

THE NEW WANDERINGS

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Feature:

Recently, I was looking around the Web for some resources to assist in introducing some young children to robots and computer programming.

I remembered that back in the late 70's, there was something called [Turtle Graphics](#), a feature of a computer language called [LOGO](#). I thought that this would fit my needs perfectly.

Turtle Graphics allows the user to move a sprite around the computer screen with a series of simple commands. The following links are a few examples of the many fine examples of Turtle Graphics that can be found on the Web.

Turtle Home Page

Turtle, a graphics programming environment designed to provide an enjoyable introduction to programming.

Turtle Graphics Applet

This example of Turtle Graphics was implemented in Java.

[An Introduction to Computer Programming](#)

At this time, I think that this is a little deeper than I need. But still, it is an excellent resource. "This website is for parents and teachers, and some students. It is a walk-through of the basic concepts behind writing computer programs, with an emphasis on graphics and games. The goal is for students to have fun, while learning the importance and practical aspects of mathematics, processes, problem solving, and critical thinking."

[Web Turtle](#)

Web Turtle can be used to help teach simple computer programming as well as the basics of geometry! It's completely web-based so it should work on almost any type of computer that has a web browser!

Of all of the versions that I found, *Scratch* is my favourite.

[Scratch](#)

Scratch is a, free down loadable, programming language that makes it easy for young people to create their own interactive stories, animations, games, music, and art.

The *Scratch* programming environment consists of LEGO like building blocks that the user can Click/Drag/Drop into the editor, thus building a program..

Scratch will evolve as the user gains more experience. They can start out by simply programming a character to move around the screen and then perhaps move on to designing a game such as [Space Invaders](#) or [Pong](#).

There are even some sites that show how to interface *Scratch* to an *Arduino*, but more on that in a later column.

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Wanderings:

[Scientific Glassblowing: A Black Art](#)

Years ago, in one of my earlier "hand-me-down" chemistry sets there was a supply of glass tubing. I think that it was soda-lime glass. I enjoyed trying to duplicate the various exercises that were presented in the set's instruction manual. But I never did learn the "Black Art".

[The Scientific Glassblowing Learning Center](#)

Here is an extensive on-line resource to scientific glass blowing.

[Teralab Glass Blowing for Vacuum Devices](#)

This page, on the [Teralab's Web site](#), describes methods for working glass for scientific vacuum devices such as glow tubes, filament lamps and thermionic devices.

[Canon Hacking Development Kit \(CHDK\)](#)

Did any of you get a Canon camera for Christmas? If so, perhaps this free utility may be of interest to you. It will allow you to **temporally** override most of the camera's factory settings plus add some exciting new features such as remote shutter release and automatic time laps photography to name but 2. Check their *List Supported Cameras* to see if CHDK will work with yours.

Interested? Further info may be found at:

- [One Page Ultra-Quick Users Guide](#)
- [CHDK Firmware Usage](#)
- [CHDK/End Users Guide All Best 50](#)
- [CHDK-SVN Autobuild Download](#)
- [How to Expand Your Camera With CHDK](#)
- [USB Remote Cable](#)
- [Laser Triggered High-Speed Photography](#)

[Oldham Optical UK](#)

Oldham Optical's main product line is the manufacture of optical elements for the professional and amateur astronomical market. Their Web site contains much useful information for the experimenter.

[Interferometers and the "Conventional Testing" of Telescope Mirrors](#)

Are Interferometers better than a conventional *Null Test* for high accuracy in testing astronomical optics?

[Build a Red Light Source for Optical Testing](#)

A small light source capable of testing down below PV $1/10\lambda$ wave front accuracy can be made extremely cheaply from a standard red LED laser pointer

[Time Twister: A LEGO Based Digital Clock](#)

"The Time Twister consists of two LEGO Mindstorms bricks communicating via Bluetooth. The master brick keeps track of the time and handles the minute digits. The slave brick handles the hour digits and the second indicator."

[Some Other Hans Andersson "Twister" Robots](#)

Can you believe the Sudoku Puzzle solving robot!

[The da Vinci Robot](#)

Here is one of [Daniele Benedettelli's](#) robots drawing the Mona Lisa.

[Fully Differential Capacitive Sensors for Seismometers](#)

I came across these sensors a number of years ago and they seem like an interesting thing to experiment with.

[Yahoo Groups: The Mad Scientist](#)

This is an open Yahoo Forum that covers anything that pertains to amateur science.

