

scientific information & medical knowledge

History of Information
Feb 15, 2011

aob

on assignment

do the reading

answer the questions

read your answers

talk to us

overview

**where we're going &
what came before**

what happened

assignments

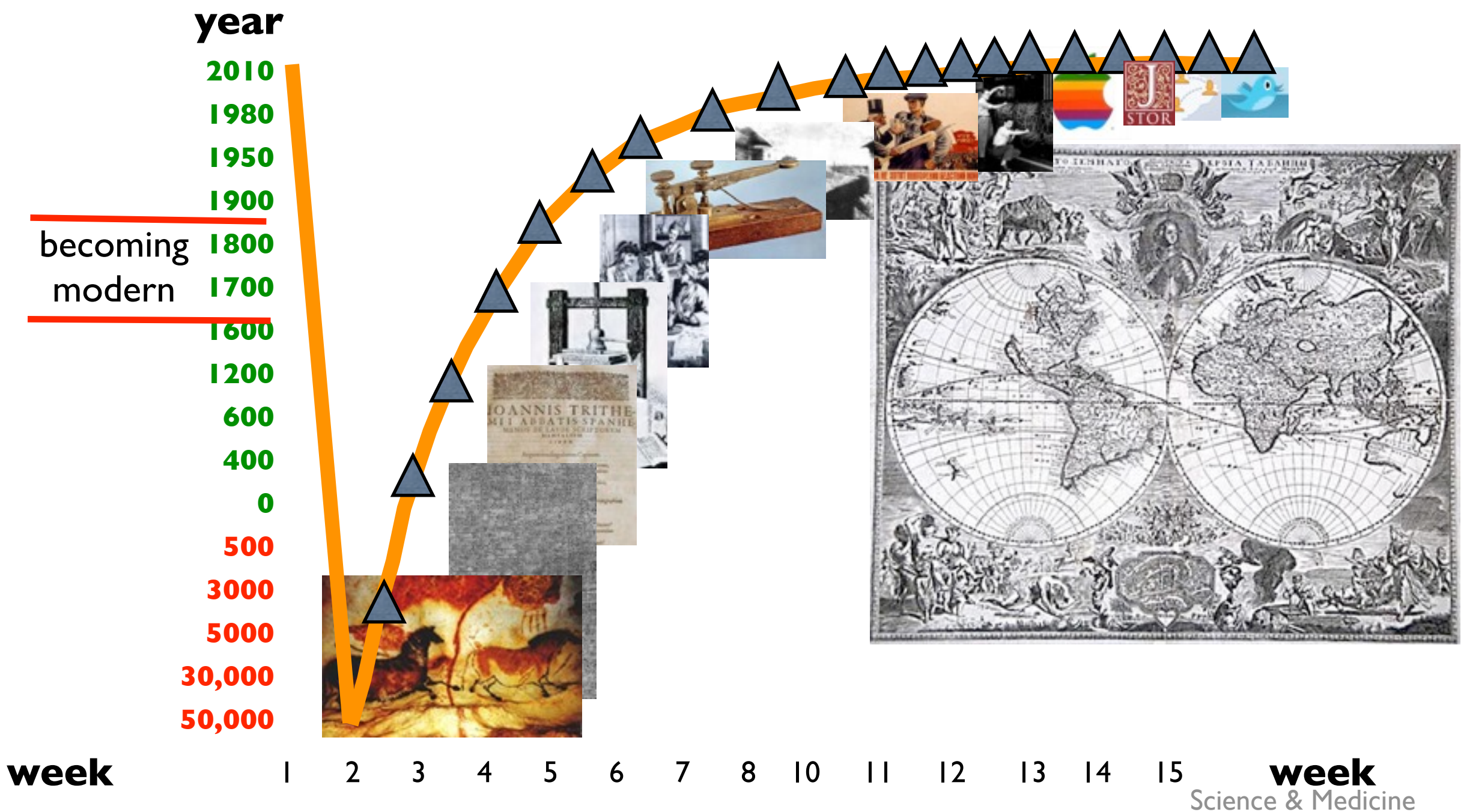
trouble for the virtuosi

solving problems

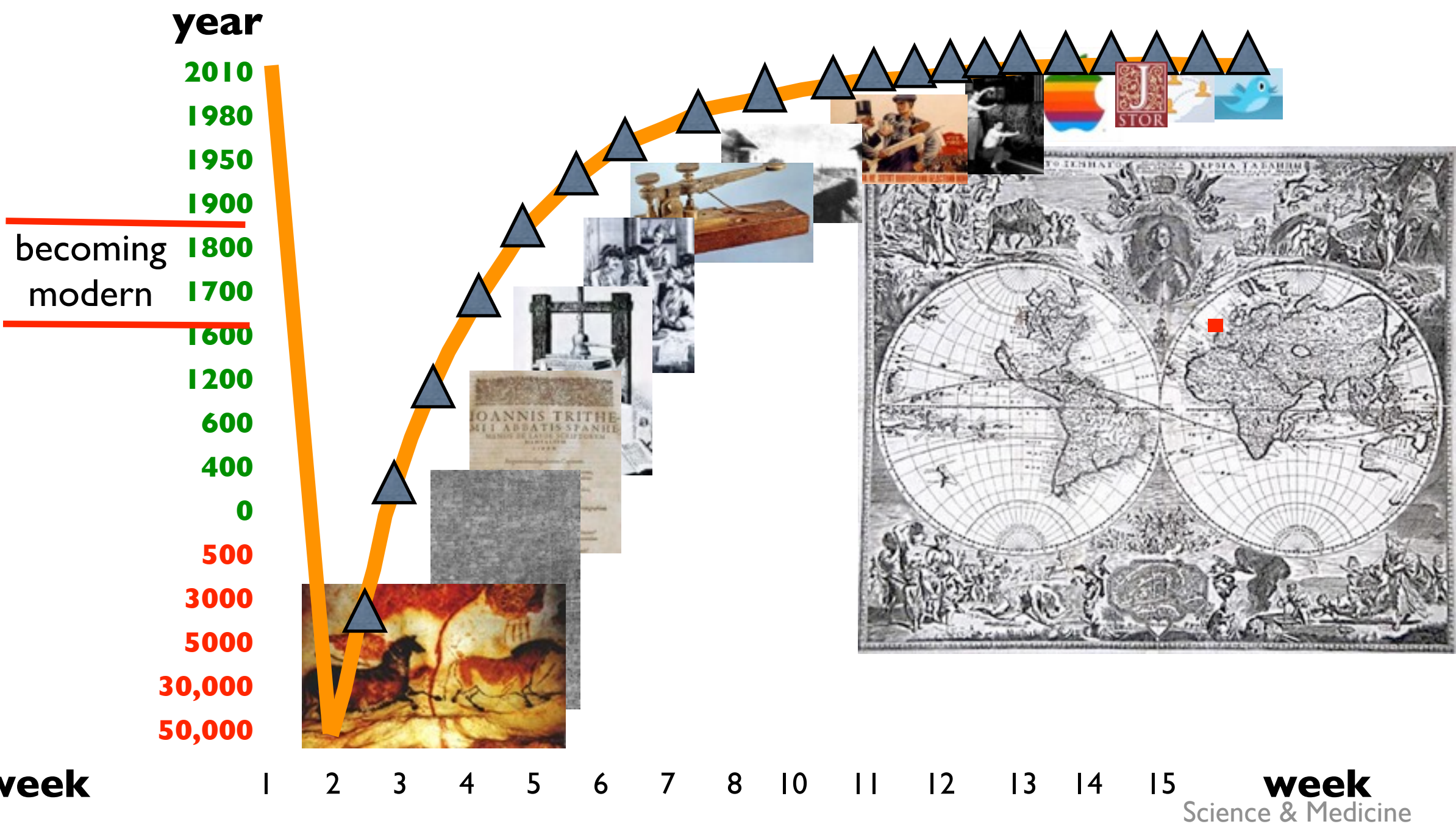
case studies

open science

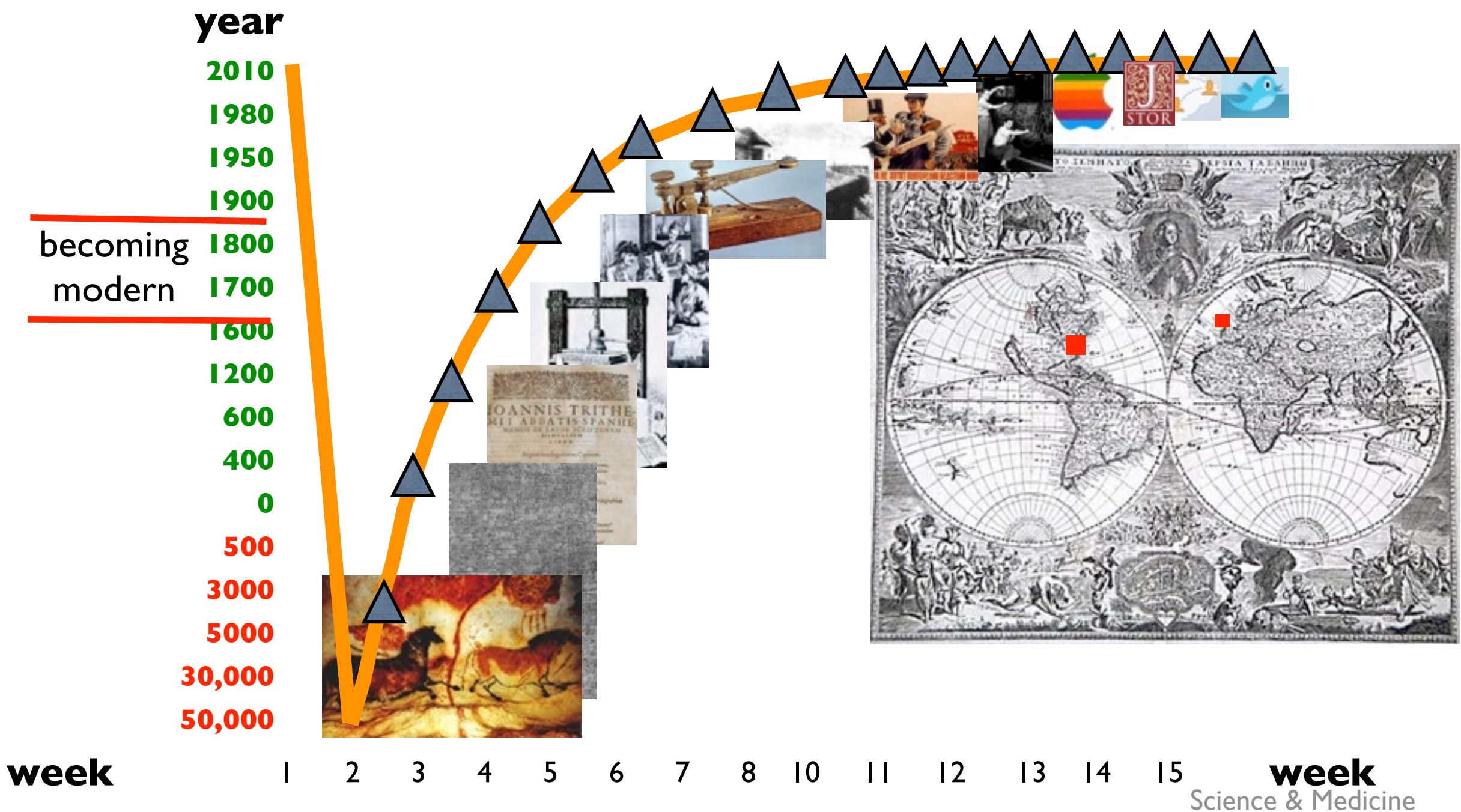
where we are going



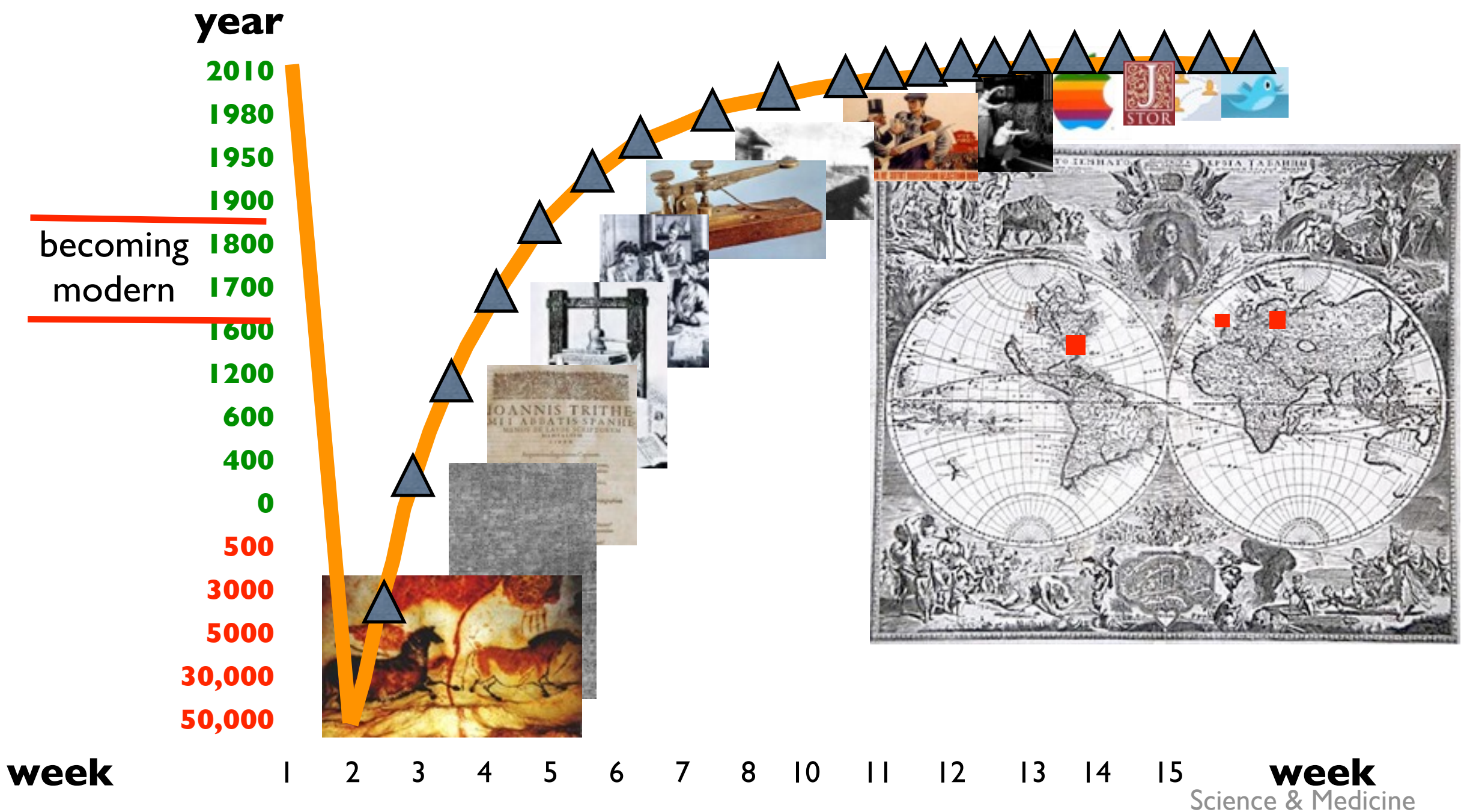
where we are going



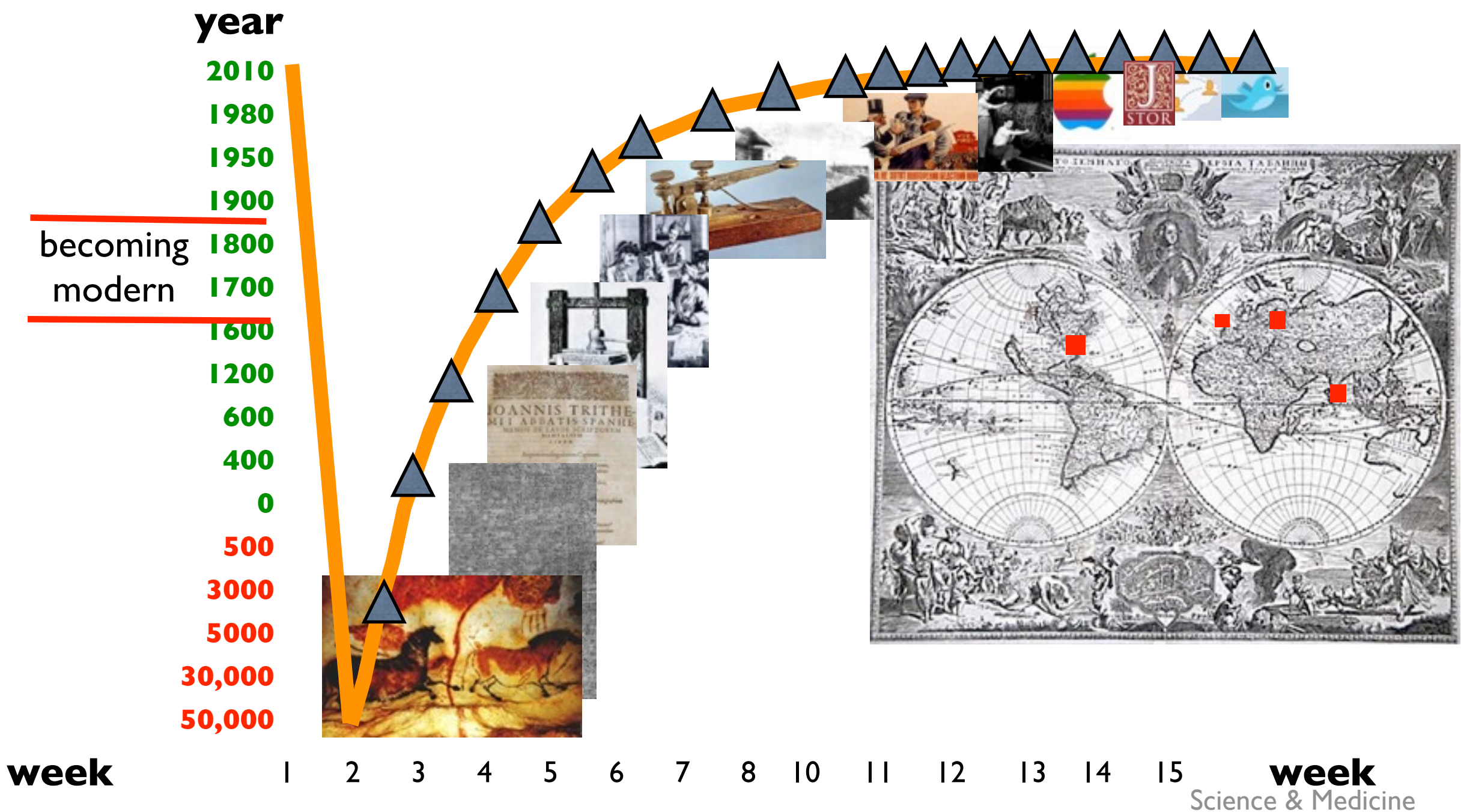
where we are going



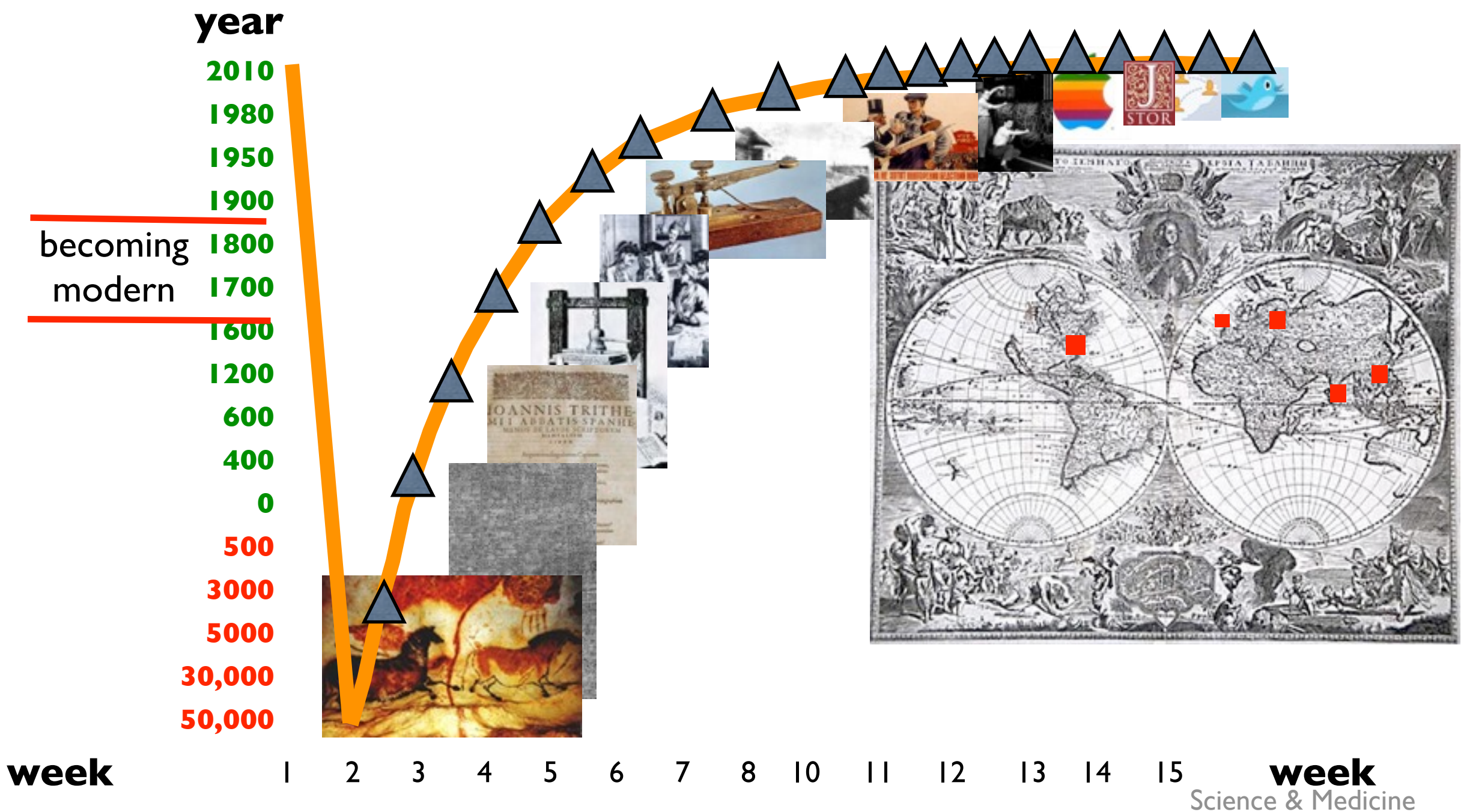
where we are going



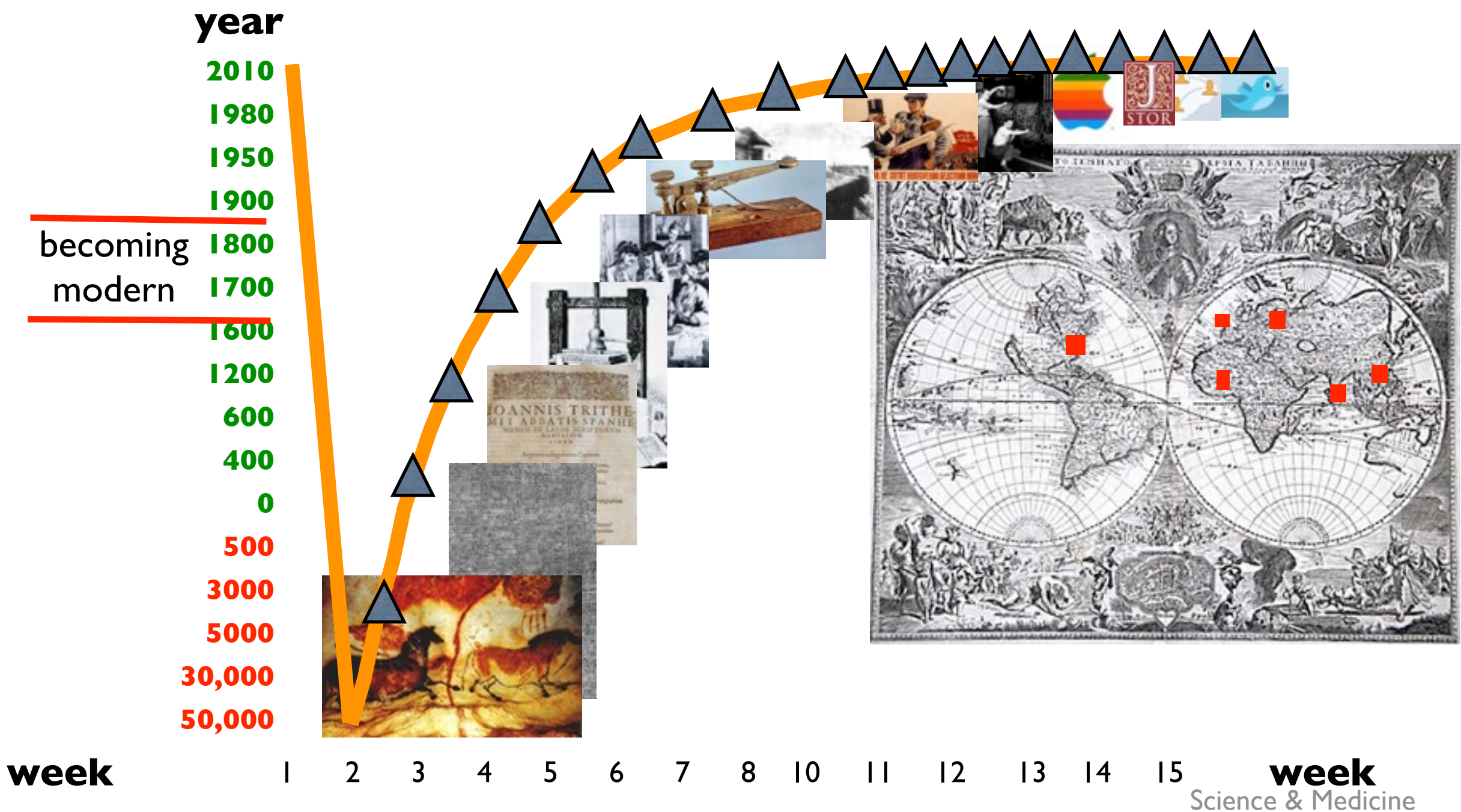
where we are going



where we are going



where we are going



"Why do we not, I say,
turn over the living
book of the world
instead of dead papers."

John Comenius
(1592–1670)

where we've been

print and the scientific revolution

the birth of modern science

the spread of knowledge

