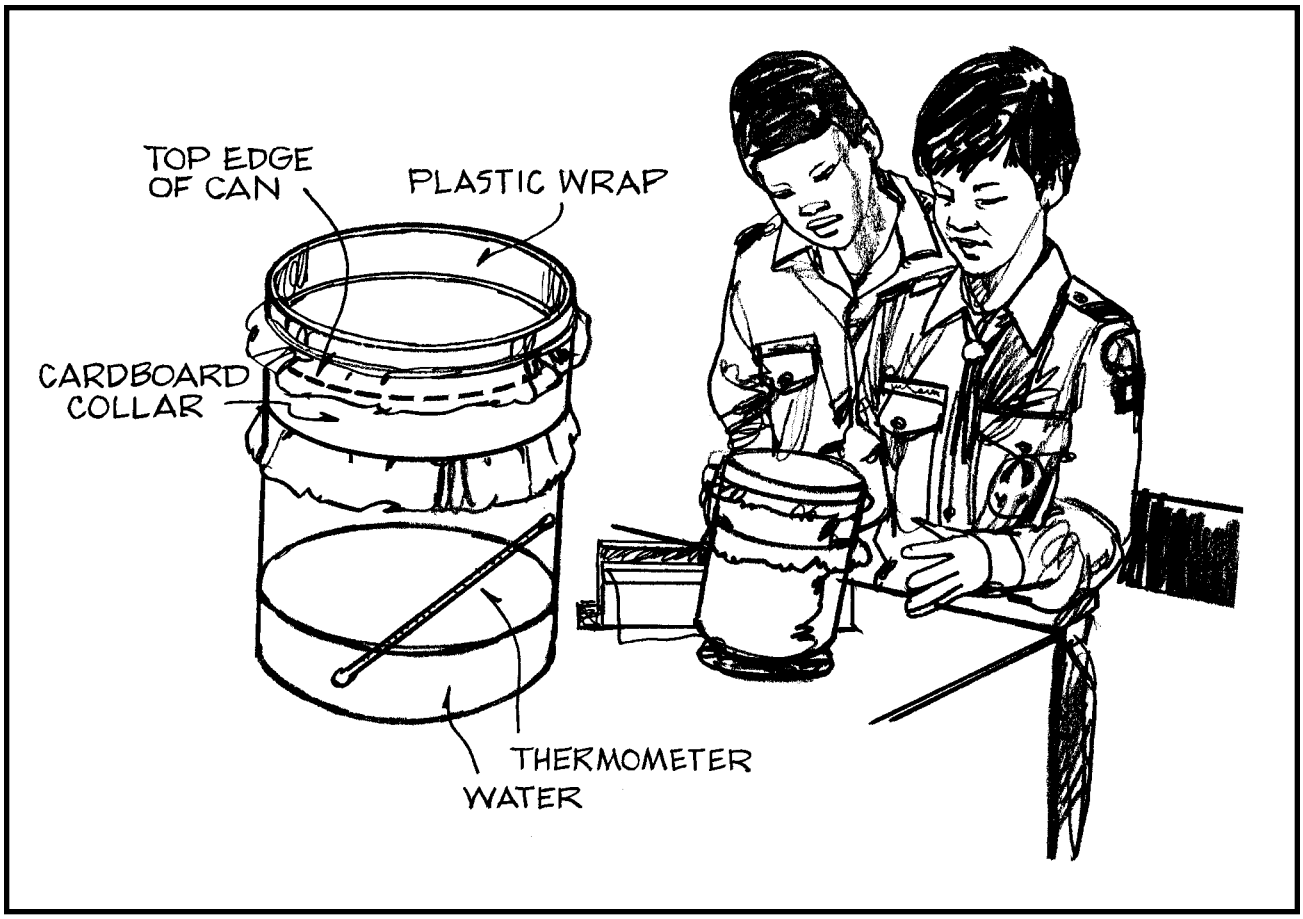
From the planning Calendar:
http://www.scouting.org/filestore/magazine/2013_2014PlanningCal.pdf

Topic	Boys Life	District Roundtable	Council Roundtable
Fishing	Sep 2013	Aug 2013	Jul 2013
Athletics	Oct 2013	Sep 2013	Aug 2013
Science	Nov 2013	Oct 2013	Sep 2013
Cooking	Dec 2013	Nov 2013	Oct 2013
Wilderness Survival	Jan 2014	Dec 2013	Nov 2013
Communications	Feb 2014	Jan 2014	Dec 2013
Pioneering	Mar 2014	Feb 2014	Jan 2014
Environment	Apr 2014	Mar 2014	Feb 2014
Orienteering	May 2014	Apr 2014	Mar 2014
Mechanics	Jun 2014	May 2014	Apr 2014
Hiking	Jul 2014	Jun 2014	May 2014
Shooting	Aug 2014	Jul 2014	Jun 2014
Sports	Sep 2014	Aug 2014	Jul 2014
Engineering	Oct 2014	Sep 2014	Aug 2014
High Adventure	Nov 2014	Oct 2014	Sep 2014
Tracking	Dec 2014	Nov 2014	Oct 2014

SCIENCE



Science is a method of learning about the world by observation, study, and experimentation. We might say that Scouting is a science because that's the way Scouts learn.

In this program feature we will explore two scientific subjects, weather and energy. During troop meetings, Scouts will discover how to use weather signs. They will also learn about the importance of conserving energy sources.

