

STEM Society Meeting, November 11, 2014

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Last Edit: 11/23/2014

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1 About the STEM Society and the STEM Society Website

STEM is an abbreviation for Science, Technology, Engineering and Mathematics. The acronym STEM is commonly associated with K-12 education, but our use of the term is only slightly bound to this meaning. There are over one hundred people on the mailing list, although a much smaller group attends any one meeting. We meet on the second Tuesday of each month at

the Trailside Center at 99th and Holmes in Kansas City, Missouri. The meetings are open to all. The start time is 6PM. We make presentations, have discussions, and have demonstration experiments. These relate to Science, the History of Science, Mathematics, Engineering, Philosophy and Technology at all levels. The topics have ranged from a technical discussion of the mathematics of General Relativity to scientific experiments for young students.

These meeting notes contain links to many other documents, which may be viewed or downloaded by clicking the link. A partial list of documents can be reached by clicking the heading **Documents**. The meeting notes may also be viewed in an archive file (archive.pdf), which is in the list of documents. Many of the documents are PDF files. They may be viewed or downloaded to the computer by clicking, provided Adobe Reader, or another program capable of reading PDF files, is present. There are many more documents available at the site than are listed under **Documents** because the documents.htm file is not at all up to date. The last time I checked, about March 2014, there were about 350 document files on the site. We are in the process of creating better techniques for finding documents and authors. The first meeting of the STEM Society was in November of 2006. For several years we used the content management program called Joomla. It had a fancy looking interface, but was hard to use. It overran the space somehow at our internet provider Bluehost. So we now have a very simple HTML site. It is not so slick looking as Joomla, but very easy to maintain and modify.

The web site is:

<http://www.stem2.org/>

Direct to the documents list:

<http://www.stem2.org/je/documents.htm>

Direct to the archive file:

<http://www.stem2.org/je/archive.pdf>

2 The November Meeting Announcement

The November meeting of the STEM Society will take place on the second Tuesday of the month, November 11, 2014, at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The starting time is 6PM.

Topics:

(1) Ryan Rezzelle, head of forensic photography, at the Johnson County Crime Laboratory will address the STEM Society.

He operates their 250,000 dollar state-of-the art laser mapping device which is used to make on-site, instant maps of crime scenes. This device is made by Leica. He will bring the device to the meeting for a demonstration. Also, he will show imagery with power point. Geometric models of the scene can be created as well as holograms.

He mentioned no one under 18 should attend, because he will show photos of crime victims..... he asked if anyone was squeamish. He says he needs about 60-90 minutes.

Note. Because the 11th is veterans day, Ryan will not be working. So he will be unable to bring the mapping device to the meeting. He could make a slide show presentation, but we may postpone the whole thing until next month.

(2) For myself, I may present material on (a) Lewis and Clark and the techniques of celestial navigation. (b) A function that has derivatives of all orders at zero, but no Taylor Series representation there. Uniform convergence of a sequence of functions. (c) The binomial series as an application of Taylor's Formula. (d) A history of labor unions and the Kansas City Leeds General Motors Plant, Walter and Victor Reuther, the Wagner Act. Bob Kessler and his father who worked there. (e) The Hawthorne California Northrop Aviation plant, the P-61 Black Widow Nightfighter, its Pratt and Whitney engines, which engines may have been built in Kansas City, about the plant and its test cells. Everyone will join in on these discussions, perhaps?

(3) Someone can lead a discussion of the current status of the Ebola virus, and how chlorine bleach destroys the virus. If you use this procedure enough will you end up with permanently slimy skin and look like a bright white shirt?

(4) Rich Kaufman may talk about diabetes.

(5) Books?

(6) Crazy Quotes, Taxes, Balloons, Botony, and Useless Babies.

(7) Surprise projects and discussions.

