



NMSR Reports

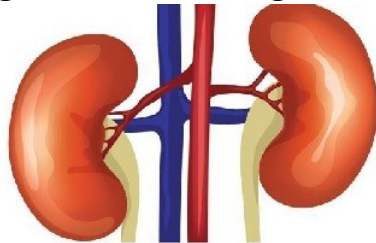
The Newsletter of the
New Mexicans for Science and Reason

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

MAY MEETING:
NEW MEXICANS FOR SCIENCE
AND REASON will hear
Benjamin Radford, on
“Organ Theft Urban Legends”
7:00 PM May 8th, 2019
==>CNM MAIN CAMPUS,
Student Resource Center<==
==>Room 204<==
Bring a friend!

FUTURE MEETINGS ANNOUNCED

May 8th, 2019 NMSR Meeting: Ben Radford on “Organ Theft Urban Legends”



New Mexicans for Science and Reason will hear Benjamin Radford, managing editor of the *Skeptical Inquirer*, speaking on “Organ Theft Urban Legends.” Join us at 7:00 PM May 8th, 2019, CNM MAIN CAMPUS, Student Resource Center, Room 204.

Coming later this year:
Anay Hightower on Fire Science
Dr. Stewart Thompson on Fluoridation

CESE Annual Meeting to feature Dr. Karen Trujillo, Secretary of Education



On June 1st, 2019 from 1:30 to 4:30, CESE will hold its 23rd annual meeting. The keynote speaker is **Karen Trujillo, Ph.D.**, New Mexico's new Secretary of Education. The topic of her talk is: "A Shared Vision of Student Opportunities for Success in New Mexico". The meeting will be held at the Anthropology Lecture Hall, Room 163 at the Maxwell Museum on the University of New Mexico. Free, and open to the public.

CESE and NMSR Science Fair Winners

Every year, the Coalition for Excellence in Science and Math Education (CESE) teams up with the New Mexicans for Science and Reason (NMSR) to make special awards at the State Science Fair at New Mexico Tech in Socorro. A high-school and middle school project are selected for a \$200 prize. We select the projects that best used the scientific method to solve, or help solve a real-world problem that has direct application to improving the world condition.

This year, the high school winner was Lane Clavel, Roy High School, for his Senior Biomedical & Health project "Pump Up the Protein." Lane's project produced an answer to the question "Is there a significant difference in protein concentrations between beef and wild game?" He found that there was no significant protein content benefit in choosing wild game venison over beef.



The middle school winner, Julian Singell, is from Los Alamos Middle School. His Junior Mathematical Sciences project, "Are New Hire Capabilities Accurately Evaluated During the Hiring Process," included some good hypothesis testing and innovative analyses.

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

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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 = V, W = J.

Bonus Puzzle Clue: Combinatorics is the Key!

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., MAY 8th, 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: MAY 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.

" N A Q M H A M Q N I P M I K J Q X K E
V Q X J J B Y K C I H Q J F , Z M
N Y B K E R H B J R Q N J B L J Q J . " -
Q H R Q I H D Y F N Q A Q N J I T K E
D I U Q L W I Q H K E I P R M M H I P R K E
U I E I C

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

APRIL CYPHER SOLUTION

"TO SAY THAT SCIENCE IS LOGICAL IS LIKE SAYING THAT A PAINTING IS PAINT." - SUPERCONDUCTIVITY PIONEER LEON COOPER

Esteemed April Code Crackers: George Egert*, Mike Arms*, Terry Lauritsen*, and Austin Moede*.

*Secret Word: "UPSCALING THEORY"

SOCORRO STUMPER

Need more Secret Word Cryptograms?

New puzzles every week at

www.nmsr.org/SocorroStumper.htm



May Bonus: “Three of a Kind”

Submitted by Dave Thomas



The probability of getting three of a kind in 5-card draw poker (52 cards, 4 suits, 13 ranks per suit) is just over 1 in 50.

The May Bonus: What is the probability of getting three of a kind in 6-card draw poker? Is it more or less than that for 5-card draw?

April Bonus : “Co-ed Debates”

Submitted by Dave Thomas

In the primary election, nine male and seven female candidates are running for president. Rather than have all 16 candidates try to debate at once, the League of Human Voters has decided to hold four debates, with just four candidates in each event. The debate panel foursomes are to be chosen randomly.

The April Bonus: How much more likely is a balanced panel (two male/two female) than an all-male panel? And how much more likely is an all-male panel than an all-female panel? (Ratio of probabilities for both.)

Answer: (A) 6; (B) 3.6

Congrats: Earl Dombroski (NM), Allen Robnett (NM), Mike Arms (NM).

APRIL 10th, 2019 NMSR Meeting: John Covan, on “Some Thoughts on Risk”



New Mexicans for Science and Reason heard vice-president John Covan at its April 10th, 2019 meeting

John opened with a discussion of the ill-fated Swedish warship, Vasa, which sank twenty minutes into its maiden voyage in 1628.



Because its designers didn’t know about the physics of keeling over, and because the king had insisted on ornamental statues, and 64 bronze cannons, the ship was barely a mile away from port when an unexpected gust of wind made it topple, capsize and sink. Thirty people died in the disaster.