Keep records of the weather this month and make periodic weather predictions. Also try some solar energy experiments or projects that might be used on a campout.

The big event will be a weather bivouac. Ask patrols to predict the weather for the bivouac as the date draws near. The highlight of the bivouac will be an adventure obstacle trail with problems patrols might have to solve during a hurricane.

SCOUTING OUTCOMES

This month's patrol and troop activities should give your Scouts

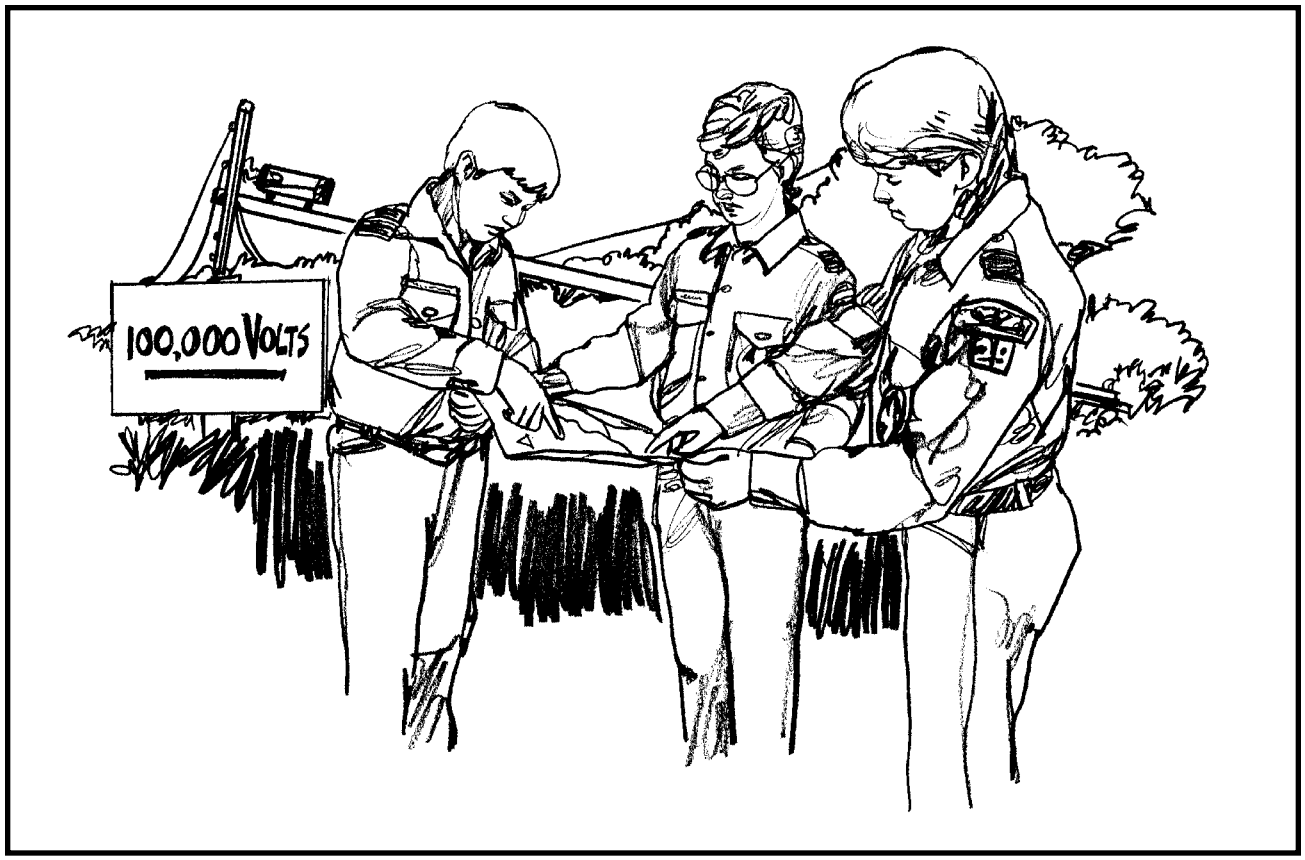
- An appreciation of the wonders of nature and possibly a greater feeling of closeness to God
- A better understanding of how pollution affects the natural world and how Scouts can help to stop it
- A strengthened resolve to do their "duty to country" through good conservation practices
- Increased self-confidence
- Basic knowledge for predicting weather

ADVANCEMENT OPPORTUNITIES

By month's end, all Scouts should meet many of their basic camping and cooking requirements through First Class rank. Depending on the campout activities, they may also complete all or part of the following rank requirements:

Tenderfoot

- Outdoor—cooking, camping, hiking, nature
- Citizenship—flag ceremonies
- Patrol/troop participation—patrol identification
- Personal development—Scout Oath and Law



Second Class

- Outdoor—cooking, camping, hiking, nature
- Citizenship—flag ceremonies, Good Turn
- Patrol/troop participation—patrol identification
- Personal development—Scout Oath and Law

First Class

- Outdoor—cooking, camping, hiking, nature
- Citizenship—flag ceremonies
- Patrol/troop participation—patrol identification
- Personal development—Scout Oath and Law

Merit Badges. Older Scouts can concentrate on the Camping, Cooking, and Weather merit badges this month. Depending on activities during the campout, they may also cover requirements for the Hiking, Backpacking, and Wilderness Survival merit badges.