[Yahoo Groups: Amateur Science](#)

You must become a member in order to view the posting on this forum.

[Science Forums](#)

"Science Forums welcomes science discussion at all levels — from beginners to researchers, covering topics from biology to computer science, and much more."

[Modern Microscopy](#)

Modern Microscopy is an on-line magazine covering the technical aspects of microscopy, procedures and methods.

[How to Boost Your Microscope's Power to Examine Your Own Samples](#)

"Magnifications of approximately 8000x and the detection of biological components to approximately 0.2-0.3 microns have been achieved with the general methods described on this page."

[Fun With a Webcam](#)

Here is a collection of interesting things that you can do with a webcam.

[Build a Single Phase Submicro Brushless Motor](#)

If your eyesight is good enough you might wish to give this a try.

[Thomas Edison's Phonograph](#)

For something a little different, why not try building a replica of Edison's phonograph from scratch?

[Bizarre Labs](#)

Search the [Index Page](#) for interesting projects that you can do in your kitchen.

[A 4-Bit Counter Using Relays](#)

Now, this is "old school"! I built something like this way back in the early '60's.

[Amateur Scientist's Guide to Water Quality Monitoring Observations](#)

Water quality is based on many factors. They can influence the water in different ways, and the effect of each factor might be different in different locations. This NASA site will help you to get started in monitoring the water in your area.

[Pachube](#)

Pachube ("patch-bay") is a web-based service that gives people the power to share, collaborate, and make use of information and data generated from the world around them.

[Motion: A Software Motion Detector](#)

Motion is a program that monitors the video signal from cameras and is able to detect if a significant part of the picture has changed.

[The Basement Mechanic's Guide to Building Perpetual Motion Machines](#)

This guide, along with other very interesting topics, may be found on **[Donald Simanek's Web Site](#)**.

[Eric Weisstein's World of Science](#)

This site contains budding encyclopedias of astronomy, scientific biography, chemistry, and physics.

[AirDrop Irrigation System](#)

The winner of this year's James Dyson Award, was Edward Linnacre, an Australian university student, who invented *the AirDrop Irrigation System* which condenses water vapor from the surrounding air and turns it into water

[Stem Cells](#)

Research into stem cells grew out of findings by **[Ernest A. McCulloch](#)** and **[James E. Till](#)** at the University of Toronto in the 1960s.

[Ted Talks: Michael Nielsen Speaks on Open Science](#)

What if every scientist could share their data as easily as they tweet about their lunch?

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[From Instructables, YouTube & Make:](#)

[YouTube: Let Your Kids Break Stuff!](#)

Stephen Colbert interviews Neil de Grasse Tyson about kids and science.

[YouTube: LEGO GBC 20 Modules](#)

Somebody had a LOT of free time and a good collection of LEGO pieces.

[Instructables: A Simple IR Detector](#)

See how a night-light can be used to detect infrared light.

[Instructables: Build a High Voltage Motor](#)

These instructions will show you how to build a to build twin rotary ion motor demonstrating the Biefeld-Brown effect.

[Instructables: A DIY Front Surface Mirror](#)

Here we see how to make a front surface mirror from a piece of acrylic mirror.

[Make: Build a Teacup Stirling Engine](#)

This project may be a bit ambitious for the average experimenter. But, if followed successfully, you will end up with an engine capable of running off of the heat from a teacup.

[Make: Temperature Logger](#)

See how to modify a 3M TL20 temperature log for amateur use.

[Make: USB Webcam Microscope](#)

Here's a relatively easy way to graft a USB webcam onto a RadioShack pocket illuminated microscope.

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The Kids Room:

[The Little Scientists](#)

Here are some tips for teaching children math and science through hands-on experience.

[The Google Science Fair](#)

The Google Science Fair is the largest global online science competition that celebrates the curiosity and investigations of young scientists everywhere!

[Is your Dog a K9 Genius?](#)

Are you looking for a Science Fair project? Then perhaps this IQ Test for a dog might be of interest. It was developed by Dr. Stanley Coren, professor

of psychology at the University of British Columbia and a prize-winning dog trainer and an authority on canine intelligence.

[Science Teacher Resources](#)

This selection from [CR Scientific](#) contains simple experiments in chemistry, mineralogy, biochemistry, and microbiology.

[T-Rex to Go](#)

This book will show you how to build your own dinosaur from chicken bones.

[Animal Tracks](#)

This page explains how you can cast and collect animal foot tracks.