THERE is another Branch of Pretenders ...who ... send down Notice to the World of their extraordinary Parts and Abilities by Printed Bills and Advertisements. They seem to have derived their Custom from an Eastern Nation which Herodotus speaks of, among whom it was a Law, that whenever any Cure was performed, both the Method of the Cure, and an account of the Distemper, should be fixed in some public Place; but as Customs will corrupt, these our Moderns provide themselves of Persons to attest the Cure, before they publish or make Experiment

where we've been

the public sphere

the birth of democratic society


the decline of rank

I lately dropped into a Coffee-House at
Westminster, where I found the Room hung
around with ... Elixirs, Tincture, the
Anodine Fotus, *English Pills*, Electuaries,
and in short, more remedies than I believe
there are diseases

where we've been

challenges ahead

knowledge, ignorance and interest



The screenshot shows the Wikipedia article for Daniel Defoe. On the left is the Wikipedia logo and a sidebar with navigation links. The main content area includes the article title, a summary, a table of contents, and the beginning of the biography section. A portrait of Daniel Defoe is on the right.

WIKIPEDIA
The Free Encyclopedia

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Daniel Defoe
From Wikipedia, the free encyclopedia.
Revision as of 08:44, 11 October 2005; view current revision
← Older revision | Newer revision →

Daniel Defoe (1660 – April 24, 1731) was an [English writer and journalist](#), who first gained fame for his novel *Robinson Crusoe*. Defoe is also notable for being arguably the earliest constant practitioner of the [novel](#) form.

Contents [hide]

- 1 Biography
- 2 Defoe and the Anglo-Scottish Union of 1707
- 3 Quotations
- 4 See also
- 5 Electronic books

Biography

Born **Daniel Foe**, the son of James Foe, a butcher in [Stoke Newington, London](#). He later added the aristocratic sounding "De" to his name as a [nom de plume](#). His gravestone gives his name as DANIEL DE-FOE. He became a famous pamphleteer, journalist and novelist at a time of the birth of the [novel](#) in the [English language](#), and thus fairly ranks as one of its progenitors.