PARENT/GUARDIAN PARTICIPATION

The patrol leaders' council can involve parents in the program feature this month by

- Asking qualified people to assist with instruction for energy/weather skills
- Inviting parents on the campout
- Asking parents to provide transportation to the campout
- Having a family potluck dinner

PATROL LEADERS' COUNCIL

The patrol leaders' council should meet during the early part of the previous month to plan troop activities for this program feature. If you don't complete all items on the following agenda, continue planning at patrol leaders' council meetings after each troop meeting.

- Decide on the campsite for the weather bivouac campout. If permissions will be needed, assign someone to secure them.
- Plan the special activities for the campout. See the ideas on these pages. If special gear or tools will be needed, assign someone to obtain them. Seek help from the troop committee, if necessary.
- Review Leave No Trace camping skills in the *Fieldbook*.
- Plan details of troop meetings for the month. Assign patrol demonstrations, covering skills that will be needed for the campout activities.
- Plan activities for the campout.

FEATURE EVENT

Weather Bivouac

This weather-wise program feature should help you to answer the age-old question, "What's the weather going to be like?" When your Scouts become interested in weather forecasting, apprehension about thunderstorms gives way to understanding and a pleasant thrill of anticipation. You'll probably see a reluctance to postpone or cancel a hike or camping trip when the Scouts themselves have forecasted an approaching storm.

The Scouts will gain an understanding of weather and become more familiar with prevailing winds, cloud formations, rain, snow, sleet, frost, and other phenomena that determine the weather.

Make the bivouac a real demonstration of preparedness and a good camping experience for the Scouts by using only equipment that you can carry on your back. New Scouts will have an opportunity to work on basic camping and cooking skills, plus some nature-related skills. The other Scouts will be able to expand their skills in many areas.

Building a Solar Energy Box

Begin with a clean, empty tin can. A 1-pound coffee can works well. Pour about a cup of water in the can, place a thermometer in the water, and let the water absorb solar energy.

You will need two transparent windows about ½ inch apart on the can. One window can be made by covering the top of the can with clear plastic wrap. Hold the plastic in place with a rubber band.

For the second window, make a cardboard collar for the can by bending a 2-inch-wide cardboard strip into a ring the same diameter as the can. Let the ends of the strip overlap and glue or staple them together. Cover the top of this collar with a second piece of clear plastic held by a rubber band. Slip the collar down over the top of the covered can so that the two plastic surfaces are about ½ inch apart.

Insulate the can so that the energy it collects will not be lost during the experiments. Wrap the can in some sort of insulation material, such as house insulation, plastic foam, or even newspaper pieces crumpled into small balls. For some suggested experiments, see the *Energy* merit badge pamphlet.

Adventure Obstacle Trail

THE HURRICANE. The object is for patrols to get a report through to a headquarters point after encountering the kinds of obstacles that Scouts might meet during a hurricane. Sealed envelopes are given to each patrol leader, to be opened at a specific spot and time (a different place for each patrol). Each patrol should be advised beforehand to bring the equipment it thinks it will need in the event of emergency situations.

The sealed envelope contains the following message:

"All means of communication have been severed between this point and the central relief headquarters. Personnel is limited, and it is extremely urgent that they know the extent of the damage in this area. They need your help in rendering service to the homeless and injured.

This is not a race against time. Follow the marked trail on the map. Watch for special hazards and other conditions that should be noted and reported to headquarters. Watch especially for injured persons; give such aid as you can and be prepared to report on this. Certain situations will require answers that you will deliver to headquarters. Be alert, be prepared, and good luck!"

Also in the envelope is a map with the central relief headquarters indicated on it, the patrol's starting point, and the route the patrol is to follow.

Problems are set up by troop leaders, parents, and troop committee members. Troop leaders and others who set up problems should serve as judges and scorers at the various stations. Have people at each problem site acting as victims.

- A downed tree is blocking the main road (dead limb laid across trail, cardboard sign on trail, "U.S. 1"). Project: Cut and clear using safe axmanship.
- Main power line down at Dow Crossing, marked with card, "100,000 volts." Project: Note location and rope off or barricade the immediate area.
- Bridge washed out at Moose Ford. Several projects possible: Lash together a raft; build a monkey bridge or other type of bridge.
- Jones family homeless, cold, hungry. Project: Build a fire and serve canned soup.
- You have broken or lost your compass. Determine due north from this point.

- Determine the height of the dangerous, tall "chimney" (tree) that has been left standing at the destroyed factory. If it should fall in this direction, will the top hit the Henderson house (carton)?

Near the end of this obstacle trail, give the Scouts a test of memory and powers of observation. List a number of questions such as:

Did Mr. Jones wear glasses? How many volts of electricity did the downed power line carry? What color was the Henderson boy's coat? How far do you think you have traveled since leaving point X? What was the number of the highway blocked by the big tree? What's the name of the lashings you used in making the bridge at Moose Ford?

WE'RE FROM NAIROBI

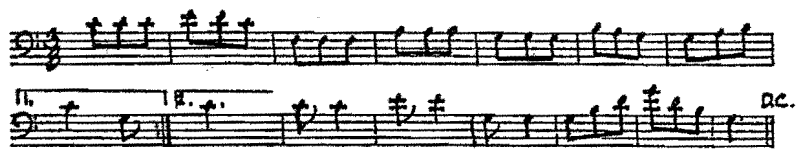
We're from Nairobi, our team is a good one.
We do the watusie, we're seven feet tall.
The cannibals may eat us, but they'll never beat us
'Cause we're from Nairobi, and we're on the ball.
SINGING! SINGING! SINGING!
Tra la la la la la la.

