ASTRONOMER

What my friends think I do  What my mom thinks I do  What society thinks I do

What the university thinks I do  What I think I do  What I really do

THEORETICAL PHYSICIST

What my friends think I do  What my mom thinks I do  What society thinks I do

What the university thinks I do  What I think I do  What I really do

A coupled thermal-mechanical model for corona formation on Venus

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Center for Radiophysics and Space Research, Cornell University, Ithaca, New York

Abstract. We develop a model of the combined thermal and mechanical evolution

Early History
Chronicle of the Industrial

• Rufus Porter
  – Schoolmaster, painter, musician, editor, inventor of the revolver (sold to Colt)
  – After 10 months, bored, he sold *Scientific American* for $800 to…
Chronicle of the Industrial

- Orson Desaix Munn, 22
- Alfred Ely Beach, 19
  - Beach was son of New York Sun publisher and inventor of first subway (pneumatic tube)
  - Magazine processed one-third of patents issued in U.S.
We give this week illustrations of this remarkable work, which, with a brief description of the details of construction and mode of operation, will give the general reader a good understanding of the nature of this mode of transit. Having fully set forth the benefits to be derived from it in a previous article, we shall confine ourselves at present entirely to a description of the work and a brief history of the origin and progress of transit by means of air inclosed in tubes.

The engravings give an excellent idea of the various parts and appliances. The tunnel is eight feet in diameter in the clear. It is lined with masonry (brick-work) laid up in water cement. A plan of a small portion of it is shown in Fig. 1, which includes the present terminus and passenger station at the corner of Broadway and Warren street, and shows the position of machinery, etc. This will be at once understood on inspection, and we therefore pass to the mode of excavation.

This is shown in Fig. 2, which represents in section the tunneling machine or shield, designed by Mr. A. E. Beach, of the SCIENTIFIC AMERICAN. The body of the shield is shown at A, and is simply a short tube of timberwork, backed by a heavy wrought iron ring, against which the hydraulic rams, D, act to advance the entire machine. The front part of the shield is a heavy chilled iron ring, B, brought to a cutting edge, and crossed on the interior by shelves, C, also sharpened. Bearing blocks, E, of timber, are placed against the masonry, as shown, on which the rams press when the shield is advanced. F is the pump from which the water...
Chronicle of the Industrial

12 Dec 1877, 18 May 1889
Birth of the Modern Sci Am

• Gerard Piel, 33
• Dennis Flanagan, 28
  – *Life* magazine reporters
  – “Joint effort” between scientists and journalists

http://www.janusmuseum.org/panabasis/jan05.htm
Golden Years

The Human Population

The articles presented in this issue point out, among other things, that rapid population growth cannot last long. The question is: Will population level off because of high death rates or low birth rates?

by Ronald Freedman and Bernard Berelson

October 1970, September 1974, August 1985,
Boom ... and Bust

Boom ... and Bust
Recent Years
Today: Print Readers

- 450,000 circulation in U.S.
  - 3.3 million readers worldwide
  - Record subscriber renewal rates
- U.S. newsstand sales average: 70,000
  - In top 100 of U.S. titles
  - BUT newsstand for SA & all magazines sliding: –15% to –20% in 2011 from 2010
    - Factors: Borders bookstores close, airline traffic down, POS changes, inherent display flaws (“Men’s”)
What’s Going On?

• Print (MRI)
  – 47 median age
  – 70% male/30% female

• Online (Nielson)
  – 37 median age—YES, 10 years younger
  – 56.5% male/43.5% female

• Print/online readers respond differently
  – On different devices, the audience shifts
  – And on different services, they change, too
Who Are the Readers?

- scientists (3–4%)
- doctors (4–8%)
- students (4–8%)
- engineers (6–15%)
- teachers (10–15%)
- managers (25%)
What Makes a *Sci Am* Story?

- present a problem/paradox/tension/mystery
- provide some resolution
- needn’t be—shouldn’t be—linear
- represent not just author’s work, but a community’s thematic rather than mission- or instrument-based
- timely: why now?
- how you know what you know
- make a point (spouse test)
Words to the Wise

underestimating the reader
worrying what colleagues will say
journalese: “insights,” “implications”
received-wisdom syndrome
metaphors that don’t travel well
obsessing over length
readers can stop anytime

http://vinodwadhawan.blogspot.com/2012/01/9-symmetry-is-supreme.html
Words to the Wise

*underestimating the reader*

*worrying what colleagues will say*

*journalese: “insights,” “implications”*

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*metaphors that don’t travel well*

*obsessing over length*

*readers can stop anytime*

http://vinodwadhawan.blogspot.com/2012/01/9-symmetry-is-supreme.html
Life Cycle of a Print Article I

- Waiting
- Submission
- Drafts
- Writing

- Article
- Editorial
- Invitation
Life Cycle of a Print Article II

- line-editing; summary for art and web team (e.g., December)
- author review of line-edit (early January)
- copy-editing and first proofs (late January)
- full proofs (early February)
- article goes to press (mid-February)
- goes up on newsstands and website (mid-March)
- it ain’t over: readers’ responses (April, May)
Box 1: Birth, life, and death of stars
How stars are born and die (stars of different masses die in different ways). Era of intense star formation is over, but the universe is, and will be, far from static. Something like this:

Box 2: Collision of Milky Way and Adromeda
Our star and planet system is due to a collision. Interactions like this will reinvigorate star formation temporarily, producing starbursts.

Box 3: Chart: the effects of higher levels of heavy elements in future stars
1) Increased opacity of star’s outer layers → lowers nuclear fuel consumption and nudges towards longer life
2) but, the heavy elements do not participate in nuclear fusion, therefore reducing nuclear fuel available, and limiting the star’s life
These 2 effects operate on different timescales: could be interesting to plot them over time, showing prospects for a long life, then crossing over into the zone of limited life when heavy elements reach a certain level.
Also— heavy elements should favor birth of planets.

http://blogs.scientificamerican.com/at-scientific-american/2012/02/21/the-evolution-of-a-scientific-american-
Evolution of an Infographic

http://chandra.harvard.edu/edu/formal/stellar_ev/poster_horiz_med2.jpg
The Emperor, Darth Vader and the Ultimate Ultimate Theory of Physics

By George Musser | March 30, 2012 | 4

PASADENA—The theory is so obscure there's not a Wikipedia page about it yet. It might be impossible to formulate mathematically. One theoretical physicist calls it the Emperor Palpatine of theories, even more powerful and inscrutable than the BRST (Becchi-Rouet-Stora-Tyutin) supercharge.
Why They Visit: Social Factor

- Social community referrals +172% (+2.1M)
  - Facebook+Twitter=96% social community traffic
- Social news referrals +82% (+2.8M)
  - StumbleUpon, Reddit, etc.
Thank You!

HÄDRÖNN
CJÖLIDDER

IKEA

1.

60,000x

+ + +

80,000x

1x

9,000,000x

2.

30x

3.

4.

http://8.media.collegehumor.cvcdn.com/90/69/d772520dd7706bb5ed8211e77b187c6f.jpg