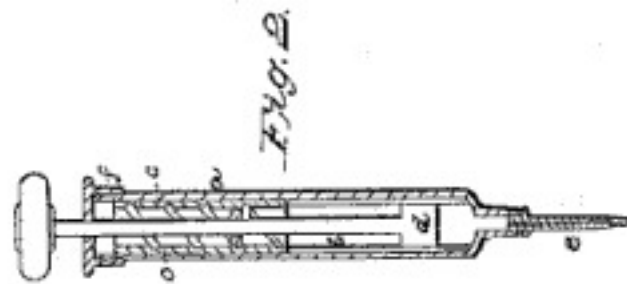
His parents were [Presbyterian dissenters](#), and he was educated in a Dissenting Academy at [Stoke Newington](#). His early business activities were unsuccessful, and he was bankrupted in 1692. By 1696, however he was the manager of a London tile factory.


Daniel Defoe

case study: medicine

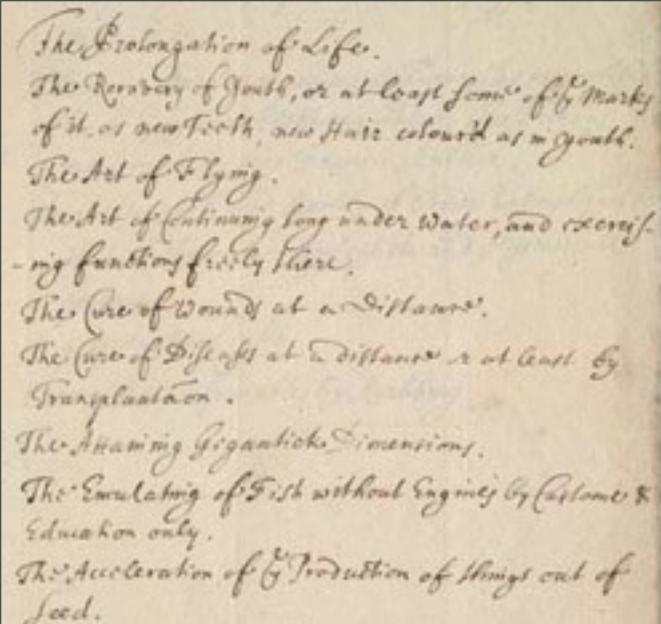
why medicine

science and technology



mind and body

enduring concerns



early scientific concerns

Robert Boyle's list

The Prolongation of Life.
The Recovery of Youth, or at least some of the Marks of it, as new Teeth, new Hair colour'd as in youth.
The Art of Flying.
The Art of Continuing long under water, and exercising functions freely there.
The Cure of Wounds at a Distance.
The Cure of Diseases at a distance or at least by Transplantation.
The Attaining Gigantick Dimensions.
The Emulating of Fish without Engines by Custome and Education only.
The Acceleration of the Production of things out of Seed.
The Transmutation of Metalls.
The makeing of Glass Malleable.
The Transmutation of Species in Mineralls, Animals, and Vegetables.

The Liquid Alkaest and Other dissolving Menstruums.
The making of Parabolicall and Hyperbolicall Glasses.
The making Armor light and extremely hard.
The practicable and certain way of finding Longitudes.
The use of Pendulums at Sea and in Journeys, and the Application of it to watches.
Potent Druggs to alter or Exalt Imagination, Waking, Memory, and other functions, and appease pain, procure innocent sleep, harmless dreams, etc.
A Ship to saile with All Winds, and A Ship not to be Sunk.
Freedom from Necessity of much Sleeping exemplify'd by the Operations of Tea and what happens in Mad-Men.
Pleasing Dreams and physicall Exercises exemplify'd by the Egyptian Electuary and by the Fungus mentioned by the French Author.
Great Strength and Agility of Body exemplify'd by that of Frantick Epileptick and Hystericall persons.
A perpetuall Light.



current concerns



How the case against the MMR vaccine was fixed

Brian Deer, journalist

+ Author Affiliations

briandeer.com

In the first part of a special BMJ series, Brian Deer exposes the bogus data behind claims that launched a worldwide scare over the measles, mumps, and rubella vaccine, and reveals how the appearance of a link with autism was manufactured at a London medical school

When I broke the news to the father of child 11, at first he did not believe me. "Wakefield told us my son was the 13th child they saw," he said, gazing for the first time at the now infamous research paper which linked a purported new syndrome with the measles, mumps, and rubella (MMR) vaccine.¹ "There's only 12 in this."

That paper was published in the *Lancet* on 28 February 1998. It was retracted on 2 February 2010.² Authored by Andrew Wakefield, John Walker-Smith, and 11 others from the Royal Free medical school, London, it reported on 12 developmentally challenged children,³ and triggered a decade long public health scare.



scientific *revolution*

what came before

what happened

what followed

who was involved

"The Scientific Revolution outshines everything since the rise of Christianity and reduces the Renaissance and Reformation to the rank of mere episodes, mere internal displacements within the system of medieval Christianity."

--Herbert Butterfield,
The Origins of Modern Science, 1300-1800, 1948



recap: social revolution

the public sphere

Civility: of conversing in quiet one with another, without being ingag'd in the passions, and madness of that dismal Age. And from the Institution of that Assembly, it had been enough, if no other advantage had come, but this: That by this means there was a race of yong Men provided, against the next Age, whose minds receiving from them, their first Impressions of sober and generous knowledge, were invincibly arm'd against all the inchantments of Enthusiasm. ... to undercut the arrogance of the teacher and the subservience of the pupil



recap: social revolution

significant developments?

the English gentleman

"Though the Society entertains very many men of particular Professions; yet the farr greater Number are Gentlemen, free, and unconfin'd."

-- Sprat

"Those dreadful
revolutions,
which cannot be
beheld upon
Paper, without
horror; unless
we remember,
that they had
this one happy
effect, to open
mens eyes to
look out for the
true Remedy."

Sprat, History

recap: political revolution

English Civil War, 1642-1651

death of Charles I

Commonwealth & Protectorate, 1649-1659

Restoration, 1660

return of Charles II

Great Plague, 1665

Fire of London, 1666

"La sange du juste à Londres fera faute
Bruslez par foudre de vingt trois le six,
La dame antique cherra de place haute
De meme sute plusieurs seront occis"

recap: almanacks & prophecy



"Sir Thomas Crewe...hath heard at the Committee for examining the burning of the city,that it was done by plots ... it was bragged by several Papists that upon such a day in such a time, we should find the hottest weather that ever was in England; and words of plainer sense" --Pepys, November 2, 1666

An Almanack
for the yere. M. D. lxxvj.
Composed by M. Michael
Nostradamus Doctour
in Physicke/ of Salen of
France in Provence.
Whā the sonne fapleth & fies/ then shal
the monster be seene in the playne day
Men shall interprete it farre otherwise
derth hath no respect/ none shall pro-
vide for it.



"We talked much of Nostradamus his prophecy of these times, and the burning of the City of London, some of whose verses are put into Booker's Almanac this year My Lady Carteret herself did tell us how abundance of pieces of burnt paper were cast by the wind .. .she took one up ... wheron there remained no more nor less than these words: "Time is, it is done"

--Pepys, February 3, 1666/7

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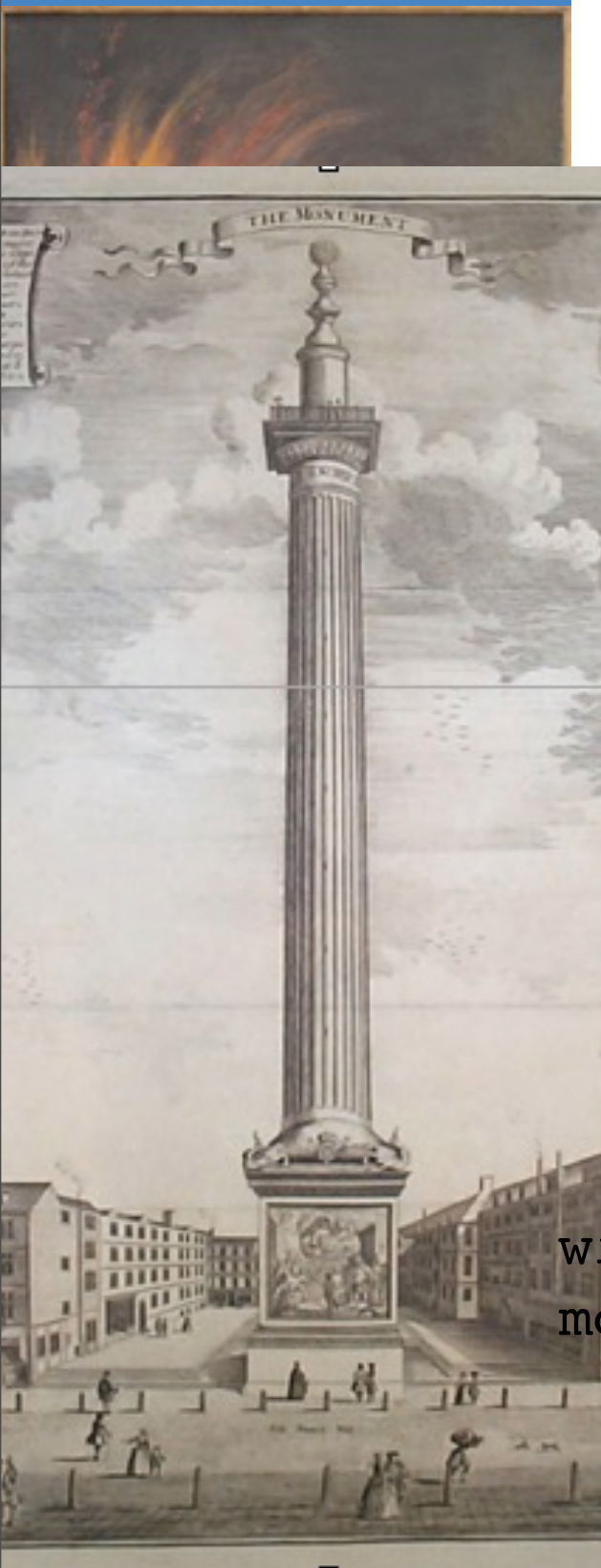
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recap: almanacks & prophecy



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"Why do we not,
I say, turn
over the living
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world instead
of dead
papers."