Chorus

Um-gow-wow, um-gow-wow, um-gow-wow
Um-gow-wow, um-gow-wow, um-gow-wow
Um-gow-wow-wow.
Singing
Um-gow-wow, um-gow-wow, um-gow-wow
Um-gow-wow, um-gow-wow, um-gow-wow
Um-gow-wow-wow!

We took sixteen men out from Kilimanjaro,
But they didn't have what it takes (clap, clap)
We took all the losers out into the jungle,
And left them tied up for the snakes (clap, clap).
Singing...

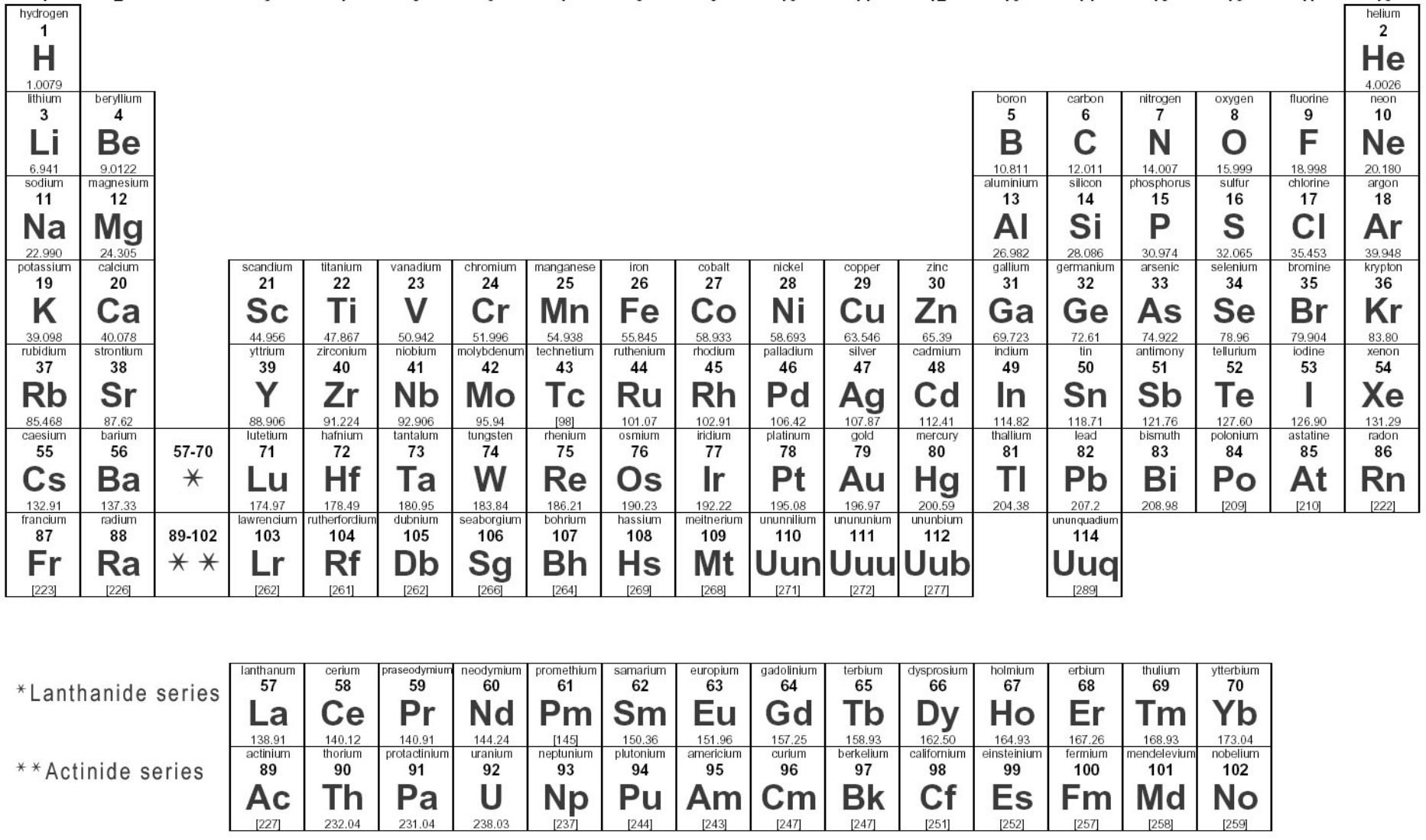
Repeat Chorus



HAVE YOU EVER TRIED to hammer in a bent nail? Even if you straighten it out before you try to reuse it, the nail still bends very easily. Only a new, straight nail will provide the best results. A carpenter beginning a new project always starts with the best materials he can find—nails, tools, and wood. In the hands of a skilled carpenter, these materials will be used to create a beautiful table or a cabinet. Remember the lesson from the carpenter; nothing beautiful can be carved from a rotten piece of wood.

Your character is the material you're using to build your life. Twenty years from now, you will begin to see the product you are building. The question to ask yourself is this: "Is the wood you're using now good wood or rotten wood?"

