE MEETINGS ANNOUNCED

September 11<sup>th</sup>, 2019 NMSR Meeting:

**Ken Frazier** on “From Darwin to Today: Thoughts on How We Honor Our Scientists and Thinkers.”

Kendrick Frazier is a science writer and longtime editor of Skeptical Inquirer magazine. He is also a former editor of Science News, author or editor of ten books, and a Fellow of the American Association for the Advancement of Science (AAAS). He is a fellow and a member of the executive



## MO-99 ONLY PRODUCED IN 6 REACTORS



## 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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**John Covan, Vice-President**

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**Kim Johnson, Industrial Physicist**

kimber@comcast.net

**Marilyn Savitt-Kring, Science Mom**

Membership: \$25/year (hardcopy newsletter), or \$15/year (downloadable PDF), make your check payable to NMSR, send to treasurer (Debbie Thomas).

### 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: T = K, Z = P.

Bonus Puzzle Clue: Consider using logarithmic theory to generate an iterable equation.

### 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 **WEDS., SEPTEMBER 11<sup>th</sup>, 2019**, 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: SEPTEMBER 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.

```
" M I O L W I L   Y J R   F J X L   V G B W P   J
I B K L   V G K   Y G M C   L X O Q M ;   A B C
O C   F J M   V G B W P   W G   K L Y L P R
V G K   C F L   E G K M C   G V   C F L Y   J Q Q
-   C F L   J Z J C F R   G V   F B Y J W
A L O W U M . "   -   F L Q L W   T L Q Q L K
```

