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# National Association of Rocketry Educator's Newsletter

February 2012

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As Big as the Moon

A wonderful movie was on TV recently about a group of kids that went to Space Camp where they trained as junior astronauts and launched model rockets. The drama in the movie was that this was a class of special needs students in 1988 that faced incredible obstacles in trying to make this improbable dream become an inspiring reality. More than a heartfelt Hollywood fantasy, this was the true story of a school in Grand Rapids, Michigan led by teacher Mike Kersjes who wrote the book the movie is based on, *A Smile as Big as the Moon*. Such stories of inspiration and success reoccur in many forms when classrooms include space and rockets. NAR has been helping educators do this for decades and we can help you, too. Look at the stars on these dark winter nights and then launch rockets toward them on the upcoming bright spring days.

Aim high!

Vince Huegele
NAR Education Chairman



2012 Team America Rocketry Challenge (TARC) is Underway

Team registration is officially completed, the forms and payments are in, the team data is all recorded and there are 678 teams registered for TARC 2012, from 49 states plus DC and the US Virgin Islands. This is 76 more teams and one more state than last year. This year we're missing entries only from Rhode Island. What matters more than how many teams register is how many fly, as this is where the learning and excitement occurs. Last year 339 teams submitted qualification flight results.

The TARC (<http://www.rocketcontest.org/>) is the world's largest rocket contest, sponsored by the Aerospace Industries Association (AIA) and the National Association of Rocketry in partnership with AAPT, DoD, NASA, and AIA member companies.

The Top 100 teams are invited to compete for a share of the \$60,000 prize package in a national fly-off on May 15, 2010. NASA invites the top 20 teams to participate in their Student Launch Initiative, an advanced rocketry program. AIA member companies, such as Lockheed Martin and Raytheon have sponsored additional prizes such as scholarship money and a trip to an international air show.

Key dates are approaching:

Feb. 1 - Complete first test flight (recommended)

Mar. 1 - First TARC qualification flight recommended (teams this year can have three official qualification flight attempts as long as one of them is on or before this date)

Mar. 15 - Complete first official flight attempt

Apr. 5 - Submit qualification form to AIA

Apr. 9 - Top 100 team selected

May 15 - National Finals at Great Meadow in The Plains, VA

The NAR website provides additional information

(<http://www.nar.org/TChallenge.html>). There is a superb new teacher resource posted on the TARC website page http://rocketcontest.org/resources_educators.cfm.

NAR member (and middle school teacher) Tom Sarradet built a whole STEM curriculum for middle school students based on using TARC, and posted it on this page.



NAR Scholarship Program and Robert L. Cannon Award

Did you know that if you are NAR member between the ages of 17 and 22 attending college or a vocational school that you may be eligible to receive a scholarship?

Are you a teacher or educator who uses model rocketry in the classroom? You are welcome to apply for a \$500 grant to use in your program.

In 2001, the NAR's scholarship and Robert L. Cannon educational awards were inaugurated at NARAM. Three NAR members received scholarships and two educators received Cannon award grants. For 2002, there were five Cannon awards and five scholarships presented to recipients. In 2003, there were four scholarships awarded to NAR members and three Cannon award winners. Since 2004, we have awarded 5 Cannon winners per year.

Deadlines for Scholarships and the Cannon award applications are May 1st and June 1st, respectively, of each year. Awards are announced at the annual meet (NARAM). You do not have to be present to receive an award.

Both of these programs are ongoing. See <http://www.nar.org/cannon.html> for details on how to apply. If you have questions concerning either program, please contact

the Joyce Guzik, via email: jguzik@mindspring.com.

Great Explorations in Math and Science (GEMS) Teacher Handbook (available for download)

The GEMS Teacher's Handbook is both an introduction to Great Explorations in Math and Science (GEMS) and a clear explanation of the elements included in all GEMS guides available from the Lawrence Hall of Science, University of California, Berkeley. For the teacher considering integrating GEMS into his or her curriculum for the first time, the handbook describes the philosophy behind the series, its alignment with the National Science Education Standards, its flexibility in diverse settings, and the structure of its teacher's guides. For all teachers, including those already familiar with GEMS, the book provides teaching strategies and tips that apply to all inquiry-based science and math activities.

The handbook includes concise discussions on numerous teaching concerns, including assessing student performance, integrating GEMS activities into established curricula, and strategies for obtaining materials. It also provides techniques for handling particular challenges, such as what to do when you, the teacher, don't know the answer, or when students arrive at "wrong" conclusions. Full-page charts summarize the major skills, concepts, themes, and mathematics strands addressed in each of the GEMS guides. Recent editions of the handbook feature "blueprints" for building year-long curricula using GEMS and other activity-based programs.

