

# THE NEW WANDERINGS

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<http://citizenscientistsleague.com/>

This is the 1 Year Anniversary of the re-launch of my *Wanderings* column as *The New Wanderings*. I hope that you have enjoyed the many excellent DIY science projects that were presented during the year.

Please take a few minutes and send me an e-mail and let me know:

- Where you are located
- What you are your interests
- What you would like to see in *Wanderings*
- What you like about *Wanderings*
- What you do not like about *Wanderings*

One thing --- Please put "TNW" in the Subject Line so that my spam filter won't bump you.

<http://wanderings.ca/Index.htm>

## **Feature:**

This month I am featuring a few of the many sites that will show us that we do not have to spend a lot of money in order to demonstrate science to our children.

### **Arvind Gupta**

Arvind has selected 2513 videos, from his [Toys from Trash](#) site, to post on YouTube.

### **David Williamson**

David seems to be able to build his marvellous machines with next to nothing.

### **Science Playwiths**

This site offers activities that will take young people away from the keyboard and monitor and allow them to get their hands dirty.

### **The Home Scientist**

Jim Hannon alerted me to this YouTube series which grew out of [Make Magazine's Science Room](#). Thanks, Jim.

### **Fun Science Project Ideas**

Fun science projects for the student, teacher or homeschooler.

### **The Fun Science Gallery**

In the Gallery, you will find instructions of how to build scientific equipments from relatively cheap materials.

### **Science Toys**

This site will show you how to make inexpensive science toys, with common household materials, that will demonstrate fascinating scientific principles.

### **Bizarre Stuff You Can make in Your Kitchen**

"This site is a museum of classic home science projects. It is not so much meant to be "how to" or educational, but more of a celebration of early to mid 20th century home experimentation and pop science illustration."

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## **Wanderings:**

### **The Tricorder Project**

Bennett Michael Harris just posted a link to this project, on the [Citizen Scientists League's FaceBook site](#). [The Tricorder Project](#) is "a really cool open hardware project to create a data observation, recording, and manipulation device inspired by the Tricorders from "Star Trek".

### **Petridish**

Help to fund science & explore the world with renowned researchers

### **DIY Gears**

Matthias Wandel demonstrates how we can quickly make wooden gears. This method should, also work with aluminum. [His Web site](#) has a nice selection of other projects.

### **An Inexpensive DIY Agarose Gel Electrophoresis System**

"One of the most significant advances in recombinant DNA technology was the introduction of agarose gel electrophoresis as a method for separating and analyzing DNA fragments."

### **The Virtual Robot Experimentation Platform (V-REP)**

V-Rep is a 3D robot simulator, with an integrated development environment, based on a distributed control architecture.

### **Robert Hart's 18 Tube Geiger-Müller Cosmic Ray Hodoscope**

Today, I saw a posting on the [SAS Face Book](#) page from Robert Hart. Back in #170 of the "old" Wanderings I had a couple of items regarding Robert's excellent work, as shown on his [Hardware Hacking](#) site. Check him out! Also, have a look at his [YouTube videos](#).

### **A Picture is Worth a Thousand Words!**

Can you follow what the author is describing? I can't!

### **Range Finder**

Here is the same project but this time illustrations are use which make things much clearer.

### **A Novel Range Finder**

This simple range finder was originally published in the February 1939 issue of *American Photography*.

### **Pyrometers**

A pyrometer or radiation thermometer is a non-contacting device that is used to measure thermal radiation emitted from an object.

### **[The Gizmologist's Lair](#)**

"The Center for Research on Things You Shouldn't Try At Home"

### **[Stereography](#)**

Stereography is the science of rendering a 3-d image in the mind of the viewer by using a pair of 2-d images.

### **[Meng Li's IR Heartbeat Monitor](#)**

This simple circuit will display your pulse rate.

### **[The Auroral Chorus](#)**

The Auroral Chorus opens the door to the realm of natural VLF radio phenomena "The (very beautiful) Music of the Magnetosphere and Space Weather"

### **[Radio Waves Below 22 kHz](#)**

Explore the world of Nature's radio signals and other strange emissions at very low frequencies.

### **[The Inspire Project](#)**

The goal of the Inspire Project is to bring the excitement of observing natural and manmade low frequency radio waves to students and citizen scientists.

### **[Laser Collimator](#)**

Here is an inexpensive DIY laser collimator for aligning a Newtonian telescope.

### **[Natural pH-Indicators](#)**

A DIY indicator made from red cabbage and red beet juice can measure the pH of a solution in the range of 1 to 13.

