

Fools' Physics

Steve Barrett

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1 April 2004

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*An irreverent look at
physics and physicists*

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The Legal Bit...

*The opinions of the speaker
are not necessarily those of
the University of Liverpool
or the Institute of Physics*

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Physics is... ?

All science is either physics or stamp collecting

Ernest Rutherford

Physics is not difficult, it is just weird

Vincent Icke

*Physics is not a religion. If it were, we'd have a much
easier time raising money.*

Leon Lederman

*Physics is like sex: sure, it may give some practical
results, but that's not why we do it*

Richard Feynman

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Physicists are... ?

*Very strange people, physicists – in my experience the
ones who aren't dead are in some way very ill*

Douglas Adams

*...it would be better for the true physics if there were no
mathematicians on earth*

Daniel Bernoulli

I love only nature, and I hate mathematicians

Richard Feynman

A physicist is an atom's way of knowing about atoms

George Wald

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You know you're a physicist if...

you know vector calculus but not long division

you chuckle whenever anyone says 'centrifugal force'

you've used every function on your scientific calculator

you have a pet named after a scientist

you laugh at jokes about mathematicians

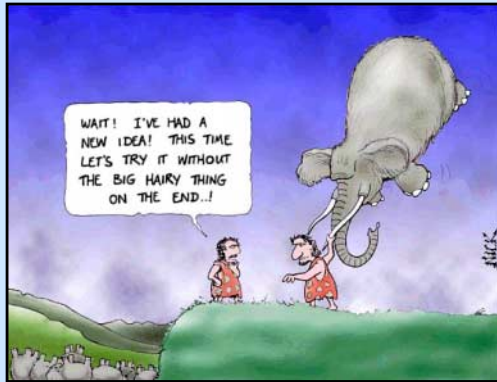
*when asked for your tutorial work, you claim to have
determined its momentum so precisely that its location
could be anywhere in the universe*

you assume a horse is a sphere to make the maths easier

you understand more than five of these indicators

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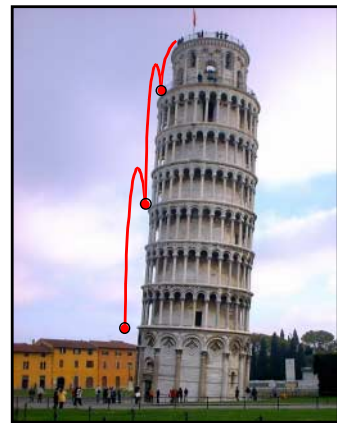


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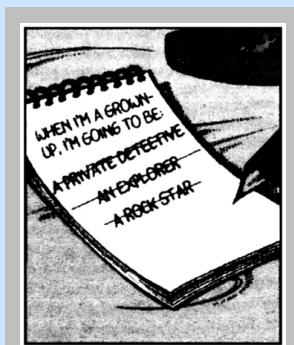


ONE OF EUCLID'S EARLIER PROPOSITIONS

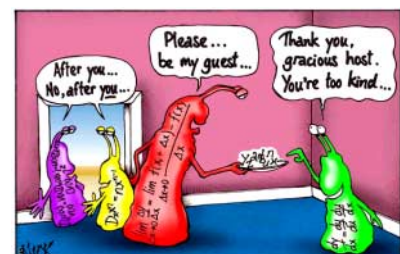
"That
can't be
right,
can it?"