DO LITTLE THINGS matter? Every big thing in life is made of the little things that lead up to it. Kingdoms have been lost because the tide turned in a single but important battle.


hydrogen 1 H 1.0079
helium 2 He 4.0026
lithium 3 Li 6.941
beryllium 4 Be 9.0122
boron 5 B 10.811
carbon 6 C 12.011
nitrogen 7 N 14.007
oxygen 8 O 15.999
fluorine 9 F 18.998
neon 10 Ne 20.180
sodium 11 Na 22.990
magnesium 12 Mg 24.305
aluminium 13 Al 26.982
silicon 14 Si 28.086
phosphorus 15 P 30.974
sulfur 16 S 32.065
chlorine 17 Cl 35.453
argon 18 Ar 39.948
potassium 19 K 39.098
calcium 20 Ca 40.078
scandium 21 Sc 44.956
titanium 22 Ti 47.867
vanadium 23 V 50.942
chromium 24 Cr 51.996
manganese 25 Mn 54.938
iron 26 Fe 55.845
cobalt 27 Co 58.933
nickel 28 Ni 58.693
copper 29 Cu 63.546
zinc 30 Zn 65.39
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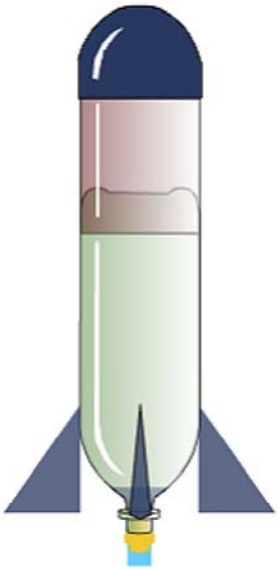
ALL ABOUT WATER ROCKETS

Water (or Bottle) Rockets

Bottle rockets or water rockets, what are they?



When someone mentions bottle rockets, do you envision placing a firecracker attached to a stick into a glass bottle and launching it?

Water rockets have been a source of entertainment and education for many years. They are usually made with an empty two-liter plastic soda bottle by adding water and pressurizing it with air for launching (like the image to the right).

Soda companies began using plastic bottles in 1970. The Polyethylene Terephthalate (PET) material used in most plastic soda bottles today was introduced in 1973.

Water rockets are used in schools to help students understand the principles of aeronautics. The Science Olympiads provide challenges of bottle rocket design and flight, including altitudes and distances reached. Many interesting designs and additional information on bottle rockets can be found with a simple Web search.

Teachers and students provide the following feedback to the Secondary Science Education Department at the University of Nebraska:

> "Two-Liter Pop Bottle Rockets may well be the GREATEST PHYSICAL SCIENCE TEACHING TOOL EVER CREATED!!" Middle grades students can manipulate and control variables, see their hypotheses verified or refuted, and graph their findings. High school students experience the nature of science at its best. They can document their abilities with the following concepts: inertia, gravity, air resistance, Newton's laws of motion, acceleration, relationships between work and energy or impulse and momentum, projectile motion, freefall calculations, internal and external ballistics, and the practice of true engineering.

How could something that sounds so simple be so complex? Open your mind to the science and mathematics behind this educational "toy." Below are links to a brief history timeline of rocketry, a comparison between water rockets and a NASA rocket, and additional information on the parts of a water rocket.

- **Timeline of Rocketry**
- **Comparison - A NASA rocket to water rockets**
- **Parts of a Water Rocket**
- **Launch Pad Construction**

Any comments, concerns, or questions should be addressed to:
Developer: **David Mazza**
Responsible NASA Official: **Jo Ann Charleston**

AWARDS

Journey to Excellence
- Scorecards
- Spreadsheets

William T. Hornaday Awards
- Earning a Hornaday Medal
- William T. Hornaday Profile
- Finding an Advisor
- Becoming an Advisor
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- Sample Projects
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- Frequently Asked Questions
- Questions?

Boy Scouts of America > Awards > William T. Hornaday Awards > Awards

An "Olympics of Conservation"

There are several different Hornaday awards. (The gold badge and gold medal are for adults.) Think of them as an "olympics of conservation," with an ever-increasing scale of challenge.

The award is given in one of seven forms.

- The local council may present the William T. Hornaday unit certificate for a conservation project by a pack, troop, team, or crew.
- The council may award the Hornaday badge to individual Boy Scouts, Varsity Scouts, and Venturers for outstanding service in conservation.
- The council may award the Hornaday gold badge to adult Scouters who have given significant leadership to conservation at a council or district level.

All other Hornaday Awards are conferred by the National Council:

- Scouts and Venturers may apply for the bronze and silver medals.
- Adult Scouters may be nominated for the gold medal.
- Organizations unaffiliated with Scouting may be nominated for the gold certificate.

Hornaday Award	Administered by	Awarded to	Type of Award	How to Qualify	Maximum Awards/Year	Requirements
Unit award	Council	Pack, troop, team, crew	Certificate	Be nominated or apply	Unlimited	Complete one project; 60% of unit contributes
Badge	Council	Boy Scout, Varsity Scout, or Venturer	Badge and certificate	Apply	Unlimited	Complete advancement requirements; complete one substantial project
Bronze medal	National	Boy Scout, Varsity Scout, or Venturer	Medal, certificate, and square knot	Apply	Unlimited	Complete advancement requirements; complete at least three bronze substantial projects, each from a different project category
Silver medal	National	Boy Scout, Varsity Scout, or Venturer	Medal, certificate, and square knot	Apply	Unlimited	Complete advancement requirements; complete at least four silver

						substantial projects, each from a different project category
Gold badge	Council	Adult Scouter	Badge	Be nominated	Unlimited	Adult Scouter; leadership to conservation at council or district level for at least three years
Gold medal	National	Adult Scouter	Medal, certificate, and square knot	Be nominated	Six	Adult Scouter; leadership to conservation at national or regional level over a lifetime (at least 20 years)
Gold certificate	National	Organization or individual	Certificate	Be nominated	Six	Outstanding contribution to youth conservation education for at least three years