### **[Sensors](#)**

Among the other items on his [Web site](#), Brooke Clarke, has included a detailed section on various types of sensors.

### **[More Sensors](#)**

Michael Gasperi describes his DIY Lego NXT/RCX sensors and provides links to other similar sites. These sensors could possibly be made to work with other controllers.

### **[The Lego RCX Dissected!](#)**

Here is a look into the inner workings of the Lego RCX microcontroller brick.

### [X-Y Table](#)

Geir Andersen gives us a look at his awesome XY table design.

### [A DIY Linear Accelerator](#)

DIY nuclear physics! Build an electrostatic accelerator in your basement.

For further examples of DIY accelerators have a look at the *Amateur Scientist* columns:

*How to Make an Electrostatic Machine to Accelerate Both Electrons and Protons - January, 1959*

*How to Build a Machine to Produce Low-Energy Protons and Deuterons - August, 1971*

### [Cockroft Walton Voltage Multipliers](#)

Do you need a high voltage source?

### [The First Cyclotron](#)

This is a collection of stories of the early particle accelerators and first cyclotrons

### [The Mad Scientist Diary](#)

The ideas, experiences and projects of a *Mad Scientist in Training*

### [Blog: I'm Going to Build an Ion Ray Gun](#)

A science blog

### [Build a Low Cost Solar Siphon Heater](#)

[Build it Solar](#) links to plans describing how to build this simple low cost device that can be used to heat your home, shop, shed or barn.

### [Warning: Scientific Content](#)

Blogging about Mythbusters and everyday science

### [BlueSci](#)

The BlueSci magazine was established at Cambridge, in 2004, to provide a student forum for science communication.

### [QR Code Generator](#)

This site allows you to generate your own [QA Codes](#). Why not give it a try!

### [Toying With Science](#)

Simon Quellen Field has authored a series of short essays on various scientific topics.

### [Science Starters](#)

Science Starters allows us to “find out about, take part in, and contribute to science through recreational activities and research projects.”  
(From Darlene Cavalier via CSL FB on 24 Feb 2012)

### [ION Newsletter](#)

The ION (Institute of Navigation) Newsletter is published quarterly and contains news other information geared toward the navigation community. There are many articles that may be of interest to the citizen scientist. For example see the articles regarding Einstein and navigation in the spring 2005 (GPS) and summer 2005 (gyrocompass) issues.

### [Navworld](#)

Navworld is “the cyber-center for fostering continued interest in the art and science of navigation by providing you with navigational celebrations, famous historical accounts, interviews, biographies and navigation solutions for your needs.”

### [10 Images that Changed the Course of Science](#)

The stories behind these images may have helped to change the course of history.

### [The H Bomb Secret: How We Got it and Why We're Telling it.](#)

This is a reprint from the November 1979 issue of progressive magazine.

### [Teller-Ulam Design](#)

The Teller-Ulam design is the nuclear weapon design concept used in most of the world's nuclear weapons

### [Ian Russell and Interactive Science Ltd](#)

Ian Russell's UK company, Interactive Science Ltd, produces some spectacular hands-on science exhibits.

### [The Cleric Scientists](#)

This is a look at the Catholic Cleric Scientists down through the ages.

### [The Online Library](#)

Here is a collection of on-line articles related to Catholicism and science.

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## **From Instructables, YouTube & Make:**

### **Instructables: A Low Cost DIY Hobby XY Table**

At the heart of this table are common drawer glides.

### **Instructables: An Arduino Controlled T-Slot XY Table**

Here is the design for another simple XY table.

### **YouTube: Stirling Engine**

This simple Stirling engine, that was designed by Subir Bhaduri, should be easily duplicated even though the commentary is in Hindi.

### **YouTube: Converting Cosmic Rays to Sound**

Forrest Mims used a Geiger counter to collect cosmic ray data, during a transatlantic flight. He then converted the data to music using an [musicalgorithm](#).

Forrest has several other “compositions” that he has posted on YouTube:

#### **Converting Tree Rings into Music**

#### **Musical Rendition of UV-B Atop Pikes Peak Modulated by Swirling Clouds**

#### **The Sound of the Sun's Ultraviolet Rays during One year (2011)**

### **YouTube: What PI sounds Like**

Michael John Blake converts “pi” to music

If I may quote YouTube User,ELFogIalt17, --- “The best thing is that theoretically you can listen to it for ever...” ☺

### **YouTube: What Tau Sounds Like**

And Michael’s rendition of “tau”

### **YouTube: Poor Man's Milling Machine**

If you’re a tool or jig junkie, like I am, you’ll love this one!