### 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
```

### AUGUST CYPHER SOLUTION

"THE SADDEST ASPECT OF LIFE RIGHT NOW IS THAT SCIENCE GATHERS KNOWLEDGE FASTER THAN SOCIETY GATHERS WISDOM." - ISAAC ASIMOV

Esteemed August Code Crackers: Mike Arms\*, Terry Lauritsen\* and Austin Moede\*!

\*Secret Word: "SMART PHONE DIG"

## SOCORRO STUMPER

### Need more Secret Word Cryptograms?

New puzzles every week at

[www.nmsr.org/SocorroStumper.htm](http://www.nmsr.org/SocorroStumper.htm)



## September Bonus: “Three Ring Circle”

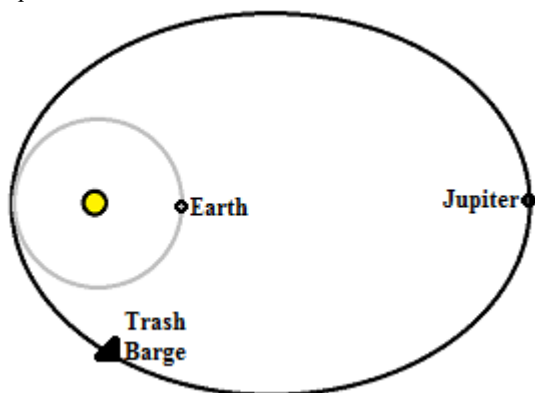
The September Bonus: Solve for X, in  $3^X = X^3$ .

## August Bonus : “Pricy Trash Run”

Submitted by Dave Thomas

Suppose you have a rocketload of undesirable trash (perhaps radioactive sludge, or vain politicians’ tweets), and you’ve managed to get it off Earth, and into an Earth-like circular orbit (radius  $R \sim 1.5 \times 10^{11}$  meters, orbital speed  $\sim 30,000$  meters/second  $\sim \sqrt{GM/R}$ ). Now, you want to dump the trash barge right into the Sun.

**The August Bonus:** Of the two methods outlined below, which is the most economical approach? Also, estimate how many joules per kilogram of barge will be required for both methods?



(A) Fire the trash barge’s rockets in the opposite direction of its orbit around the Sun, bringing it to a standstill, from which it would plummet directly into the sun. (This is the inner orbit shown above.)

(B) Briefly fire the barge’s rockets in the same direction of motion as the rocket, giving it an elliptical orbit with the perihelion near Earth’s orbital radius, and an aphelion near Jupiter’s orbital radius ( $\sim 7.8 \times 10^{11}$  meters). Once the barge reaches aphelion, then fire the rockets in the opposite direction of its orbit around the Sun, bringing it to a standstill, whereupon it will plunge into the Sun. (This is the outer orbit above.)

**Note:** assume both Earth and Jupiter are considered “elsewhere” in the solar system for the entire duration, and are shown for scale only. They will not affect the barge in its orbit around the sun. In other words, sun and barge are a 2-body problem.

**Answer:** (B) is much more economical, and in fact, takes only 15% of the energy per kg required for (A).

**Congrats:** Earl Dombroski (NM).

## August 14<sup>th</sup>, 2019 NMSR Meeting:

### Dr. Stewart Thompson on Fluoridation

Stewart Thompson, Assistant Professor of Neuroscience in the Psychology department at New

Mexico Tech, spoke on “A diatribe on fluoride” at our August 14th, 2019 meeting.

Dr. Thompson said that some early studies showed a reduction in cavities in people suffering from fluorosis (a discoloring of teeth). Andrew Mellon, the founder of ALCOA, and Secretary of the Treasury from 1921 to 1932, had a problem of disposing of millions of tons of waste fluoride into the environment. (Fluoride is released during the production of things like aluminum.) With the help of the government, the benefits of fluoride in reducing cavities were used to justify its prevalence in the environment.

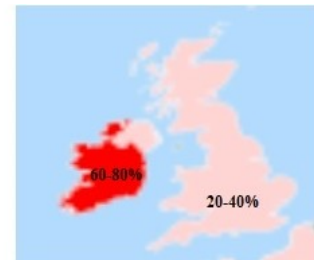


Stu said that in 1985, William Marcus, PhD, a high-level EPA scientist, objected for being forced to write into regulations that high levels of fluoride in water were fine, despite documented negative health effects. The EPA caved to external political pressure to set the fluoride level at 4mg/L, and then fired Dr. Marcus. The Union fought back, and investigations showed extreme collusion between the EPA and industry. The trial found for Dr. Marcus on every count, and he was reinstated, with full back pay and damages. Even then, the EPA continued to harass him, and subsequently he won even more ‘damages’. Robert Reich, Secretary of Labor, was instrumental in helping Marcus.

Data (from the World Health Organization, WHO) shows that dental decay in Western Europe (where there is very little fluoridation) has declined at the same rate as in the United States over the past half century. For the seven countries with the lowest tooth decay rates, six have no water fluoridation programs, and England has 10% fluoridation.



**Tooth Decay Prevalance**



**Use of Fluoridation**

*While use of fluoridation is higher in Ireland than in Northern Ireland or England, the presence of tooth decay is flip-flopped, and is much lower in England and Northern Ireland.*

So, why has there been a general reduction in caries? Use of fluoridated toothpaste is >95% in the OECD countries (Organisation for Economic Co-operation and Development, which includes 36 developed nations). The CDC has, since 1999, said: “Fluoride prevents dental caries predominately after eruption of the tooth into the mouth, and its actions primarily are topical for both adults and

children.”

The National Research Council has said since 2006: “The major anticaries benefit of fluoride is topical and not systemic.” In other words, the benefit of fluoride comes from topical use; drinking fluoride does not help anyone’s teeth.

Fluorine is the most electronegative and reactive element on Earth. The USDA has pointed out that fluoride is a serious problem for domestic animals: “Airborne fluorides have caused more worldwide damage to domestic animals than any other air pollutant.” Groundwater fluoride above 1.5mg/L is considered a major health risk by the WHO. Excessive fluoride intake can cause acute toxic hazard, such as to people with impaired kidney function. Other hazards include chronic toxic hazards of gene mutations, cancer, reproductive effects, neurotoxicity, bone pathology and dental fluorosis.

More than 400 peer reviewed studies find that fluoride is a neurotoxin. Anatomical effects include Neurodegeneration and neurotransmitter deficiency. Over two hundred animal studies showed that prolonged exposure is bad, especially with iodine deficiency or aluminum excess. Three human studies have shown that gestational exposure impairs fetal brain development.

There are functional deficits reported as well. Reduced intelligence was found in 53 studies in human populations. Moderately high fluoride reduces IQ by ~10 points. Fetal exposure seems to be a major factor. (FDA banned fluoride supplements for expecting mothers in the 60’s.) Impaired learning and memory is indicated in over 40 studies in animals. Rodents ingesting fluoride have impaired learning and memory.

Systemic effects have also been found, including spleen/immune function, negative effects on kidney function, negative effects on thyroid Function, and cancer incidence. The source of fluoride (SFA) contains arsenic, which is a demonstrated carcinogen.

By 2012 there were more people drinking artificially fluoridated water in the USA than the rest of

theWorld combined. Surprisingly, after evidence of negative health effects became convincing, fluoridation actually increased in the USA. And, fluoridation is still extolled as awesome. The EPA appears reluctant to use evidence to guide practice.

Why? Stu’s take is that health policy is driven by commercial vested interests in the USA. In other developed countries, however, it is driven by government trying to minimize the cost of universal healthcare. In 2015, fluoride levels in the United States were finally lowered to recommended levels of 0.7ppm.

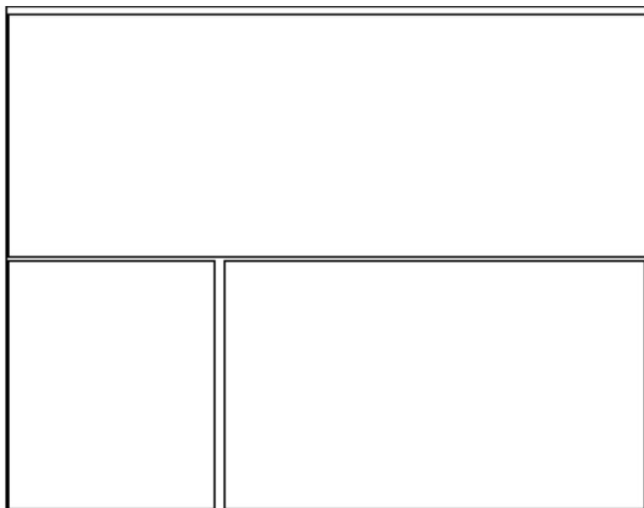
Stu talked briefly about vaccines as well. Some vaccines are better than others, he said. By not taking into consideration the possible negative effects of *some* vaccines, the medical community is actually providing fodder for anti-vaccine propagandists.

NMSR thanks Stuart Thompson for a fascinating lecture. His slides, including comments on both fluoridation and vaccines, are available at the NMSR website, at [www.nmsr.org/fluoride.pdf](http://www.nmsr.org/fluoride.pdf).

DUES check the date on your mailing label. If it's time for you to renew, or to make a contribution, please make your check payable to NMSR, and send it to Debbie Thomas, NMSR Treasurer, 3205 Alcazar NE, Albuquerque., NM 87110  
Name \_\_\_\_\_  
Address \_\_\_\_\_  
Membership \$25 per annum (hard copy newsletter), or \$15 per annum (online newsletter).

**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](mailto:nmsrdave@swcp.com).**

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



**IN THIS ISSUE:**  
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