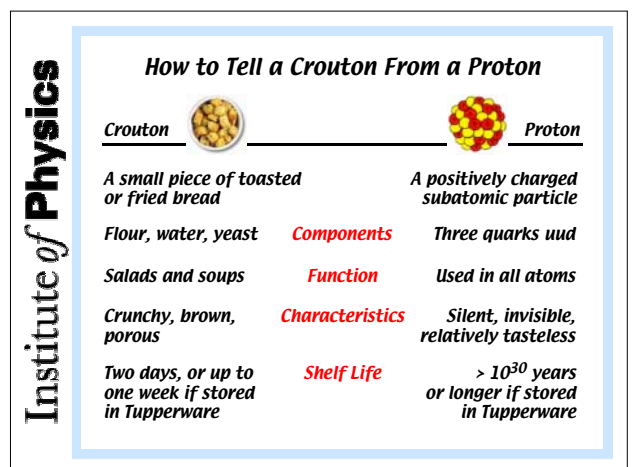
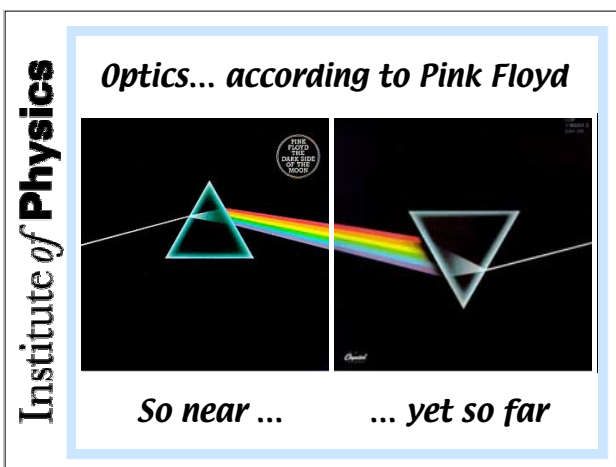
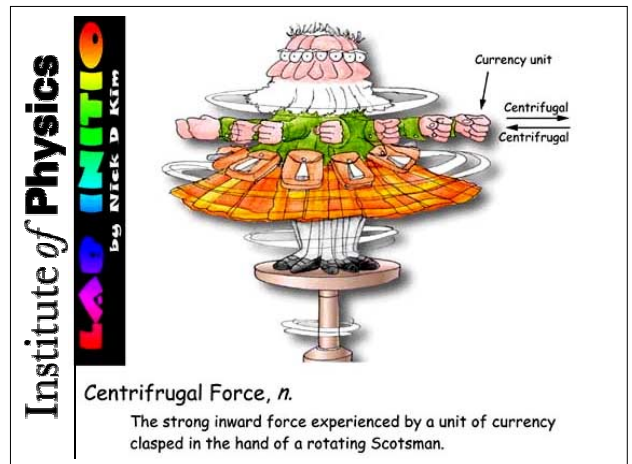
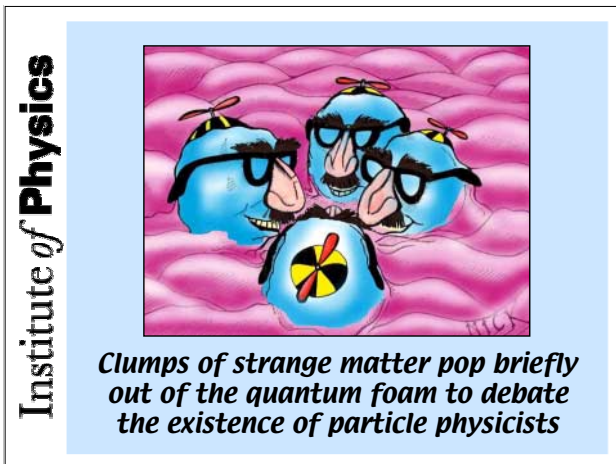
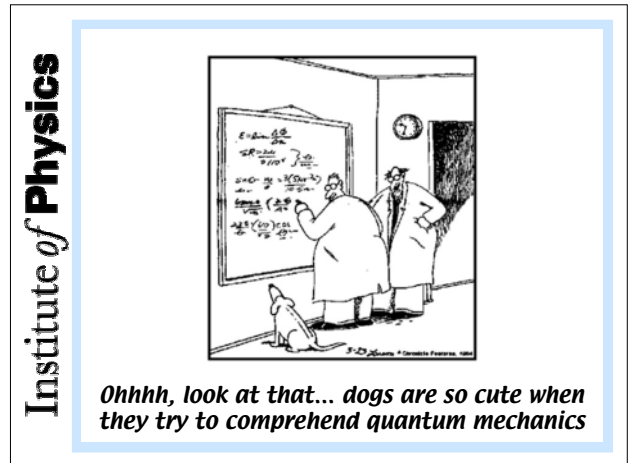
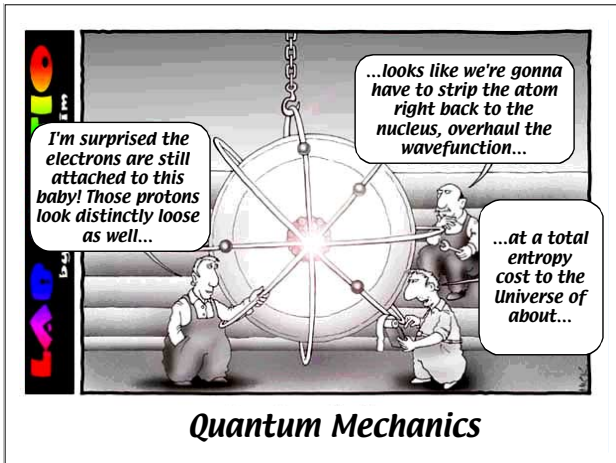
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Differential Equations