[Science Playwiths](#)

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

[Grammar and Usage for the Non-Expert](#)

These articles by Tina Blue are intended to solve common problems of grammar and usage for those people who want answers but who do not want a lot of technical explanations.

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Women in Science:

[Sharon Terry: Citizen Scientists](#)

“Ordinary people are taking control of their health data, making their DNA public and running their own experiments. Their big question: Why should science be limited to professionals?”

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Random Samples:

[Calendars That Work](#)

This site allows you to build and print a free calendar for the current and next month.

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Suppliers and Stuff:

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

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

[Custom Printed Maps](#)

I love [topographic maps](#) and *MyTopo* allows me to customize a map of an area of interest. They will then mail my map to me.

[Arduino Data Logging Shield](#)

I just purchased one of these shields but I have not had time to try it out. The logger can save your data to a 2 gig SD card and has a real time clock to allow you to time stamp your data.

[The Solarbotics SAFE](#)

The *Solarbotics Arduino Freeduino Enclosure* (SAFE) is a laser-cut acrylic case for your Arduino based project.

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On The Lighter Side:

[Geek T-Shirts](#)

If you need a new T-Shirt have a look at these humorous science related shirts.

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From The Far Side:

I was originally going to make a *Feature* out of these links. But since they propose a controversial theory, I thought that it would be better placed in this section.

On 09 Nov. 2004, I caught part of a very interesting PBS feature --- [America's Stone Age Explores](#). The program looked at the common theory that the first North American peoples crossed the Bering Land Bridge from Asia about 13,500 years ago.

But, there are some that contend that there could have, also, been a migration, west, from Europe.

Years ago, while sailing into the Arctic, through [Davis Strait](#), I remember that for as far as the eye could see, the sea ice was black with seals and there was almost a daily sighting of various types of whales. Their presence represented a huge food supply and if the modern [Inuit](#) can live, for extended periods, on the sea ice by hunting seals, other marine animals and fish, why couldn't ancient man? I thought that perhaps a band(s) of peoples could have followed the ice edge, west to North America, either by foot, dog team or boat (similar to [Inuit umiak](#)

Years later, I learned of the theory that the [Solutreans](#), a [Clovis](#) like people of ancient France and Spain, may have crossed to North America from Europe.

[Mitochondrial DNA](#) analysis of [North American First Nations Peoples](#) showed the expected Asian markers. But then the investigators were thrown a curve ball when they found evidence of pre-Columbian European influences, along with the Asian markers, in the DNA of the [Ojibwa People](#). This new DNA turned out to be similar to that of the Clovis like [Solutrean People](#) of ancient France and Spain.

[The North Atlantic Ice-Edge Corridor](#)

Possible Palaeolithic Route to the New World ---- Bruce Bradley and Dennis Stanford contend that that the earliest origin of people in North America may have been from southwestern Europe during the last glacial maximum.

[The Stone Age Columbus?](#)

This BBC documentary asks --- "Who were the first people in North America? From where did they come? How did they arrive?"

[Early Dates, Real Tools?](#)

The Topper Site, South Carolina: Archaeologist, Albert Goodyear, claims that humans were in North America 50,000 years ago?

[Immigrants From the Other Side](#)

Clovis Is Solutrean?

[Center for the Study of the First Americans](#)

The Center for the Study of the First Americans explores the questions surrounding the peopling of the Americas.

[The Clovis First / Pre-Clovis Problem](#)

“Tony Baker proposes that the “first peoples” entered North America, via the Bering Strait, about 20-30,000 BP, and gradually populated North and South American. Than sometime between 17,500 and 11,500 BP a few individuals from Europe found their way into the New World. They did not bring a gene pool, but they brought the Solutrean lithic technology from which the indigenous population adopted the soft hammer percussion technique and the exquisitely made biface. The Clovis point was then invented almost overnight and it spread across the in place population in a very short time.”

[A Journey to a New Land](#)

The *Virtual Museum* at Simon Fraser University Museum of Archaeology and Ethnology looks at the Siberian migration.

[Solutreans: The first Americans](#)

I, originally, saw this program on TV, a few years ago, and recently found it on YouTube by accident.

- [Part 2/9](#)
- [Part 3/9](#)
- [Part 4/9](#)
- [Part 5/9](#)
- [Part 6/9](#)
- [Part 7/9](#)
- [Part 8/9](#)
- [Part 9/9](#)

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