

THE NEW WANDERERINGS

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Feature:

In light of the recent, [22 February 2011, earthquake in Christchurch New Zealand](#), and the [12 March 2011 Japanese earthquake](#) I thought that it would be fitting to open the New Wanderer with a feature on seismographs and earthquakes.

[Earthquake Learning Resources from GNS New Zealand](#)

What are earthquakes, where and why do they happen?

[IRIS --- Incorporated Research Institutions for Seismology](#)

IRIS is a consortium of National Science Foundation sponsored universities that is dedicated to the distribution of seismic data.

[John C. Lahr: A Tribute to the "Gentleman" Scientist](#)

On 17 March 2009, the world lost a skilled educator and supporter of amateur science.

[John Lahr's AS1 Seismograph](#)

This is the start of a series of YouTube presentations about Lahr's AS1 DIY Seismograph.

[The Fun with Science](#)

This page, located on [John C. Lahr's](#) site, contains several unique [Seismometer Designs](#). See the student competition ... [Design & Build a Seismometer](#).

[Seismic Sensor based on Diamagnetic Levitation](#)

This is a collection of notes regarding a unique seismic sensor that utilizes the [diamagnetic](#) properties of graphite.

[Useful Links](#)

The Lahr Web Site has a collection of useful seismic links.

[DIY Seismograph Construction](#)

Dale H.'s Welcome to my Earth and Space Web site contains a section on building your own instrument...

[An Inexpensive Vertical Seismometer](#)

This inexpensive seismometer was developed, in 1998, for Georgia Tech's Mid America Earthquake Center Teachers' Workshop

[How to Build an Inexpensive Seismometer.](#)

David Saum's site presents detailed information on how to build a microprocessor based seismometer that can detect earthquakes worldwide. David also provides us with many useful links.

[Linear Magnetic Sensors for Seismometers](#)

Chris Chapman reports that he has been experimenting with Neodymium magnets and Hall Effect linear sensors to make a simple linear position sensor, suitable for use with pendulum / feedback type seismometers.

[Central Nexus Seismograph Project](#)

George Rhoten shows us his seismometer project that he based on an ADXL345 accelerometer and an Arduino Duemilanove microcontroller.

[Seismometer Pivot Studies](#)

Charles R. Patton, Chris Chapman, and Brett Nordgren have conducted studies on various types of seismometer suspensions.

[The Redwood City Public Seismic Network](#)

The PSN site is a good place to start if you are looking for information on amateur seismic research.

[Welcome to the Quake-Catcher Network](#)

This is a collaborative initiative for developing the world's largest, low-cost strong-motion seismic network by utilizing sensors in and attached to internet-connected computers. [See Dr. Elizabeth Cochran explain the project.](#)

[The Earth Forces Webring](#)

This Webring is a collection of websites presenting information on volcanoes, earthquakes and tsunamis.

[Latest Earthquakes in the World - Past 7 days](#)

The [USGS](#) provides a display of the World's latest earthquakes.

[Really Good Seismometers](#)

Follow the discussion, on the [SAS Facebook Page](#), between Brett and Jim about the design and construction of a seismometer.

[Heat Treating a Seismometer Spring](#)

This item, from [Jim Hannon's Blog](#), is a summary of his plans for building an oven that he will use to heat treat springs and bake pizza.

[Dave's Landslide Blog](#)

Dave Petley's blog provides a commentary on landslide events occurring worldwide, including the landslides themselves, latest research and conferences and meetings.

[An Amazing Seismograph](#)

Here is a look at a seismograph from a different angle.

[Earthquakes and Tsunamis](#)

The 28 January 2005 *Wanderings Column* ran a feature on earthquakes and tsunamis.

[Wanderings No. 97 --- 03 June 2005](#)

And, lastly, *Wanderings No. 97* contains several other seismic links.

Wanderings:

[The Grameen Foundation](#)

The goal of the Foundation is to see poor people, especially the poorest and those living in harder to reach areas, have access to microfinance and technology and as a result of access to these services, move themselves out of poverty.