Writing a Report

What you read/write *What it means*

Typical results are shown

The best results are shown

It is clear from the figure that...

It is impossible to tell from the figure

The sample was accidentally strained during mounting

...dropped on the floor

The sample was handled with extreme care

...not dropped on the floor

Writing a Report

It is suggested that...

I think

It may be that...

I think

It is believed that...

I think

It is generally believed that...

I know another guy who thinks so too

The agreement with prediction is excellent

fair

The agreement with prediction is fair

imaginary

The agreement with prediction is as good as could be expected

non-existent

Writing a Report

It is clear that much additional work is required

I don't understand it

A quantitative theory to account for these results has not been formulated

No one else understands it either

Correct within an order of magnitude

Wrong

UNIVERSITY COLLEGE, LIVERPOOL.

LENT TERM EXAMINATION EASTER, 1893.

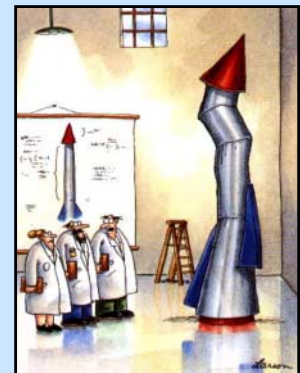
6. Define boiling point. Can water be made to boil without heating it?
13. Illustrate some transformations of energy by examples, and state what is meant by the "conservation of energy," and the "mechanical equivalent of heat."
16. What velocity will suffice to melt a bullet if all the energy of the blow is retained in the bullet.

Eight good answers are sufficient.

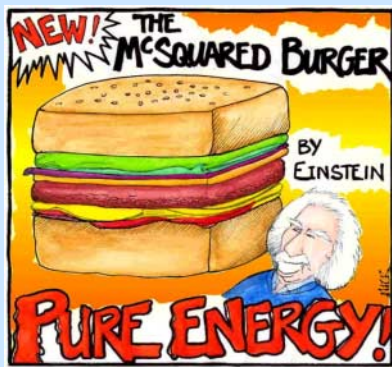
If you are unable to answer enough questions properly, you may write an essay on any part of the subject that you do know something about.



"It's time we face reality... we're not exactly rocket scientists"



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B

Bortex, n.

Personal field emitted by boring people. Comprises sluggish sub-atomic particles called **borons**.



Y

Yakademic, n.

An academic who has been describing their research since asked about it 20 minutes ago (see Bortex)