### **YouTube: Mechanisms & Automata**

This is a display of some amusing mechanisms constructed from wood.

### **YouTube: Syringes Are Used to Actuate a Mechanical Arm**

Syringes are used to demonstrate hydraulic principals.

**[YouTube: Lewis and Clark's Air Rifle](#)**

Lewis and Clarke had a Girandoni air rifle with them during their historic expedition.

**[Make: Tesla's Fluidic Diode](#)**

In 1920, Nikola Tesla was granted a patent for a "Valvular Conduit" or a type of one way valve with no moving parts.

**[Make: Project Tips](#)**

This is a collection of tips and links to assist you with your projects.

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**The Kids Room:**

**[Free the Children](#)**

"Young people everywhere have a right to be free from poverty, thirst, exploitation and disease."

**[Sleeping Children Around the World](#)**

*Sleeping Children Around the World* (SCAW) provides bed kits to children located in underdeveloped and developing countries.

**[Scale of the Universe 2](#)**

Fourteen year old Cary Huang, with help from his twin brother Michael, compiled this remarkable view of our universe --- from the smallest to the infinite. Further examples of their work can be seen on [their Web site](#).

**[Homebrew Battery and Electrostatic Generator](#)**

Make a simple lemon battery and an electrostatic generator.

**[Make a Paper and Cardboard Medieval Castle](#)**

This is a complete project that shows you how to make a medieval castle out of paper and cardboard.

**[Make a Cardboard and Aluminum Foil AM Radio](#)**

Here is a simple AM radio that is made from cardboard and a few odds and sods.



[ilovebacteria](#)

“The ilovebacteria.com web site was created to explain science to people who do not necessarily have a scientific background.” Why not try one of their experiments such as making [DIY pH indicators](#) using different coloured plants.

[The TeleToyland Sandbox](#)

You can control a robot, via the Internet, to draw in this sandbox.

[TeleToyland](#)

You can visit TeleToyland’s main site and see their other projects devoted to web robots, telepresence, web animatronics, animated and interactive web art, and interesting web cams.

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**Women in Science:**

[Rosalind Franklin and the Secret of Photo 51](#)

Should Rosalind Franklin have shared the Nobel Prize, with Watson and Crick, for the discovery of DNA's structure?

[The Science Cheerleaders](#)

Bringing science to the people

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**Random Samples:**

[The Global Alliance for Clean Cookstoves](#)

“The Global Alliance for Clean Cookstoves is a new public-private initiative to save lives, improve livelihoods, empower women, and combat climate change by creating a thriving global market for clean and efficient household cooking solutions.”

[The Hesperian Health Guides](#)

“The Hesperian Health Guides is a health information and health education source that supports individuals and communities in their struggles to realize the right to health. We develop easy to read materials that are produced in many languages.” Thanks, Sheldon, for finding this.

### [The Titanic Universe](#)

15 Apr 2012 will commemorate the 100<sup>th</sup> anniversary of the sinking of the Titanic. BTW they got the ocean wrong! It was the Atlantic not the Arctic.

### [Karl Sims' Puzzle Collection](#)

After trying to answer the puzzles in Karl's collection, take some time and look around [the rest of his site](#).

### [Lists and More Lists](#)

Such as:

[20 Amazing Optical Illusions/](#)

[Another 10 Amazing Optical Illusions](#)

[12 Extremely Weird Names of Molecules](#)

And --- many more ----

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## **Suppliers and Stuff:**

### [Scientific American's "The Amateur Scientist". \[CD-ROM\]](#)

This CD contains the complete Amateur Scientist columns from Ingalls to Carlson.

### [Ginsing](#)

Make your Arduino sing with this synthesizer shield.

### [Minecraft](#)

Minecraft is a game that lets you use blocks to build anything you can imagine.

### [The Geometer's Sketchpad](#)

Sketchpad gives students a tangible, visual way to learn geometry, algebra, pre-calculus, and calculus.

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## **On The Lighter Side:**

### [The Titanic Hit an Ice Berg on 15 April 1912](#)

But what happened to the berg? Comedian, Les Barker, asks "Have you got any news of the iceberg?"

**Science Cartoons**

Enjoy a collection of science related cartoons from the [Nearing Zero Web site](#).

**More Science Cartoons**

Sidney Harris gives us a sample of his science cartoons.

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