William T. Hornaday Unit Award

A Hornaday unit certificate, No. 21-110, is awarded to a pack, troop, team, or crew of five or more Boy Scouts, Varsity Scouts, or Venturers for a unique, substantial conservation project. At least 60 percent of registered unit members must participate. At least 60 percent of the registered unit members must participate. These units may be nominated, or they may apply to their BSA local council for recognition.

William T. Hornaday Badge

The Hornaday badge is awarded, upon approval of the local council, to a Boy Scout, Varsity Scout, or Venturer for outstanding service to conservation and environmental improvement. Applicants meeting all requirements receive a certificate, No. 21-111, and the William T. Hornaday badge.

William T. Hornaday Bronze or Silver Medal

These individual awards are granted by the National Council of the Boy Scouts of America to a Boy Scout, Varsity Scout, or Venturer for exceptional and distinguished service to conservation and environmental improvement.

The silver medal, the most distinguished in Scouting for exceptional conservation service, will be awarded for clearly outstanding efforts in planning, leadership, execution of plans, involvement of others, and opportunities taken to help others learn about natural resource conservation and environmental improvement. The distinction between the bronze and silver medals is based primarily on the number and quality of the projects and their impact on the local community. The William T. Hornaday Awards Committee may award a bronze medal if the application does not meet the standard of exceptional service required for the silver medal. There is no limit on the number of bronze medals that may be awarded each year. Both awards include the medal (bronze or silver), a certificate, and an embroidered square knot.

William T. Hornaday Gold Badge

The gold badge is by nomination only and is awarded by the local council to an adult Scouter. The nominee should have demonstrated leadership and a commitment to the education of youth on a council or district level for significant conservation efforts for a period of at least three years. Nominations are made to the local council. The award includes the gold badge.

William T. Hornaday Gold Medal

The gold medal is by nomination only and is awarded to an adult Scouter. It recognizes unusual and distinguished service in natural resource conservation and environmental improvement at the regional, national, or international level. Nominations must be approved by the Hornaday Awards Committee and by the Conservation Committee of the National Council, Boy Scouts of America. Any recognized conservation/environmental organization may submit a nomination. The award includes the gold medal, a certificate, and an embroidered square knot. Six gold medals may be awarded annually.

William T. Hornaday Gold Certificate

This conservation award is granted to organizations or individuals by the National Council of the Boy Scouts of America. Nominations are accepted from any recognized conservation or environmental protection organization. The organization or individual should have demonstrated leadership and a commitment to the education of youth on a regional, national, or international level reflecting the natural resource conservation and environmental improvement mission of the William T. Hornaday Awards program.

Awards Presentation

The National Council of the Boy Scouts of America supplies certificates, medals, and badges at no charge to local councils. Certificates are printed with the recipient's name.

Information packages containing a history of the award and pictures of Dr. Hornaday are available from the national office upon request. Councils are encouraged to maximize press coverage on the occasion of the award presentation—this distinguished honor reflects favorably on the Scouting program.

Requirement 5: Identify clouds in the low, middle, and upper levels of the atmosphere. Relate these to specific types of weather.

Let's start by listing the clouds by type:

Cloud Type	Cloud Name
Vertically developing clouds (0-50000 feet)	Cumulonimbus, Cumulus
Low Clouds (below 6500 feet)	Stratus, Nimbostratus, Stratocumulus
Middle Clouds (6500-20000 feet)	Altocumulus, Altostratus
High Clouds (above 20000 feet)	Cirrus, Cirrostratus, Cirrocumulus

Cumulonimbus clouds are associated with showers and thunderstorms, while nimbostratus clouds are associated with steady precipitation, like snow and rain. The nimbus or nimbo designation indicates that the clouds are precipitating water or ice. The other clouds typically do not produce precipitation that reaches the ground, although they may produce precipitation that evaporates in the air before it reaches the ground. Meteorologists call this kind of precipitation "virga".