[Newly Discovered Fascinating Marine Specimens](#)

The Canadian Department of Fisheries and Oceans compiled a YouTube presentation showing some of their recent discoveries.

[Guerrilla Scholarship](#)

This is a collection, which was compiled by Sheldon Greaves, of tools, ideas, and resources for the amateur scientist, the independent scholar and people, who like to think, learn and create.

[Thermoelectric Solar Power](#)

A [Peltier cell](#) and a [Fresnel lens](#) are used to produce non-photovoltaic power.

[Yahoo Groups](#)

Yahoo Groups enables you to connect with people who share your interests and passions. There are thousands of existing groups so it should be easy to find one that suited to you. No? Then start your own! The following is a brief example of what they have to offer:

[The Home for Amateur Scientists @ Yahoo Groups](#)

This forum, while NOT sponsored by or for *The Society for Amateur Scientists*, was created for amateur scientists to discover-design-create-invent-innovate and share science fun, toys & games!

[The Mad Scientist @ Yahoo Groups](#)

The Mad Scientist is very similar to the *Amateur Scientist Group*.

[Robotics and ROV's @ Yahoo Groups](#)

Here is a fairly active forum that is devoted to DIY Remotely Operated Vehicles (ROV). Here, builders can exchange their ideas and plans.

[Arizona Near Space Research @ Yahoo Groups](#)

This is a scientific-educational amateur radio and balloon group that launches high altitude balloons.

[Amateur Telescope Making @ Yahoo Groups](#)

Amateur Telescope Makers can use this Group to exchange their ideas, problems and projects.

[Amateur Astronomy @ Yahoo Groups](#)

Amateur Astronomy fans can gather here to discuss all aspects of their interests.

[Piezoelectric Sensors](#)

A piezoelectric sensor is a device that uses the [piezoelectric effect](#) to measure [pressure](#), [acceleration](#) or [strain](#) by converting the forces to an electrical signal.

[Piezo Film Sensors Technical Manual](#)

Piezo film is a flexible, lightweight, tough engineering plastic available in a wide variety of sizes.

[Piezo Film Pulse Sensor](#)

The Piezo Film Pulse Sensor is a sub-project of the [Phoenix Project Ambulatory Blood Pressure Monitor Project](#).

[Volunteers Are Needed](#)

If interested, you can take part in the [Phoenix Project Ambulatory Blood Pressure Monitor Project](#).

[Images Scientific Instruments, Inc](#)

Images SI, Inc is [a source of inexpensive piezo film](#) for the experimenter.

[Piezoelectricity and Rochelle Salt](#)

[Wanderings No. 100 15 July 2005](#) has a few links to piezoelectricity and how to cook up some Rochelle Salt.

[World's Simplest CD Player Motor](#)

No, it does not play CD's. This is a simple homopolar motor that is made from a CD, an AA battery, a coat hanger, a bit of copper wire, a quarter and a couple of rare earth magnets..

[Spectrum Analyzer with Waterfall Display and Real-Time Audio Processing](#)

SpecLab is a free audio processing program that can use a PC sound card or an ADC as its input.

[NurdRage --- Real Experiments Real Science](#)

This site demonstrates chemistry experiments for all levels from simple kitchen chemistry all the way up to advanced organometallic synthesis.

CAUTION! Do a Web search for the [MSDS Sheets](#), and READ them, for the various chemicals that you will be using.

[The Golden Book of Chemistry Experiments](#)

It is reported, on the Web, that the US government had this book banned and removed from libraries because they thought that the projects were too dangerous for its intended audience. Is this true? I don't know, but [I downloaded a pdf copy](#) and didn't find anything that I considered THAT dangerous. You decide.

[Producing X-rays from a Cheap Light Bulb](#)

This YouTube clip shows how you can produce X-rays with a small incandescent light bulb. **Caution!** I would not experiment with X-rays without using a personal [dosimeter](#).

[DIY Cotton Candy Machine](#)

This is sweet! Now you don't have to wait for the circus or county fair to get your fix of cotton candy or candy floss, as it's called "across the pond".