John explained that “Risk Management” does not mean reducing all risks to zero. You try to cope with the risks you can afford to mitigate, but some “residual risk” always remains. Stressors (causes of risk) include the environment (storms, earthquakes, etc.), wear and tear, and malevolent acts (terrorism, for example). There are always limitations on what can be done – budgets must be adhered to, delivery times can be critical, technology may not be developed enough, not to mention legal and political constraints. The environments to be considered include Normal operational environments, Off-normal operational environments, and Accident environments.

John talked about the A-10 aircraft as an excellent example of systems engineering.

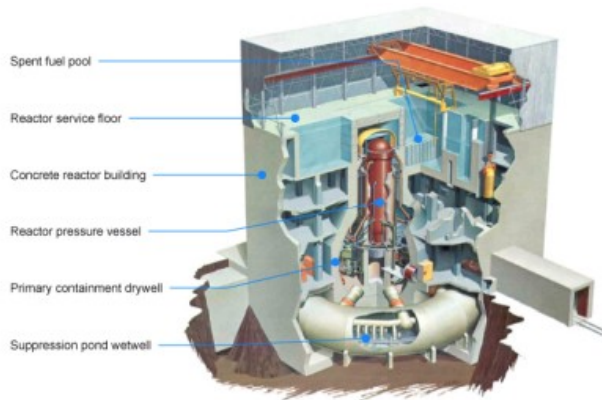


One thing the A-10 must do is provide effective close air support. It must not be too vulnerable to enemy fire, however. The strategies for its use include specialization in loitering over the battlefield, and providing lethal, high rates of fire (4,000 rpm Gatling gun). The pilot is protected with a titanium bathtub. Backup control systems help the pilots get back home. The risks of getting shot down are compensated for by the sturdy construction and redundant control systems. It is a very formidable weapon.



John said that human nature can conflict with risk management. A section of the Autobahn highway was seeing too many crashes; since there is no speed limit, each driver decides how much risk to take. When the dangerous stretch of highway was rebuilt so as to have wider, gentler curves, the crash rate remained high. The drivers realized they could drive faster, and a “New Normal” was established.

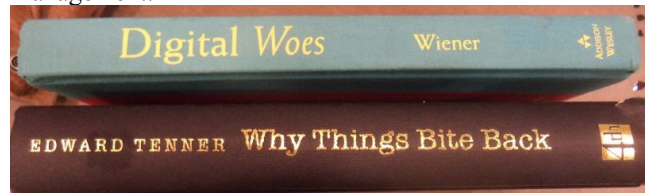
Fukushima Daiichi nuclear disaster was used to illustrate design basis (DB) considerations. The Earthquake and tsunami exceeded the DB. Why? The historical data was insufficiently understood; emergent data was not acted upon; and, consequences amounted to residual risk. The plant was built to withstand a magnitude 8.8 quake. Here, the “residual risk” included a very rare 9.0-magnitude earthquake, which was what toppled the reactors, John said.



The recent Boeing 737-Max disasters were discussed next. When Boeing got some new, larger, more powerful engines, they didn’t design a new plane around it. Rather, they stuck that big engine on to their popular 737 airframe, which was really too small for the job. Existing flight characteristics were changed, and the plane became unstable, and more likely to stall. The solution was software to control the difficult craft, rather than training the pilots to fly it safely. The software was not up to the task, and two deadly crashes have ensued. John said the software solution was like “putting lipstick on a pig.”

Covan mentioned some good books on risk

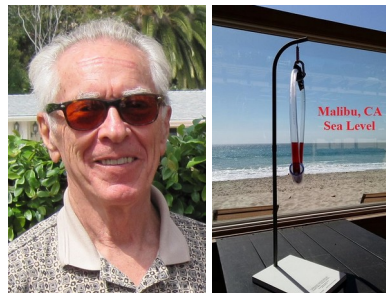
management.



John also recommended “Digital Woes” By Lauren Ruth Wiener: “Why we should not depend on software.”

NMSR thanks John Covan for a stirring presentation.

Frank J. Thomas: Longtime NMSR member Frank Thomas passed away peacefully on April 20th, 2019, at age 89. Survivors include sons Dale, Wayne and Keith Thomas, nephew Dave Thomas, and niece Debbie Thomas. A celebration of his life will be held on June 29th in Malibu. He will be missed.



Measurement of horizon dip at sea level courtesy Frank J Thomas

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

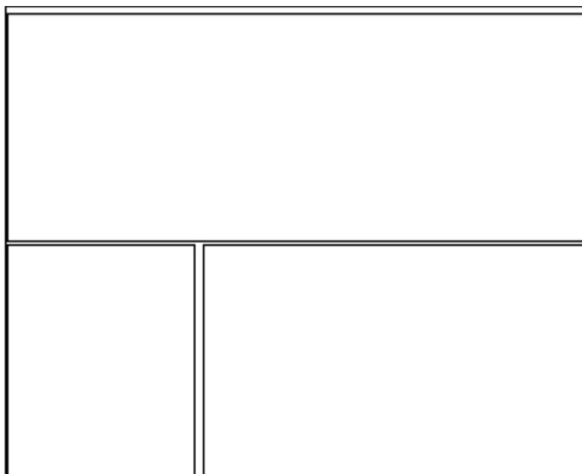
Name _____

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.

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



IN THIS ISSUE:

Future Meetings
Announced
New Puzzles!
Science Fair Winners
Announced
April meeting -
Covan on Risk

Ben Radford
Urban Legends
Weds. May 8
7:00 PM

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