John Comenius
(1592–1670)

anti-authoritarian revolutionaries

from **Ptolemy** (c. 100-170)
to

Copernicus, Galileo, Tycho, Kepler, Newton

from **Hippocrates** (460-375 bce), **Galen** (c. 129-216)

Ayurveda, Yellow Emperor's Inner Canon

to

Paracelsus (1493-1541)

Harvey (1578-1657)

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other rumblings

old wives tales?

"Experience, though noon auctoritee

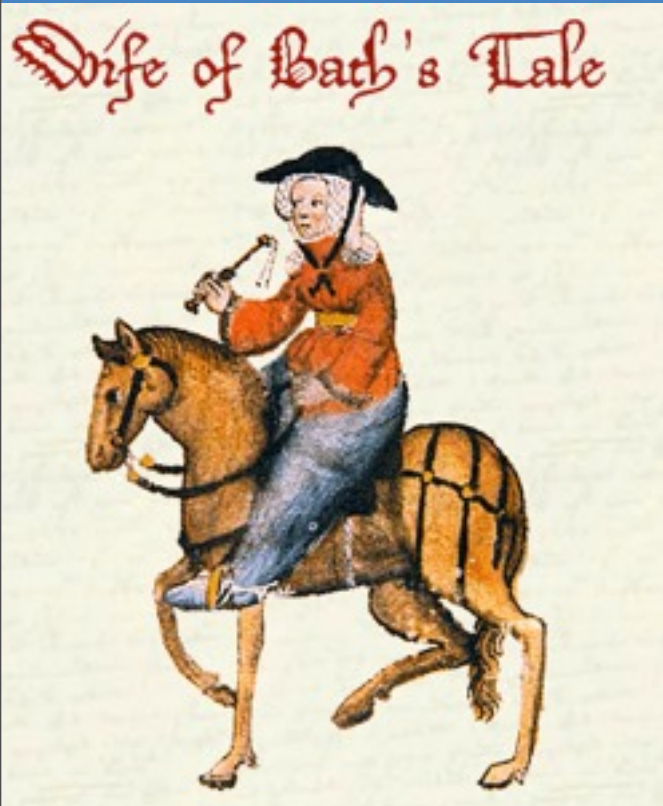
Were in this world, were right ynogh to me

To speke of woe that is in mariage"

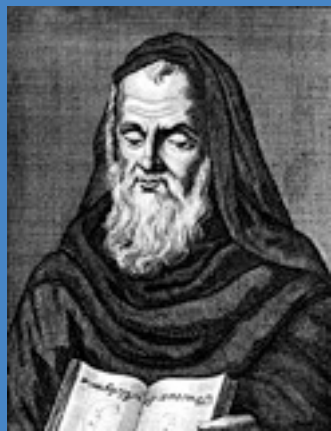
Geoffrey Chaucer,

"The Wife of Bath's Prologue and Tale,"

c. 1390



proto science



Roger Bacon
c 1220–1229



Francis Bacon
1561–1626

scientific rumblings

Roger Bacon

Francis Bacon

New Atlantis

Nullus in Verba

revolutionary beliefs

new scientists

"Men did generally think, that no man was fit to meddle in matters of this consequence, but he that had bred himself up in a long course of Discipline for that purpose; that had the habit, the gesture, the look of a Philosopher. Whereas experience on the contrary tells us, that greater things are produc'd, by the free way, than the formal."

-Sprat

revolutionaries

"Followers of
nature itself
and truth"
-Henry Oldenburg

the royal society, 1660

Boyle (1627-1691)

Wren (1632-1723)

Locke (1632-1704)

Hooke (1635-1703)

Newton (1642-1727)

Halley (1656-1742)

...

Moxon (1627-1691)

Graunt (1620-1674)

Petty (1623-1687)

Benjamin Franklin (1706-1790)

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Sprat's *wonderful model*

to separate the knowledge of Nature, from
the colours of **Rhetorick**, the devices of
Fancy, or the delightful deceit of **Fables**

Sprat's *model*

They have labor'd to inlarge it, from being
confin'd to the custody of a few; or from
servitude to private interests.

They have striven to preserve it from being
over-press'd by a confus'd heap of vain, and
useless particulars; or from being straitned
and bounded too much up by General Doctrines

Sprat's *model*

Not so much, by any solemnity of Laws, or ostentation of Ceremonies, as by **solid Practice**, and examples: not, by a glorious pomp of Words; but by the silent, effectual, and unanswerable Arguments of real Productions.

Members ... different Religions, Countries, and Professions ... not to lay the Foundation of an English, Scotch, Irish, Popish, or Protestant Philosophy; but a **Philosophy of Mankind**. ... the Church of England ought not to be apprehensive the general Banck, and Free-Port of the world ... receive strangers from all countries, into its number

observation & experimentation



Robert Hooke
1663–1703



Robert Boyle
1627–1691

Hooke & Boyle

Trials in Chymistry, or Mechanicks ...
the right *Art of Experimenting*"

--Sprat

justifying technology

"I judged that whatever men's eyes were in
the younger age of the World, our eyes in
this old age of it needed spectacles"

--Hooke

communication

corresponding secretary

"their intention was more to communicate
to each other their discoveries ... some
resemblance, to the Academy lately begun
at Paris ... to all the learned world
they called for aid"

--Sprat



Henry Oldenburg
1619–1677

"publish'd to the world"

cures for sickness

"[Publication] is a most heroick Invention:
For by such concealments, there may come
very much hurt to mankind. If any certain
remedy should be found out against an
Epidemical disease; if it were suffer'd to
be ingross'd by one man, there would be
great swarms swept away, which otherwise
might be easily sav'd."

-- Sprat

publication

advertisements, articles, abstracts

"to print a Paper of advertisements... wherein will be contained heads or substance of the inquiries they are most solicitous about, together with the progress they have made and the information they have received from other hands ... a short account of such other philosophicall matters as accidentally occur."

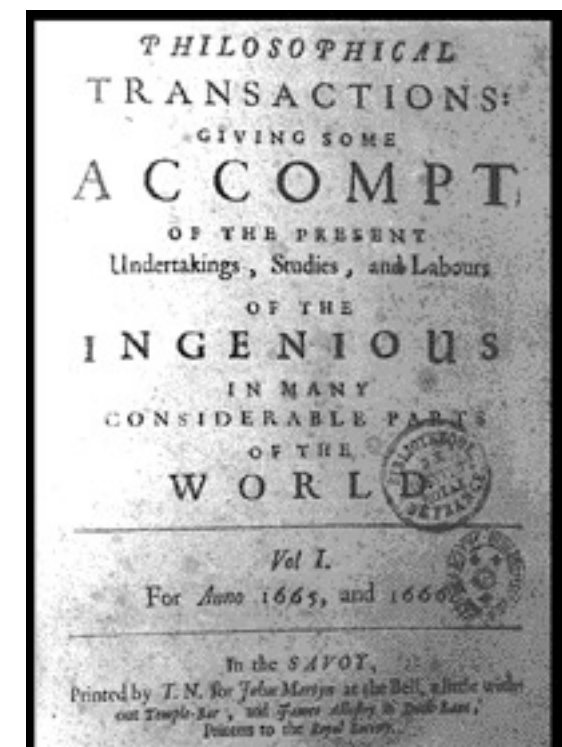
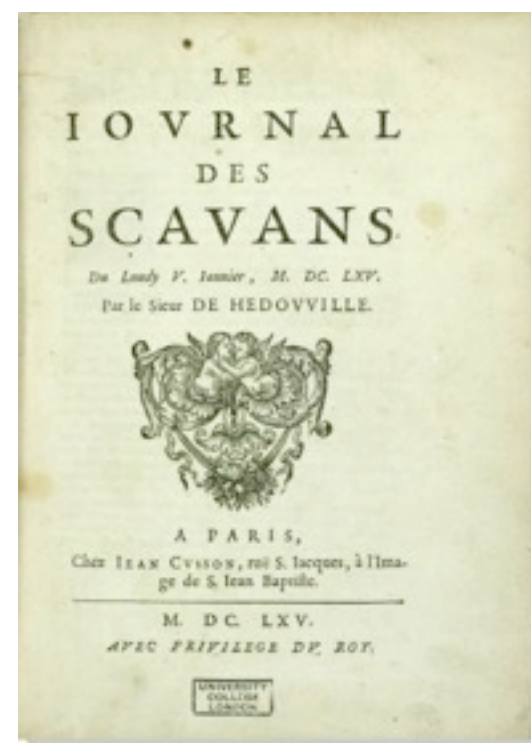
--Robert Hooke

Boyle, random publication v **Hooke**, ordered

journals

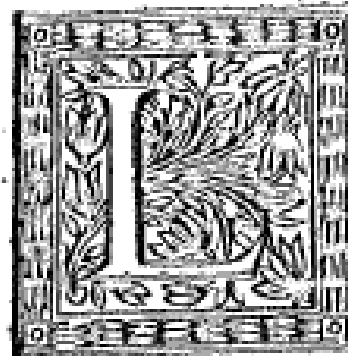
Journal des Scavans, 1665

Philosophical Transactions, 1665



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L'IMPRIMEUR AU LECTEUR.



Le dessein de ce Journal estant de faire sçavoir ce qui se passe de nouveau dans la Republique des lettres, il sera composé,

Premierement d'un Catalogue exact des principaux livres qui s'imprimeront dans l'Europe. Et on ne se contentera pas de donner les simples titres, comme ont fait jusques à present la plupart des Bibliographes: mais de plus on dira de quoy

ils traitent, & à quoy ils peuvent estre utiles.