[Tree Power](#)

First there was Flower Power and now there's Tree Power? Researchers at the University of Washington found that there is a small but measurable voltage produced by trees. In fact, there's enough power in trees for to run a small electronic circuit.

[Make a Joule Thief](#)

The Joule Thief is a tiny, easily built, switching power supply that enables nearly all of a battery's energy to be used even from a so called dead battery. Perhaps it could be used with Tree Power.

[Colors of Noise](#)

You heard of White and Pink Noise but what about the other colours?

[When Is 24 Not 24?](#)

24 is not 24 when we are talking about bicycle speeds. I have a so called 24 speed bike, but if I calculate the actual gear ratios, using for instance, Sheldon Brown's Gear Ratio Calculator, I can see that some of the ratios are so close that there is not any mechanical advantage from one to the other. The major portion of Sheldon's site is dedicated to bicycles and how they work and how they should be maintained. This link points to a utility that will calculate your [Gear Raito / Gain Ratio](#).

[The Stirling Engine](#)

Koichi Hirata gives a very good treatment of the Stirling Engine covering what they are, how they work and how to build many types of these engines.

[Build a DIY Stirling Engine](#)

Stirlingbuilder.com provides plans and guidance for those who want to build their own Stirling engines.

[The Germplasm Resources Information Network](#)

The U.S. Department of Agriculture's *Germplasm Resources Information Network* ([GRIN](#)) web server provides germplasm information about plants, animals, microbes and invertebrates.

[Dr. Duke's Phytochemical and Ethnobotanical Databases](#)

These [phytochemical](#) and [ethnobotanical](#) databases show the chemical compounds that are found in various plants and how they are used by civilization.

[Flint and Steel: What Causes the Sparks?](#)

I have been making sparks for years both with grinders and with my several flint lock rifles. But I never gave much thought about the science behind these sparks. That is, until I stumbled across this article about [pyrophorics](#) and starting fires with fire steel.

[An Elementary Knowledge of Metalworking](#)

Many projects involve the building of an apparatus using metal or plastic. Koichi Hirata has written an elementary guide to useful shop practises.

[Drill Bit Sizes](#)

Drill bits come in many different "flavours" ---- fraction, number, letter and metric.

[Drill and Tap Size Chart](#)

The correct drill size that you should use depends upon the material that is being drilled and will you want a clearance hole or will you be tapping threads?

[AWG Wire Size Converter](#)

Here is a calculator that will convert between AWG, inches and mm diameter, and square mm area measures of wire size.

[Jack Horkheimer: Star Gazer](#)

I remember Jack Horkheimer from the "old days" when he was the Star Hustler on PBS. Even though I wasn't into astronomy, I always liked his presentation and I could never forget his theme song ---- [Isao Tomita's Arabesque No1.](#)

[Climate Change](#)

Here are the views on Climate Change from the Met Office, the UK's National Weather Service.

[Climate Truth](#)

Climate Truth is one person's attempt to understand what is happening to the Earth and why.

[Climate Truth Initiative](#)

Ian L. McQueen's group, *The Climate Truth Initiative*, does not appear to have a Web site. They should NOT be confused with

[Climate Truth](#) as they each take a different view of the climate change / global warming debate.

[Climate Debate Daily](#)

"Let the best argument win." --- A look at both sides of the argument.

[YouTube Account of Stolen E-mails](#)

Climate deniers have been making a lot of noise about the set of stolen e-mails from the University of East Anglia.

[The Argo Float Network](#)

Much has been written about [the scarcity of proper land temperature monitoring stations](#) are giving false indications for Global Warming. On the other hand, we have the Argo Float network which [is a collection of over 3200 ocean based](#) sea temperature and salinity monitoring stations that is spread around the globe. The Argo network, coupled with [Satellite Altimetry](#) data, may give us a better insight to the whole question. You can access the [Argo Data @ Argo.net](#).

The Kids Room:

[Imhotep's Legacy Academy \(ILA\)](#)

Imhotep's Legacy is a university outreach program that mobilizes the community to help improve student success and bridge the achievement gap for Grades 7-12 students of African heritage in Nova Scotia.