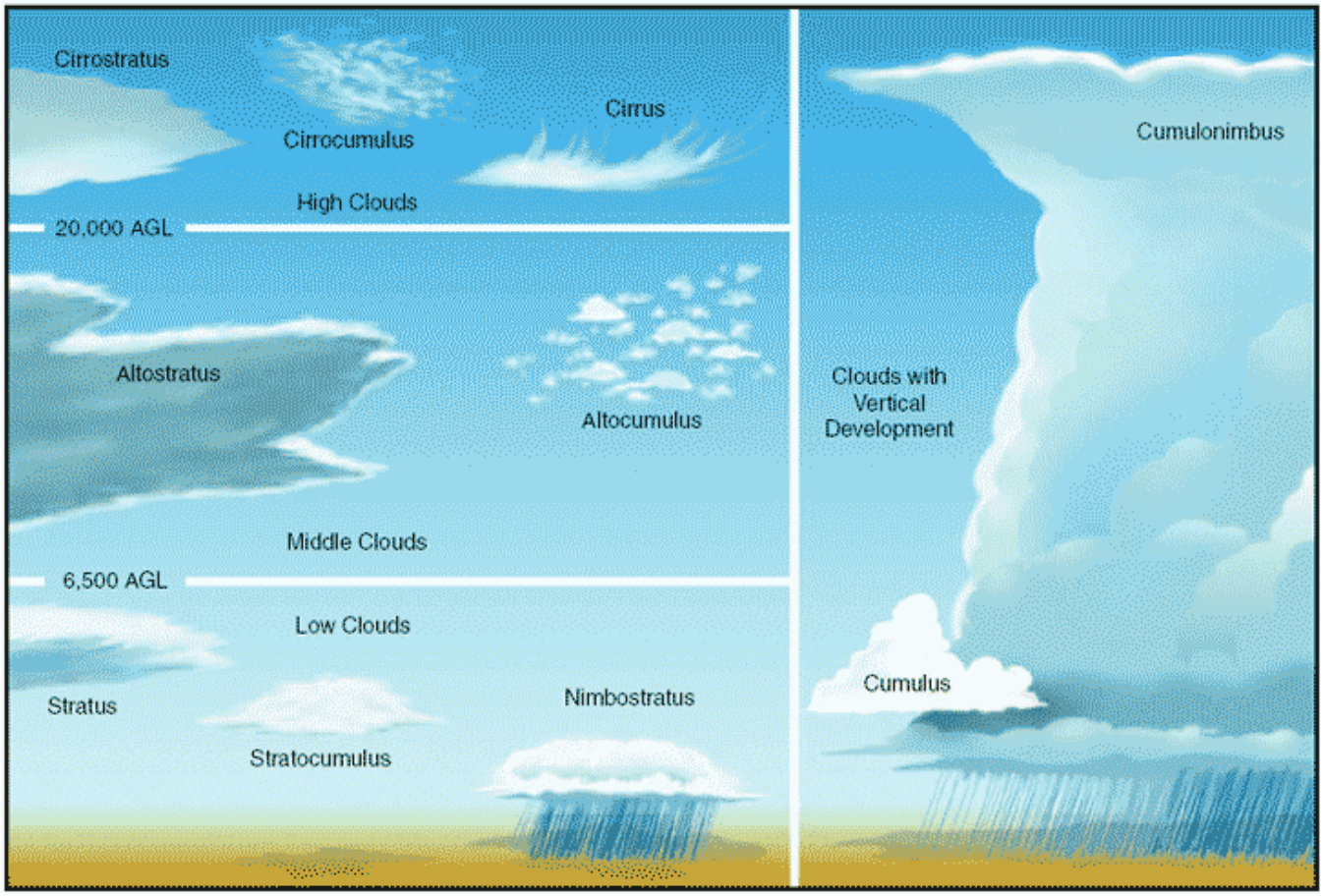

Figure 6 Cloud Types

Nuclear Quiz

True/False Questions

_____ 1. Radiation could mutate you giving you deformities.

_____ 2. Sleeping next to someone most nights of a year results in a radiation dose about the same as that from an X-ray of your hand.

_____ 3. The recent shipment of 1.5 tons of plutonium from France to Japan had the energy equivalent of about 1000 oil tanker shipments.

_____ 4. Some TV's and computer screens emit radiation that can cause cancer.

_____ 5. Many dentures are radioactive.

_____ 6. Irradiation of strawberries to retard spoilage causes the strawberries to be slightly radioactive.

_____ 7. Living 1 mile from the Chernobyl nuclear reactor during the accident would be more likely to cause your early death than being 5 pounds overweight.

_____ 8. Organically grown tomatoes are not radioactive.

_____ 9. Radioactive waste with a half life of 1 trillion years is even more dangerous and difficult to store or dispose of safely than is otherwise-similar waste with a half life of 24,000 years.

_____ 10. The Chernobyl accident has resulted in deformed farm animals being born.

_____ 11. Transportation of fruits and vegetables will cause more deaths over the next 20 years than the transportation of nuclear waste.

_____ 12. A pound of plutonium dust dispersed over a city would likely cause 100,000 deaths.

_____ 13. The Three Mile Island nuclear reactor accident will ultimately result in over a thousand people dying of cancer.

_____ 14. Some eyeglasses and camera lenses are radioactive.

_____ 15. For decades early this century, many people thought radiation was healthy and paid substantial money for beverages and ointments laced with radium and/or radon.

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_____ 16. All environmentalists are against nuclear power.

_____ 17. The dead skin layer on your body stops some kinds of ionizing radiation.

_____ 18. Most cancer is caused by environmental pollution – both nuclear and chemical.

_____ 19. Using a vacuum cleaner reduces radioactivity in your home.

_____ 20. Each Boeing 747 includes 3000 pounds of uranium-238 metal in its construction.

_____ 21. Coal-burning power plants cause thousands of deaths each year.

_____ 22. Eating a gram of plutonium is more likely to kill you than eating a gram of vitamin D or caffeine (taken all at once).

_____ 23. It is more dangerous to have lived in a house with an elevation of 50 ft higher than your present house than to have a dental X-ray.