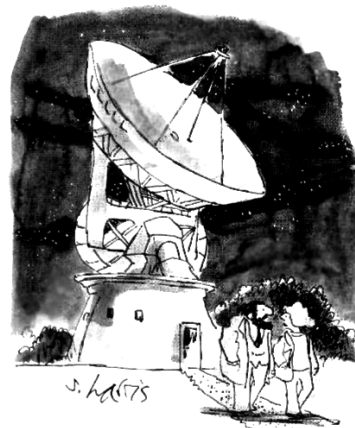


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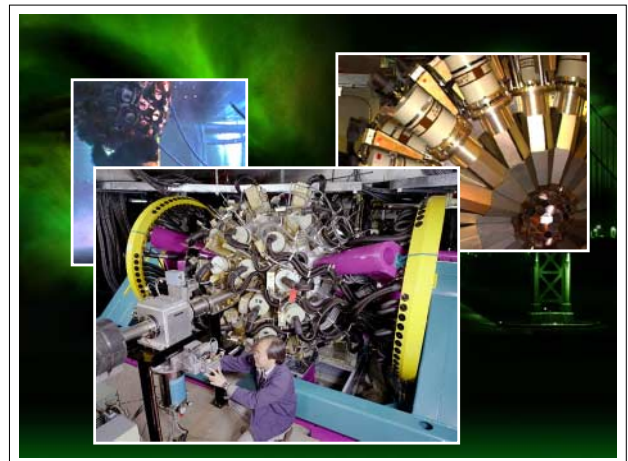


Proto-Professor Zag, pioneer in fire research

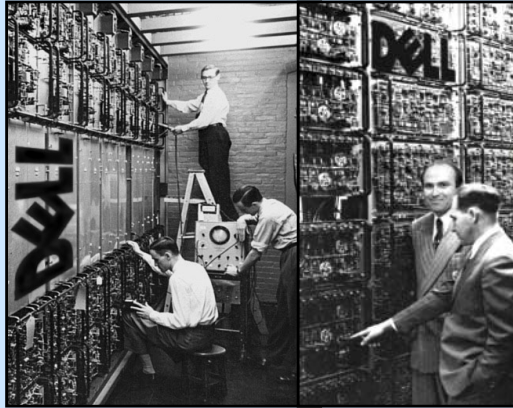
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I'll be working on the largest and smallest objects in the Universe - superclusters and neutrinos. I'd like you to handle everything in between.



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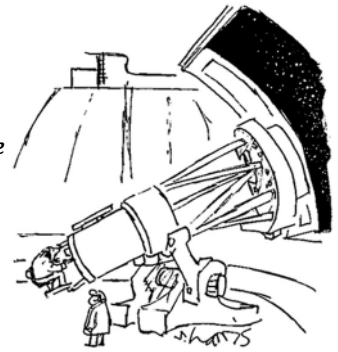
Let's see now...
picking up where
we left off...

1,262,386,413

1,262,386,414

1,262,386,415

...

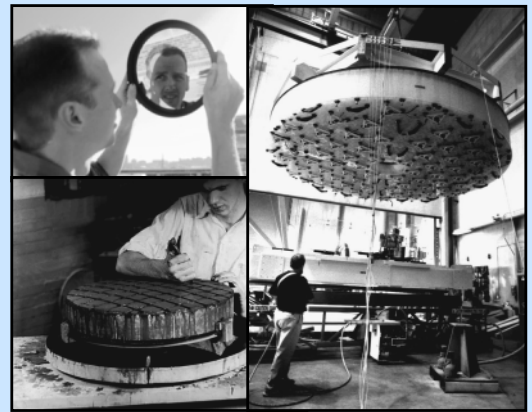


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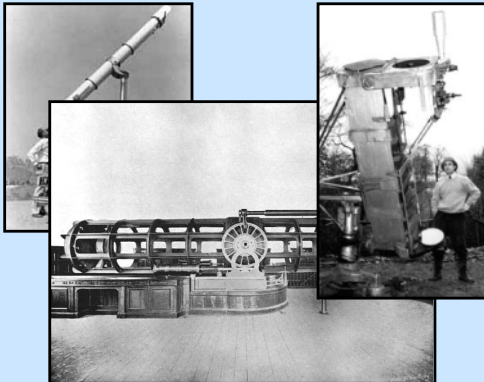