[High School Experiments](#)

Here is a collection of fairly simple classroom physics experiments.

[Welcome to the Astronomy & Physics Demonstration Website!](#)

The Departments of Astronomy & Physics at Saint Mary's University, Halifax, NS has a nice selection of online demonstrations.

[Bigshot: A Camera for Education](#)

What an excellent concept! The Bigshot Camera Project is still in the prototype stage and the units are not currently available for purchase. When released, the cameras will be able to give the child hands-on experiences in both technology and art.

[Oh, Go Fly a Kite!](#)

Anthony's Kite Workshop shows us how to make many different types of kites, including Alexander Graham Bell's [The Tetrahedral Kite](#).

[The Scott Sled](#)

This has to be my all time favourite kite. It's easy and very quick to build and it's an excellent flyer. One addition --- I always use two tails, attached to the bottom of each outer spar, made out of 3 or 4 metre lengths of **[flagging tape](#)**.

[Arvind Gupta's Toys from Trash](#)

What an educator! Arvind Gupta brings science to the people and shows them how to build science and fun toys from common junk.

[Arvind Gupta's YouTube Videos](#)

Arvind Gupta has a number of clips on YouTube

[Drawing Slate for the Blind](#)

Arvind Gupta demonstrates his DIY aid for the blind. Yes, this video is in Hindi, but you can still get an idea of what it's all about.

[The Science Toy Maker](#)

This is a teacher-created site for people who like to roll up their sleeves and make fun, mysterious science toys and projects that entice scientific investigation.

[Science Toys You Can Make With Your Kids](#)

Simon Quellen Field shows us how to make Science Toys with common household materials, often in only a few minutes that demonstrate fascinating scientific principles.

[Stuff from Junk!](#)

David Williamson shows us how a variety of toys and scientific demonstrations can be made with stuff that can be found around the house.

[How to Make a DIY Force Meter](#)

This DIY Force Meter (a.k.a. **[Spring Balance](#)**) can be built from PVC plumbing scraps and will let you measure pushes and pulls around you. The meter can be calibrated in Newtons or what ever units you wish.

[Compressed Air Rocket](#)

Rick Schertle demonstrates how to make a reasonably safe rocket system. Compressed air, not pyrotechnics, is the only fuel.

[The Bio-Battery](#)

Can a lemon battery light a LED?

[How Many Cosmic Rays Go Through Our Bodies Every Minute?](#)

Cosmic Chris, created by Tara Newman, shows that the number is around 500.

[Build a Toy](#)

The V&A Museum of Childhood, London, offers many online and at home activities, on [Their Kids' Pages](#), to keep the little ones busy.

Women in Science:

[Teen Scientist Fights Lentil Fungus](#)

Rui Song, 14, recently took a \$5,000 prize at the [Sanofi-Aventis BioTalent Challenge](#) in Ottawa, for her research on a fungus that attacks lentils, a major agricultural export.

[Frances Oldham Kelsey Ph.D, M.D.](#)

Dr. Kelsey is a pharmacologist, who, while working for the U.S. Food and Drug Administration, blocked the approval to market [thalidomide](#) in the US because she had concerns about the drug's safety.

[Celebrating mathematical women](#)

Coinciding with the 100th International Women's Day two new competitions to find the best young female mathematical minds in the UK and Europe have been launched.

Random Samples:

[The Uncultured Project](#)

The Uncultured Project is Shawn Ahmed's one man journey to try and make the world a better place by connecting online communities to communities on-the-ground in a way that creates meaningful & tangible differences.

[Re-Surface Your Scratched CD / DVD's](#)

If you have any children in your house, you are bound to end up with a bunch of scratched CD/DVD's that will no longer play. My local DVD rental store charges \$2.50/CD to remove the scratches which can get a bit expensive. Therefore, I thought that there had to be a better way so I did an Internet search and found dozens of remedies. I read a few and come up with the following procedure that gave me excellent results:

- First, wash the CD/DVD with warm water and dish washing liquid.
- Dry by patting with tissues.