Secondement, quand il viendra à mourir quelque personne celebra par sa doctrine & par ses ouvrages, on en fera l'Eloge, & on donnera un Catalogue de ce qu'il aura mis au jour, avec les principales circonstances de sa vie.

En troisieme lieu on fera sçavoir les experiences de Physique & de Chymie; qui peuvent servir à expliquer les effets de la Nature: les nouvelles decouvertes qui se font dans les Arts & dans les Sciences, comme les machines & les inventions utiles ou curieuses que peuvent fournir les Mathematiques: les observations du Ciel, celles des Meteores, & ce que l'Anatomie pourra trouver de nouveau dans les animaux.

En quatrieme lieu, les principales decisions des Tribunaux Sèculiers & Ecclesiastiques, les censures de Sorbonne & des autres Vniuersitez, tant de ce Royaume que des Pays estrangers.

Enfin, on taschera de faire en sorte qu'il ne se passe rien dans l'Europe digne de la curiosité des Gens de lettres, qu'on ne puisse apprendre par ce Journal.

Le seul denombrement des choses qui le composeront pourroit suffire pour en faire connoistre l'utilité. Mais j'edifieray qu'il sera tres-advantageux à ceux qui entreprendront quelque ouvrage considerable, puis qu'ils pourront s'en servir pour publier leur dessein, & informer tout le monde à leur communiquer les manuscrits, & les pieces fugitives qui pourront contribuer à la perfection des choses qu'ils auront entreprises.

PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD

Vol. I.

For Anno 1665, and 1666

In the SAVOY,

Printed by T. N. for John Martyn at the Bell, a little within
out Temple-Bar, and James Allart in Duck-Lane;



(1)

Numb. 1.

PHILOSOPHICAL TRANSACTIONS.

Munday, March 6. 166th.

The Contents.

An Introduction to this Tract. An Account of the Improvement of Optick Glasses at Rome. Of the Observation made in England, of a Spot in one of the Belts of the Planet Jupiter. Of the motion of the late Comet predicted. The Heads of many New Observations and Experiments, in order to an Experimental History of Cold; together with some Thermometrical Discourses and Experiments. A Relation of a very odd Monstrous Calf. Of a peculiar Lead-Ore in Germany, very useful for Essays. Of an Hungarian Bolus, of the same effect with the Bolus Armenus. Of the New American Whale-fishing about the Bermudas. A Narrative concerning the success of the Pendulum-watches at Sea for the Longitudes; and the Grant of a Patent thereupon. A Catalogue of the Philosophical Books published by Monsieur de Fermat, Counsellor at Tholouse, lately dead.

The Introduction.



VHEREAS there is nothing more necessary for promoting the improvement of Philosophical Matters, than the communicating to such, as apply their Studies and Endeavours that way, such things as are discovered or put in practise by others; it is therefore thought fit to employ the *Press*, as the most proper way to

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Printed by T. N. for Ioh. Moxon at the Bell, a little within
out Temple-Bar, and James Allcock in Pauls Church
Printers to the Royal Society.

(1)

Numb. 1.

PHILOSOPHICAL TRANSACTIONS.

(10)

An Account of a very odd Monstrous Calf.

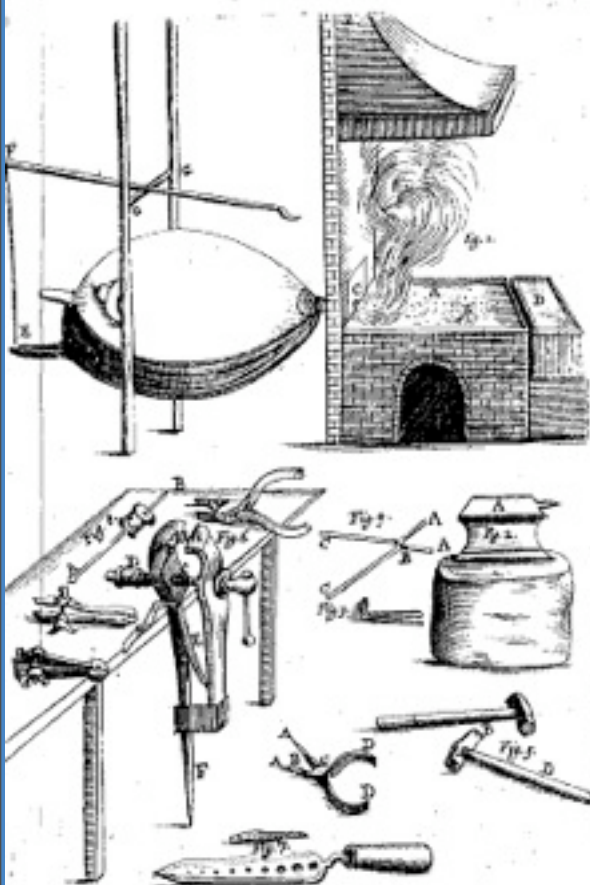
By the same Noble person was lately communicated to the *Royal Society* an Account of a very Odd Monstrous Birth, produced at *Limmington* in *Hampshire*, where a Butcher, having caused a Cow (which cast her Calf the year before) to be covered, that she might the sooner be fatted, killed her when fat, and opening the Womb, which he found heavy to admiration, saw in it a Calf, which had begun to have hair, whose hinder Leggs had no Joynts, and whose Tongue was, *Cerberus*-like, triple, to each side of his Mouth one, and one in the midst: Between the Fore-leggs and the Hinder-leggs was a great Stone, on which the Calf rid: The *Sternum*, or that part of the Breast, where the Ribs lye, was also perfect Stone; and the Stone, on which it rid, weighed twenty pounds and a half; the outside of the Stone was of Grenish colour, but some small parts being broken off, it appeared a perfect Free-stone. The Stone, according to the Letter of Mr. *David Thomas*, who sent this Account to Mr. *Boyle*, is with Doctor *Haughteyn* of *Salisbury*, to whom he also referreth

PHILOSOPHICAL
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Vol. I.

For Anno 1665, and 1666

In the SAVOY,
Printed by T. N. for Ioh. Maister at the Bell, a little within
out Temple-Bar, and James Allaby in Pauls Church
Printers to the Royal Society.



MECHANICK
EXERCISES,
OR,
The Doctrine of
Handy-works.

Began Jan. 1. 1677. And intended to be
Monthly continued
By Joseph Moxon Hydrographer to the
Kings most Excellent Majesty.



LONDON,

Printed for Joseph Moxon at the sign of Atlas on
Ludgate-Hill, 1677.

not so philosophical

philosophers, physicians, and mechanics

"this freedom ... which they use in
embracing all assistance ... is most
advantageous to them"

--Sprat



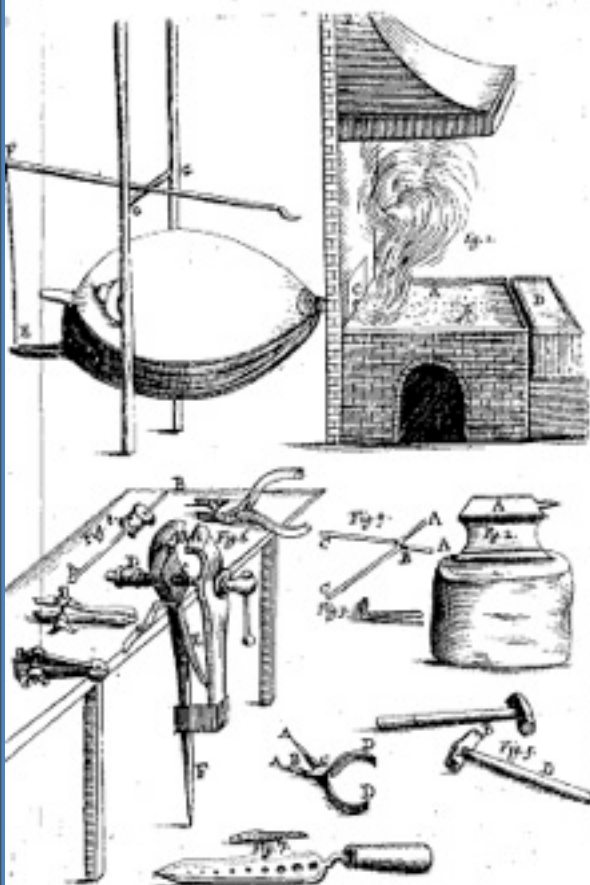
Joseph Moxon
1627-1691

Joseph Moxon,

astronomy
mathematics

navagation

self-help, ..



MECHAN
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LONDON,

Printed for Joseph Moxon at the
Ludgate-Hill, 1677

MECHANICK EXERCISES:

Or, the Doctrine of

Handy-works.

Applied to the Art of

Printing.

P R E F A C E.

BEfore I begin with Typographie, I shall say
some-what of its Original Invention; I mean
here in Europe, not of theirs in China and
other Eastern Countries, who (by general
assent) have had it for many hundreds of years,
though their Invention is very different from ours; they
Cutting their Letters upon Blocks in whole Pages or
Forms, as among us our Wooden Pictures are Cut; But
Printing with single Letters Cast in Mettal, as with us
here in Europe, is an Invention scarce above Two hundred
and fifteen years old; and yet an undecidable Controversie
about the original Contriver or Contrivers remains on foot,



Joseph Moxon
1627-1691

overview

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some responses

In their code, the scientific society maintains that they would not to let people take advantage of their knowledge by hastily make profit out of fully verified knowledge. They mentioned that, through scrutiny of scientific works, they would advance the global body of knowledge while at the same time catch any work that was not congruent with the rest of verified works or authors whose veracity seemed doubtful. Thus, it seems that the scientific society promises that it would catch the greedy vendors mentioned in the "Essay against the Quacks" whom deceived people into believing they had cures for diseases that did not work at all. I was very much curious about a point that Spratt makes about how he feels a certain level of boastfulness in philosophers because of a historically hierarchical structure of learning in which theoreticians come up with systems to understand raw data while learners just learn the theory without having actual exposure to the process of coming up with these theories from observations. This in turn makes them believe that everything they learn has to fit into these theoretical "small systems."