*Jeremiah Horrocks and Professor Bode
observing the transit of Venus in 1639*

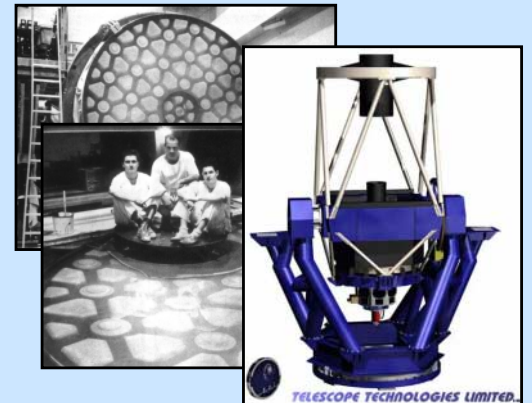
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Back To The Future

Man will never reach the moon regardless of all future scientific advances

Lee de Forest

There is not the slightest indication that energy will ever be obtainable from the atom

Albert Einstein

The one thing that man will never know is the chemical composition of the stars

Auguste Comte 1835

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Back To The Future II

This 'telephone' has too many shortcomings...
The device is inherently of no value to us

Western Union 1876

[regarding the telephone] I can see a time when every city will have one

Mayor of an American city

I think that there is a world market for maybe five computers

Thomas Watson, Chairman IBM 1943

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Back To The Future III

...that in a few years, all great physical constants will have been approximately estimated, and that the only occupation which will be left to men of science will be to carry these measurements to another place of decimals.

James Clerk Maxwell 1871

Heavier-than-air flying machines are impossible

X-rays will prove to be a hoax

Radio has no future

Lord Kelvin 1895 and 1897
President of the Royal Society

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Back To The Future IV

Professor Goddard does not know the relation between action and reaction and the need to have something better than a vacuum against which to react. He seems to lack the basic knowledge ladled out daily in high schools.

New York Times editorial 1921

Correction: It is now definitely established that a rocket can function in a vacuum. The Times regrets the error.

New York Times July 1969

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Moon Hoax

Radiation from the Van Allen belts

Why no blast crater below the Lunar Module ?

Why no flame from the Lunar Module rocket engine ?

In photographs supposedly taken on the lunar surface...

Why are the shadows 'filled in' ?

Shadow angles are inconsistent

Shadow lengths are inconsistent

No stars appear in the sky

Position of the Earth in the sky is incorrect

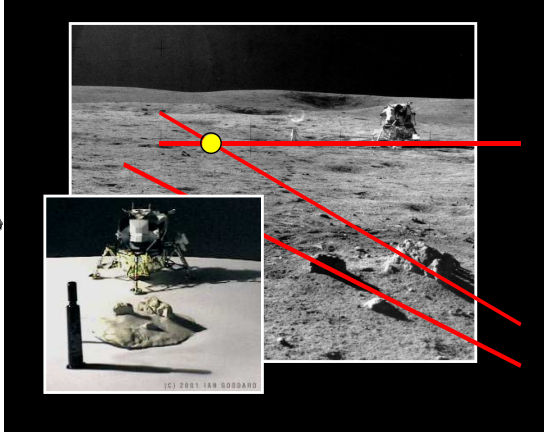
Same background appears in images of different areas

Why are the images well-focussed and well-framed ?