- See if the CD/DVD plays
- If it won't, wet the CD with water
- Place the CD, track side up, on several layers of news paper
- Put a glob of tooth paste, cream not gel, on your finger
- Using a fairly firm pressure, rub the paste across the CD, from the centre to the outer edge of the CD
- Continue all around the CD for about 5 or 10 minutes.
- Wash the CD as above.
- Try to play the CD/DVD. You might have to repeat the process to get all the scratches out.

Note: I found that I did not have to remove the actual scratch in order to fix the CD/DVD. Perhaps just rounding off the sharp edges of the scratch will fix the problem. Anyway, why not try to repair some non-important disks to see if it works for you. Good Luck!

Suppliers and Stuff:

Being listed here does not constitute an endorsement of any information, product or service.

[Dr. Who's Sonic Screwdriver](#)

This collector's item is an exact replica of the [Gallifreyan](#) multipurpose tool used by [The Doctor](#) himself.

[Metallium --- Pure Element Samples](#)

Metallium specializes in supplying high-purity metal and non-metal Element Samples to individuals and organizations around the world.

[Gyroscopic Bicycle Training Wheel](#)

Also available from [Think Geek](#) is this high tech training wheel. I think that we may buy one as soon as the 16 inch version is released.

[Interesting Science Toys](#)

Bill Beaty has compiled this list of science toys.

[The EZ-Expander](#)

This [Arduino](#) shield is an inexpensive way to add 16 new digital output pins to your Arduino.

[The UV Monkey](#)

This small key ring gadget quickly indicates UV intensity.

[Liquidware --- Open Source Electronics](#)

Liquidware is a supplier of open source [Arduino](#) compatible modules.

[The Amateur Scientist 3.0 CD-ROM](#)

Bright Science is offering the complete collection of *Scientific American's* ["The Amateur Scientist"](#) column from 1928 to its final cancellation in 2001.

On The Lighter Side:

[Rock-Paper-Scissors: You vs. the Computer](#)

Test your strategy, against the NY Times Robot, in this rock-paper-scissors game which illustrates basic artificial intelligence.

[A Look at the Elements](#)

Tom Lehrer takes us on a trip through the elements.

[Giant Swiss Army Knife](#)

For \$1000 you can purchase this [Genuine Swiss Army Knife](#) and let your [MacGyver](#) shine forth.

[The Buzzword Generator](#)

Are you writing a paper? Well, instead of "using plain text" you can blow your readers away with "de-engineered solution-oriented moderator" and other buzzwords.

[What Is A Shig?](#)

How about a Lincolnshire Curly Coat Pig or sheep-pig.

[Keep Your Mind On The Job!](#)

These posters, featuring characters from the [Simpsons](#), are a great way of using humour to reinforce basic safety practises.

[The 2009 Ig Nobel Prize Winners](#)

[Improbable Research](#) has awarded the 2009 Ig Nobel Prizes at the [19th First Annual Ig Nobel Prize Ceremony](#).

From The Far Side:

[Aqua Teen Hunger Force Boston Bomb Scare](#)

31 january 2007 --- The News Media whipped up a state of panic, in the streets of Boston, with their reporting of the Bomb Squad finding electronic cartoon figures attached to the bases of bridges.

Updated: Boston Mooninite Installers Arrested

Turner Broadcasting System had to pay Boston-area authorities \$2 million to settle claims as a result of their guerrilla marketing campaign for “Aqua Teen” being mistaken for terrorist bombs.

Star Simpson

The Aqua Teen affair reminded me of Star’s problems in Boston. See **Wanderings No. 155 from 06 February 2009**

Retired Chemist Runs Afoul of State and Federal Authorities

Here is another “one” from Massachusetts!

Teen with Home Chemistry Lab Mistakenly Arrested for Meth Production

A Canadian college student majoring in chemistry built himself a home lab and discovered that trying to do science in your own home quickly leads to accusations of drug-making and terrorism.

Methamphetamine Laboratory Recognition

Watch out! If you happen to purchase the wrong combination of items, you, too, may be turned in by some vigilant Wal-Mart clerk. Also, did you know that, in **Texas**, you are not allowed to purchase an **Erlenmeyer flask** without a permit?

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