The STEM Society Website:

<http://www.stem2.org/>

3 Crazy Quotes, Taxes, Balloons, Botony, and Useless Babies.

Niels Bohr to Wolfgang Pauli: "Your theory is crazy, but not crazy enough,"

"We are all agreed that your theory is crazy. The question that divides us is whether it is crazy enough to have a chance of being correct." Said by Niels Bohr to Wolfgang Pauli after his presentation of Heisenberg's and Pauli's nonlinear field theory of elementary particles, at Columbia University (1958), as reported by F.J. Dyson in his paper **Innovation in Physics**, (Scientific American, 199, No. 3, September 1958, pp. 74-82.

Benjamin Franklin observing a French Ballon ascent, when questioned about their usefulness, replied, "What is the use of a newborn baby?" This is often attributed to others such as Michael Faraday, and James Clerk Maxwell.

Enrico Fermi: "If I could remember the names of all these particles, I'd be a botanist."

Prime Minister Gladstone to Michael Faraday: "What is the practical value of electricity?" "Why, sir, there is every probability that you will soon be able to tax it."

Some of these are probably apocryphal, and if basically true may be misquotes, and could have been said on various occasions to various people.

4 Longitude, The Lewis and Clark Expedition, and The Shackelton Escape From Antarctica

An old method of determining longitude is called the lunar method, and involves measuring the lunar distance (the angle) from the moon to a star. See the document called **Celestial Navigation**:

<http://www.stem2.org/je/navigation.pdf>

5 Leeds General Motors Plant, Northrop Plant in Hawthorne, California

Topics: (1) The Sit-down Strike of 1935 in Kansas City at the Leeds plant, (2) The P61 Blackwidow Night-fighter produced at the Hawthorne plant, and its Pratt and Whitney prop engines, which may have been produced in Kansas City at the Bannister plant. Those restoring old planes at the KC downtown airport have an old Pratt and Whitney engine.

6 Scripting

We briefly demonstrated the script called **stemdocs.bat**, which locates the file names of all documents on the **stem2.org** website that contain a set of keywords. This script is the windows batch file

```
@echo off
rem stemdocs.bat, Version 8/2/14, by Jim Emery
rem lists those lines in file \txt\stemdocs.txt containing specified words
if "%1"==" " goto help
grep -i %1 c:\txt\stemdocs.txt > \tmp\tmp1.txt
copy \tmp\tmp1.txt \tmp\tmp2.txt
:search
shift
if "%1"==" " goto list
grep -i %1 \tmp\tmp2.txt > \tmp\tmp1.txt
copy \tmp\tmp1.txt \tmp\tmp2.txt
goto search
:list
semi2nl \tmp\tmp1.txt \tmp\tmp2.txt
type \tmp\tmp2.txt | more
goto end
```

```
:help
echo stemdocs.bat, by jim emery, Version 8/2/2014
echo Lists file names, and titles, for documents on the stem society website: stem2.org
echo Prints lines in the file \txt\stemdocs.txt that contain key strings
echo Usage: stemdocs string1 string2 string3 ...
:end
```

The Macintosh or Linux version of this script is

```
# stemdocs.sh 9/14/2014
if [ $# -eq 0 ]
then
  echo Lists file names, and titles, for documents on the stem society website: stem2.org
  echo Prints lines in the file ~/txt/stemdocs.txt that contain key strings
  echo Usage: stemdocs string1 string2 string3 ...
  exit
fi
# echo number of arguments $#
cp ~/txt/stemdocs.txt tmp1
while [ $# -gt 0 ]
do
  grep -i $1 tmp1 > tmp2
  cp tmp2 tmp1
  shift
done
perl ~/bin/splitnotes.pl < tmp1 > tmp2
cat tmp2 | more
```

For more information see the document called **Batching and Scripting**, which is at

<http://www.stem2.org/je/batch.pdf>

7 Rich Kaufman: Diabetes

Rich gave a very informative talk on Diabetes, including, the history, the progression of the disease, causes, and results of some of the latest research on this disease, which research is increasing understanding and modifying medical treatments.