GEMS Teacher's Guides are clearly organized, easy to use, and do not require any special background in math or science. Each classroom session includes an overview, materials list, and preparation steps, followed by clear, step-by-step instructions for effective classroom presentation. Background information is provided for the teacher, along with photographs, illustrations, and, often, examples of student work. Throughout each guide are comments on presentation strategies and practical advice to help the teacher, many suggested by teachers who tested the units.

<http://lawrencehallofscience.org/gems/GEMSpdf/teacher's%20handbook.pdf>

American Institute of Aeronautics and Astronautics (AIAA) Foundation: Investing in the Future of Aerospace

The AIAA is the professional society for the field of aerospace engineering. The AIAA Foundation has provided scholarships to over 500 college students at 130 universities. Additional information with deadlines is available at <http://www.aiaa.org/pdf/student/09ScholarshipFINAL.pdf>.

Civil Air Patrol (CAP) promotes and supports aerospace education

CAP educational programs (for its own members and the general public) help prepare American citizens to meet the challenges of a sophisticated aerospace society and understand its related issues.

CAP offers national standards-based educational products, including a secondary textbook, *Aerospace: The Journey of Flight*, and the middle-school-level *Aerospace Dimensions*. Aerospace Education Members can get classroom materials and lesson plans from CAP.

http://members.gocivilairpatrol.com/aerospace_education/index.cfm



How to Build a Model Rocket

NAR member Hans "Chris" Michielssen has developed and donated to the NAR some outstanding web pages of tutorial on "[How to Build a Rocket](#)" that go step-by-step through all the basic craftsmanship techniques of making a model rocket. This is a great complement to the 6-part NAR video on the AIA website on How to Build and Fly a Model Rocket. Thanks, Chris!

Fun iPhone app: 3D Sun

Imagine holding the entire sun in the palm of your hand. Now you can. A new iPhone app developed by NASA-supported programmers delivers a live global view of the sun directly to your cell phone. Users can fly around the star, zoom in on active regions, and monitor solar activity.

The name of the app is "3D Sun" and it may be downloaded free of charge at Apple's app store. Just enter "3D Sun" in the Store's search box or visit <http://3dsun.org> for a direct link.

Realtime images used to construct the 3-dimensional sphere are beamed to Earth by the Solar-Terrestrial Relations Observatory (STEREO), a pair of spacecraft with a combined view of 87% of the solar surface. STEREO-A is stationed over the western side of the sun, while STEREO-B is stationed over the east. Together, they rarely miss a thing.

Telescopes onboard the two spacecraft monitor the sun in the extreme ultraviolet (EUV) portion of the electromagnetic spectrum. "That's why the 3D sun looks false-color green," explains Lika Guhathakurta, STEREO program scientist at NASA Headquarters. "These are not white-light images."

Many users say their favorite part is the alerts. The app comes alive on its own when the sun grows active or when interesting events are afoot. For example, a recent alert notified users that a comet just discovered by STEREO-A was approaching the sun. When the comet was destroyed by solar heating, the app played a movie of Comet STEREO's last hours.

<http://www.nasa.gov/topics/solarsystem/features/iphone-sun.html>

Don't have an iPhone? Get your daily Space weather report at www.spaceweather.com. It offers news and information about the Sun-Earth environment such as sunspots, solar conjunctions, aurora alerts and more.

Aviation History in February: 100 Years Ago

February 8, 1908: The U.S. War Department informed the Wright brothers that their proposal to build a heavier-than-air flying machine for \$25,000 had been accepted. The performance of the Wright brothers' Army Flyer exceeded expectations so much that the War Department paid them \$30,000, which included bonus money, for their efforts.



Space History in February: 45 Years Ago

February 14, 1963: NASA launched Syncom 1, the first communication satellite intended for geosynchronous orbit. Sadly, after about five hours of flight, NASA lost contact with the satellite and could not re-establish it.

Persistence and determination pay dividends...Within twenty years the United States, Europe, Japan and Russia successfully put a total of 21 satellites into orbit.

Manufacturers

Looking for a special rocket to blend a history and science lesson? Look no further...[Dr. Zooch](#) has a Friendship 7 Mercury Atlas rocket for you! The Doctor also has a long list of other stand-off scale rockets you might find exciting as well!

Need a custom decal for your special classroom project? Check out [Excelsior Rocketry](#)...They have decal sets for older (classic) Estes, Centuri and Cox model rocket kits as well as kits of all types (scale, sport, futuristic, etc.).

Want something truly unique for your classroom rocketry demonstration? [Art Applewhite](#) has something for you...Check out his Cinco, Stealth, and Qubits kits! And don't be surprised to find something for free!



Quick Links...

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[Our Website](#)

[NAR Teacher Resources](#)

[Model Rocket Safety Code](#)

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