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Nuclear Quiz

Answers to the True/False Questions

1. F
2. T
3. T
4. T
5. T
6. F
7. F
8. F
9. F
10. F
11. T
12. F
13. F
14. T
15. T
16. F
17. T
18. F
19. T
20. T
21. T
22. T
23. T

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Boy Scouts of America

ONE HUNDRED YEARS OF SCOUTING IN THE CHURCH

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American Originals: Norman Rockwell and Scouting

The Church History Museum and the National Scouting Museum in Irving, Texas, have collaborated to bring to Salt Lake City twenty-three works of art by world-famous artist and long-time Boy Scouts of America illustrator Norman Rockwell.

Read More

A Good Turn Daily: 100 Years of Scouting and the Aaronic Priesthood

A second exhibition designed for the Church's scouting-age boys will examine the relationship between Scouting and the Aaronic Priesthood through interactive displays and historical memorabilia, including the original charter signed in 1913.

Read More

Both exhibitions will help participating Boy Scouts complete parts of the scouting heritage and art merit badges.

No guided tours of these exhibits are being offered, but museum docents are available in the galleries to answer questions as you explore these two exhibits during regular museum hours.

Information

July 19, 2013–December 31, 2013
Two new exhibitions at the Church History Museum celebrate the 100-year anniversary of the partnership between the Boy Scouts of America and The Church of Jesus Christ of Latter-day Saints.

Church History Museum
45 North West Temple Street
Salt Lake City, Utah 84150

Map

Learn More

Search Library

Questions and Answers

| Return to the Electricity and Magnetism Index Page |

How do I make an electromagnet?

It is fairly easy to build an electromagnet. All you need to do is wrap some insulated copper wire around an iron core. If you attach a battery to the wire, an electric current will begin to flow and the iron core will become magnetized. When the battery is disconnected, the iron core will lose its magnetism. Follow these steps if you would like to build the electromagnet described in our Magnets and Electromagnets experiment:

Step 1 - Gather the Materials

To build the electromagnet described in our Magnets and Electromagnets experiment, you will need:

One iron nail fifteen centimeters (6 in) long

Three meters (10 ft) of 22 gauge insulated, stranded copper wire

One or more D-cell batteries

A pair of wire strippers

Step 2 - Remove some Insulation

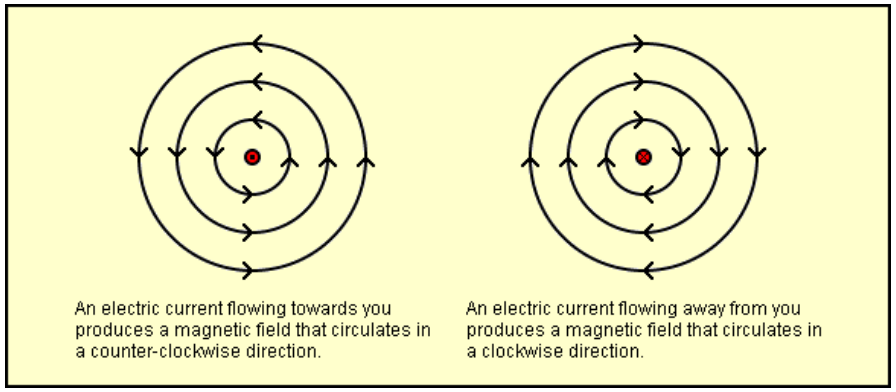
Some of the copper wire needs to be exposed so that the battery can make a good electrical connection. Use a pair of wire strippers to remove a few centimeters of insulation from each end of the wire.

Step 3 - Wrap the Wire Around the Nail

Neatly wrap the wire around the nail. The more wire you wrap around the nail, the stronger your electromagnet will be. Make certain that you leave enough of the wire unwound so that you can attach the battery.

When you wrap the wire around the nail, make certain that you wrap the wire all in one direction. You need to do this because the direction of a magnet field depends on the direction of the electric current creating it. The movement of electric charges creates a magnetic field. If you could see the magnetic field around a wire that has electricity flowing through it, it would look like a series of circles around the wire. If an electric current is flowing directly

towards you, the magnetic field created by it circles around the wire in a counter-clockwise direction. If the direction of the electric current is reversed, the magnetic field reverses also and circles the wire in a clockwise direction. If you wrap some of the wire around the nail in one direction and some of the wire in the other direction, the magnetic fields from the different sections fight each other and cancel out, reducing the strength of your magnet.



Step 4 - Connect the Battery

Attach one end of the wire to the positive terminal of the battery and the other end of the wire to the negative terminal of the battery. If all has gone well, your electromagnet is now working!

Don't worry about which end of the wire you attach to the positive terminal of the battery and which one you attach to the negative terminal. Your magnet will work just as well either way. What will change is your magnet's polarity. One end of your magnet will be its north pole and the other end will be its south pole. Reversing the way the battery is connected will reverse the poles of your electromagnet.

Hints to Make Your Electromagnet Stronger

The more turns of wire your magnet has, the better. Keep in mind that the further the wire is from the core, the less effective it will be.

The more current that passes through the wire, the better. **Caution!** Too much current can be dangerous! As electricity passes through a wire, some energy is lost as heat. The more current that flows through a wire, the more heat is generated. If you double the current passing through a wire, the heat generated will increase **4 times**! If you triple the current passing through a wire, the heat generated will increase **9 times**! Things can quickly become too hot to handle.

Try experimenting with different cores. A thicker core might make a more powerful magnet. Just make certain that the material you choose can be magnetized. You can test your core with a permanent magnet. If a permanent magnet is not attracted to your core, it will not make a good electromagnet. An aluminum bar, for example, is not a good choice for your magnet's core.

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