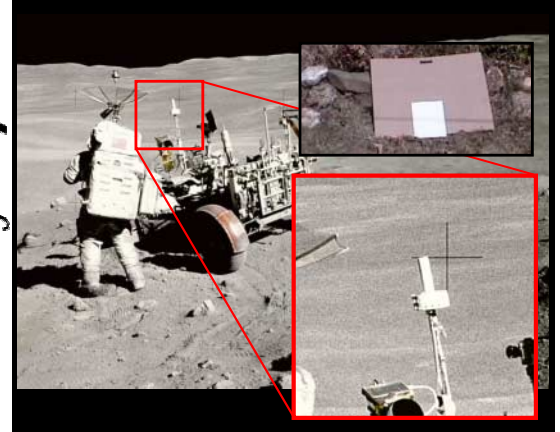
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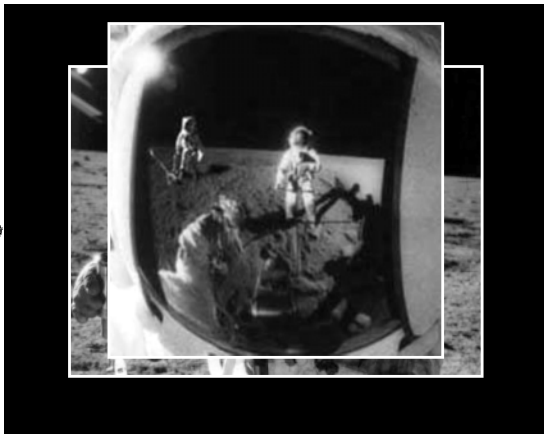
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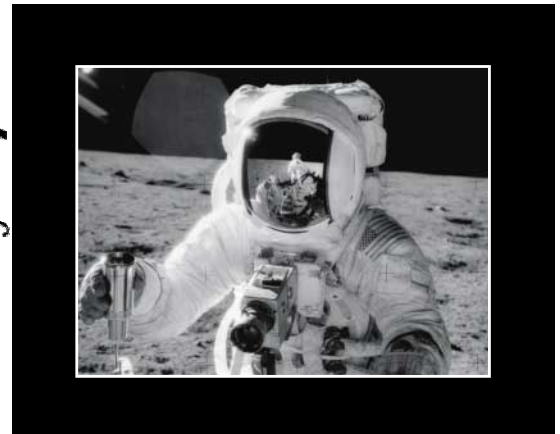
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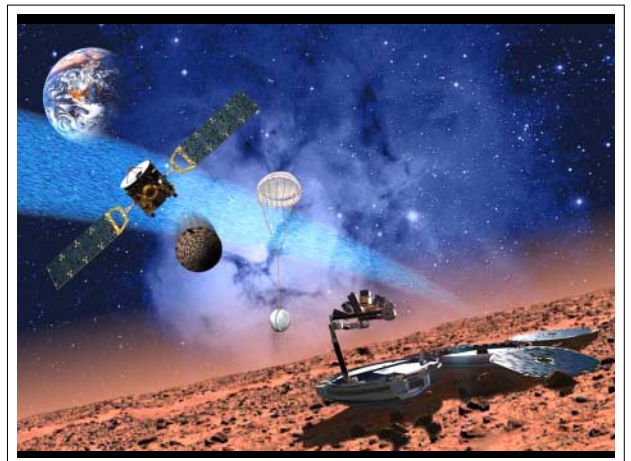
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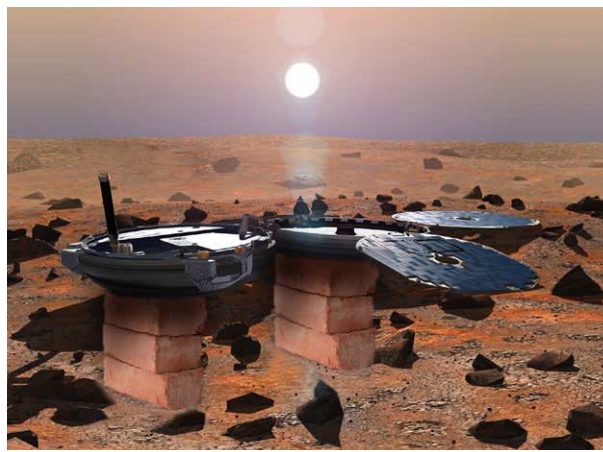


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*"One hour is long
enough for anyone"*

Michael Faraday 1812

Acknowledgements

Inspiration

Prof Jim Matthew
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**A Random Walk in
Science**

Robert Weber
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**More Random Walks
in Science**

**How to Tell a Proton
From a Crouton**

Judith Stone
Angus and Robertson

Acknowledgements

Far Side

Gary Larson
<http://www.shonky.com/Pics/larson.jpg>

Lab Initio

Nick Kim
<http://www.linuxgrrls.org/~nick>

Astro cartoons

Sidney Harris
<http://astro.wsu.edu/worthey/astro>

Nearing Zero

University of Waikato
<http://www.nearingzero.net>