--Edgardo Quintanilla
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beyond quick fixes

The information that Sprat outlines in his book shows how adept the Royal Society was with information and more specifically scientific information and experiments. The experiments detailed in the book show the extensive research they have done and their way of expressing their results in a short and concise format for people to understand. The Spectator warns against having faith in Quacks because they promise to be able to “sell health” for the delights of longevity--something that is obviously not true. Instead, the Royal Society promotes the written evidence developed through experiments. They served as a central repository for written information—the first of its kind, and provide a sort of vault of information against the claims of Quacks... and more specifically, help defend against the fallacies that the Quacks announce and advertise. Demonstrating an exploring nature and eye, it can encourage the exploration of the natural world for answers rather than looking for the quick fixes for the “desires of life” that the pretenders sell.

—Annie Chin

exposing the public to newest inventions

Sprat lays down guidelines to help create a scientific society ... some of them can be directly applied to help protect the public against the claims of Quacks and frauds. For example, Spratt says "... the very inequality of the Titles of Teachers, and Scholars, does very much suppress, and tame mens Spirits, which though it should be proper for Discipline and Education; yet is by no means consistent with a free Philosophical Consultation" (70). What he is saying is that the common people fear the titles of doctors and such scientific men, and this should not be the case. ... Spratt suggests we change how we look at these titles in order to facilitate a healthier relationship between teachers and scholars alike. Furthermore, Sprat also suggests how "the Royal Society will be able buy [by?] degrees, to purchase such extraordinary inventions, which are now close lock'd up in Cabinets..." (76). By exposing the public to newest inventions and technologies, it would be harder for a Quack to make up a lie or claim about something new because it has not been documented to the public. Also, people in general will have a better sense about what is possible with the current science and technologies and maybe have a better scientific understanding. With these two main guidelines followed, it make it harder for the public to be tricked by a fraud or pretender.

-Steven Tanti

overview

where we're going &
what came before

what happened

trouble for the virtuosos

solving problems

case studies

open science

EXPERIMENTS
IN
CONSORT
OF THE
FLUCTATION
ARISING
From the Affusion of several
MENSTRUUMS



Upon all sorts of Bodies.

To which is added

The Nature, Causes, and Power
of Mixture.

Exhibited to the Royal Society.

By *NEHEMIAH GREW, M. D.*
and Fellow of the *Royal Society*.

L O N D O N,

Printed for *John Martyn*, Printer to the
Royal Society, at the Bell in *S. Pauls*
Church-yard. 1678.

battling books

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New EXPERIMENTS,
And Useful
OBSERVATIONS
CONCERNING

Sea-Water

MADE

FRESH,

According to the
Patentees Invention :

In a Discourse Humbly Dedicat-
ed to His Majesty the KING
of Great-Britain, &c.

By a Fellow of the Colledge of Phy-
sicians, and of the Royal-Society.

Printed Anno Dom. 1683

battling books

EXPERIMENTS

IN

CONSORT
OF THE
LUCTATIO
ARISING

From the Affusion of several
MENSTRUUM

Upon all sorts of Bodies.

To which is added
The Nature, Causes, and Power
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Patentees Invention

In a Discourse Humbly De-
scribed to His Majesty the King
of Great-Britain, &c.

By a Fellow of the Colledge
Physicians, and of the Royal

Printed Anno Domini 1691

battling books

AN EXAMINATION

OF
Mr. John Colbatch
HIS
BOOKS, viz.

- I. *Novum Lumen Chirurgicum.*
- II. *Essay of Alkalies and Acids.*
- III. *An Appendix to that Essay.*
- IV. *A Treatise of the Gout.*
- V. *The Doctrine of Acids further Asserted,*
&c.
- VI. *A Relation of a Person Bitten by a Viper,*
&c.

To which is added,
An Answer to Dr. Leigh's Remarks on a Treatise
concerning the Heart of the Blood.

Together with
Remarks on Dr. Leigh's Book intituled *Exercitationes Quing;* Printed at a private Press in Oxford,
without the License of the University.

AS ALSO
A short View of Dr. Leighs Reply to Mr. Colbatch, &c.

By RICHARD BOULTON, of
Brazen-Nose College in OXFORD.

LONDON,
Printed for Tho. Bennet, at the Half-Moon
in St. Pauls Church-yard 1699.

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Printed for Tho. Bennet, at the Half-Moon
in St. Pauls Church-yard 1699.

A Compleat

TREATISE

OF

URINES,

Shewing the right Method of

Urinal Prognostication,

Far different

From the Common Practice

OF

Quacks and Mountebanks.

By T. H. ^{UCKS} Pharmacop. Rustican.

Pro Captu Lectoris habent sua fata libelli.



Samuel Pepys
1663–1703

trouble for the virtuosi

the failed demo

"And thither anon come all the Gresham College, and a great deal of noble company: and the new instrument was brought called the Arched Viall, where, being tuned with lute-strings, and played on with keys like an organ, a piece of parchment is always kept moving; and the strings, which by he keys are pressed down upon it, are grated in imitation of a bow, by the parchment; and so it is intended to resemble several vialls played on with one bow, but so basely and harshley, that it will never do. But, after three hours' stay, it could not be fixed in tune" --Pepys, October 5, 1664

I have sent one
to weigh Air at
the Picque of
Teneriff that's
the lightest Air.
I shall have a
considerable Cargo
of that Air.
Sheerness and the
Isle of Dogs Air
is the heaviest.
Now if I have a
mind to take
Countrey Air, I
send for, may be,
forty Gallons of
Bury Air, shut all
my windows and
doors close and
let it fly in my
Chamber.."

Shadwell, *Virtuoso*

trouble for the virtuosi

royal mockery

"the King came and stayed an hour or two
laughing at Sir W. Petty, who was there about
his boat; and at Gresham College in general;
at which poor Petty was, I perceive, at some
loss; but did argue discreetly, and bear the
unreasonable follies of the King's objections
and other bystanders with great discretion; ..
but the King ... cried him down with words
only. Gresham College he mightily laughed at,
for spending time only in weighing of ayre,
and doing nothing else since they sat."

--Pepys, February 1, 1663/4
Science & Medicine 40

still laughing

Spectator, 1711

"innumerable Retainers of Physick, who, for
want of other Patients, amuse themselves
with the Stifling of cats in an Air Pump,
cutting up Dogs alive, or impaling of Insects
upon the Point of a Needle for Microscopical
Observations."

still going



Jonathan Swift
1667–1745

Jonathan Swift, 1725

"Voyage to Laputa"

the flapper

the "Academy of Projectors"

objects for words

sunbeams out of cucumbers

food out of excrement

houses built from the top down

pillows out of marble ...

#5. \$650,000 for beaver management in North Carolina and Mississippi

about 2 hours ago from web



SenJohnMcCain
John McCain

still going



Jonathan Swift
1667–1745

Jonathan Swift, 1725

"Voyage to Laputa"

the flapper

the "Academy of Projectors"

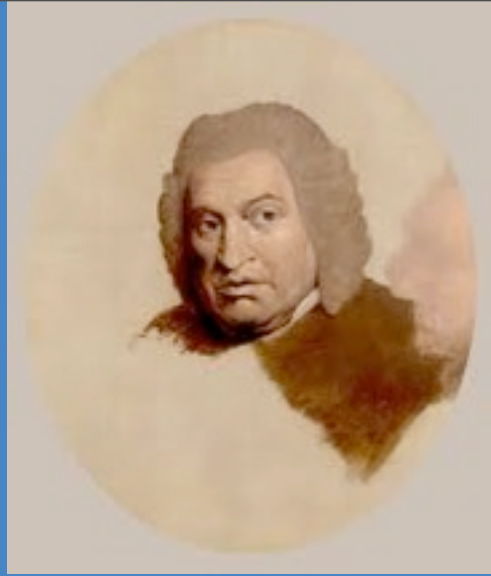
objects for words

sunbeams out of cucumbers

food out of excrement

houses built from the top down

pillows out of marble ...



Samuel Johnson
1708–1784

health sciences

"[T]he time was supposed to be near,
when ... health [should] be secured by the
universal medicine;

"The society met and parted without any
visible diminution of the miseries of life.
The gout and stone were still painful."

Samuel Johnson, *Idler* 1759

overview

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open science

solving problems

registering

"their *Registers*, and *Journals* which I have
been permitted to peruse," --Sprat

distinguishing

Society of Antiquaries, 1717

credentialling

"we find many Noble Rarities to be every day given in, not onely by the hands of Learned and profess'd Philosophers; but from the Shops of *Mechanicks*; from the Voyages of *Merchants*; from the Ploughs of Husbandmen; from the Sports, the Fishponds, the Parks, the Gardens of Gentlemen"

--Sprat

establishing authority:

(1)

Numb. 1.

PHILOSOPHICAL TRANSACTIONS.

Munday, March 6. 1664.

The Contents.

An Introduction to this Tract. An Account of the Improvement of Optick Glasses at Rome. Of the Observation made in England, of a Spot in one of the Belts of the Planet Jupiter. Of the motion of the late Comet predicted. The Heads of many New Observations and Experiments, in order to an Experimental History of Cold; together with some Thermometrical Discourses and Experiments. A Relation of a very odd Monstrous Calf. Of a peculiar Lead-Ore in Germany, very useful for Essays. Of an Hungarian Bolus, of the same effect with the Bolus Armenus. Of the New American Whale-fishing about the Bermudas. A Narrative concerning the success of the Pendulum-watches at Sea for the Longitudes; and the Grant of a Patent thereupon. A Catalogue of the Philosophical Books published by Monsieur de Fermat, Counsellour at Tholouse, lately dead.

Numb. 364.

Beginning the Thirty first Volume.

PHILOSOPHICAL TRANSACTIONS.

For the Months of *January, Feb. March and April. 1720.*

The CONTENTS.

- I. *Some Remarks on a late Essay of Mr. Cassini, wherein he proposes to find, by Observation, the Parallax and Magnitude of Sirius.* By Edmund Halley, L. L. D. Astron. Reg. Geom. Prof. Savil. & R. S. S.
- II. *An Account of the External Maxillar, and other Salivary Glands: Also of the Insertions of all the Lymphatics (as well above as below the Subclavians) into the Veins; which Glands and Insertions have not hitherto been mentioned, or not truly described by any Authors.* By Richard Hale, M. D. Reg. Soc. & Col. Med. Lond. Soc.
- III. *De Peste Constantinopoli grassante. Auctore nupero V. Cl. Emanuele Timone, M. D. Hoc scriptum ab Auctore Clarissimo, qui Constantinopoli per multos annos Medicinam fecerat, Excellentissimo Ablegato Britanico, Roberto Sutton, Eq. Aurato, traditum, ejusdem Equitis permissu, cum Societate Regia communicavit idem R. Hale, M. D.*
- IV. *An Account of a Luminous Appearance in the Air, seen at Dublin on January the 12th, 17th.* By Philip Percival, Esq; Brother to the Right Honourable the Lord Percival, F. R. S. and communicated by his Lordship to the Royal Society.

V. Of

exclusivity

- V. *Of the Infinity of the Sphere of Fix'd Stars.* By Edmund Halley, L. L. D. R. S. S.
- VI. *Of the Number, Order, and Light of the Fix'd Stars.* By the same.
- VII. *An Account of the Method of making Sugar from the Juice of the Maple Tree, in New England.* By the Honourable Paul Dudley, Esq; F. R. S. Communicated by John Chamberlayne, Esq.
- VIII. *A Copy of an Affidavit made in Scotland, concerning a Boy's living a considerable time without Food.* Communicated by Patrick Blair, M. D. F. R. S.
- IX. *A Discourse concerning a Method of discovering the Virtues of Plants by their External Structure.* By the Same.
- X. *An Account of a Book, Entituled, Geometria Organica, sive Descriptio Linearum Curvarum Universalis. Auctore Colino Mac Laurin, Matheseos in Collegio Novo Abredonensi Professore, & R. S. S.*

overview

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plague

open science

insecure health

plague

"Cramp be thou
faintless
As our Lady was
sinless
When she bare
Jesus"

--Pepys

black death: 1347

plague again: 1665

in London, of about 1/2 million, 100,00 died



slow progress

The plague is much in Amsterdam, and we in fears of it here.

Pepys, **Dec.** 31, 1663

The talk upon the 'Change is, that De Ruyter is dead, with fifty men
of his own ship, of the plague, at Cales

June 30, 1664

We were told to-day of a Dutch ship ... where all the men were dead
of the plague, and the ship cast ashore at Gottenburgh

Sept. 24, 1664

Thence to the Coffee-house ... where all the neues is of the
Dutch ... and of the plague growing upon us in this towne

May 24, 1665

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slow progress

The towne grows very sickly, and people to be
afeard of it; there dying this last week of
the plague 112, from 43 the week before,.The
Mortality Bill is come to 267; June 29th,
1665 Above 700 died of the plague this
week. **July 13, 1665**

The sickness is... almost every where, there
dying 1089 of the plague this week.
July 19, 1665

plague years

A
JOURNAL
OF THE
Plague Year:
BEING
Observations or Memorials,
Of the most Remarkable
OCCURRENCES,
As well
PUBLICK as PRIVATE,
Which happened in
L O N D O N
During the last
GREAT VISITATION
In 1665.

Written by a CITIZEN who continued all the
while in London. Never made publick before

L O N D O N :
Printed for E. Nott at the Royal-Exchange; J. Roberts
in Warwick-Lane; A. Dodd without Temple-Bar;
and J. Graves in St. James's-street. 1722.

"Some endavours were used to suppress the printing of such books as terrified the people ... these terrors ... led them into a thousand weak, foolish, and wicked things .. running about to fortune tellers ... streets were plastered over with doctors' bills and papers of ignorant fellows, quacking and tampering in physic, and inviting people to come to them for remedies . 'infallible preventive pills against the plague' ... 'Sovereign cordials against the corruption of the air'"

Daniel Defoe, *Journal of the Plague Year*, 1722

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AN B no. h. 2
ADVERTISEMENT
 FROM THE
Society of Chymical Physitians,
 TOUCHING
MEDICINES by them prepared, in pursuance of his
Majesties Command,
 For the Prevention, and for the Cure of the
P L A G U E.

T Being a matter avowed by the most laborious Physicians residing in this famous City, yea and now openly acknowledged by those also in several Parts, who are principally addi-
 ed to Galenic Doctrines and Medicines, that Remedies made by Chymical preparation are
 of greater Efficacy than any other, for preservation from Epidemics, as well as for the Cure of
 them, and that the other failing, the people must have recourse unto Chymical Medicines,
 whereby it is clearly given and granted, that they are the most powerful and efficacious Means, and there-
 upon have been by these worthy Persons particularly recommended for publick use, in this sad time and dis-
 pleasing Time of Pestilential Contagions. We cannot but with all our hearts congratulate our Brethren,
 possessing this their so desirable and ingenious an acknowledgment, wishing to see the day, that the un-
 happy Contagious breasting and chafe, teaching the efficacy of Medicines, cease at an end: In this we
 look on it as a good Omen towards a more full and free coming over us into the future, even unto the most a-
 miable state that it is or has been whithersoever; and it gives hope, that we may one day come
 to a more brotherly correspondence, and unanimously endeavour to reform and relieve the State of Medi-
 cines, both as to Principles and Practice, according to the Chemical and more ancient way.

We therefore, the Society of Chymical Physicians of London, being deeply moved with consideration of
 the calamity befallen this great City by the Plague, and perceiving it necessary and reasonable, notwithstanding
 the use of those common Galenic Medicines, which have been recommended to the people by others,
 have thought fit, in obedience unto His Majesties command, to hold several meetings, and have thereupon de-
 liberately concluded upon the preparation of such Medicines, both Preservatives and Curatives, by Art Chy-
 mical, as are not borrowed out of living Authors, but expressly devised and tried to the service of the pre-
 sent Time, which is many things differs from the *Life of humankind*, or to Foreign Countries where those
 Authors lived. Which Medicines so prepared we here offer to our Countrymen, not doubting but that the
 great God, who hath given us a heart and light to teach us the mystery of Nature, and the mysterious na-
 ture of Diseases, will be found our wish answer by his special blessing, as to make us and our knowledge as his
 own hands, to leave the found, and save the sick from this devouring Maladie.

In pursuance whereof, it is thought meet to signify the places, to which all persons concerned may repair
 and be furnished with the Medicines by us prepared, at reasonable Rates, with Direction how to use them
 in order to Preservation, and in case of Cure.

First, at the Houses of

Dr. William Cuddard, in St. John's Church near Clerkenwell. Dr. Mowbray Neale in St. Tho- mas Apostle. Dr. Edward Bullock in Thomas-Town near Cripplegate. Dr. Thomas Williams in Time-Closter Court in Fleet-street.	Dr. Edward Manning next door to the Blom-Bow at the foot of Ludgate Hill without Ludgate. Dr. George Thompson next to the Blom-Bow Inn without Aldgate. Dr. Thomas O'Flaherty at his House against St. Clements Church in the Strand. Dr. Richard Barker in Barbican.
--	--

These Places are named, because our Society is not yet provided (as we should) with a Publick House or
 College, with publick Offices, so when the people might be directed to resort for the Medicines; and there is a
 necessity of doing sometime soonest, beside of the present difficulty of his Majesties Subjects.
 Lived at 28 June 1665.

London Printed for John Starkey, and are to be sold at his Shop at the Mitre near Temple-Bar.

AN
ADVERTISEMENT

FROM THE

Society of Chymical Physitians,

TOUCHING

MEDICINES by them prepared, in pursuance of his

Majesties Command,

For the Prevention, and for the Cure of the

PLAGUE

WHAT a manner moved by the
yea and now openly acknowledge
that in Galesick, Dordrecht, and Med
et gentes collectione non ay other
them, and that the other being
wholly it is clearly given and granted, that the
upon have been by these worthy Persons particularly
placido: Thus of *Pollicinell* Contagion. We
nourishing this their to be desirable and ingenious a
happy Centon, the breast in and clear, teach
both, as it is a good one toward a more full ac
with at once that it is of our have been with
as a more brotherly correspondence, and mean
dine, both as to Principles and Practice, accord
We therefore, the Society of Chymical Physitians
the calvary befallen this great City by the Plag
ing the use of these common *Galesick* Medicines,
have thought fit, in obedience to his Majesties com
mand, to be published about the preparation of such
medicines, as are now become use of having *Antisepti*
fect Light, which is many things differs from the
Antisepti. Which Medicines so prepared in
great God, who hath given us a heart and light in
need of *Medicines*, will be found our wish away in
our hands, to leave the found, and save the sick
In pursuance whereof, it is thought meet to be
and be furnished with the *Medicines* to be by us
in order to *Prevention*, and in case of *Cure*.

Printed
Dr. William Guallard, in St. J.
Close near *Cherwell*.
Dr. Mowbray Nodden in St.
near *Apollon*.
Dr. Edward Boleyn in *James*
near *Cripplegate*.
Dr. Thomas Williams in *Two*
Court in *Flint-street*.

These Places are named, because our Society is now
Colledge, with publick Offices, so that the ne
cessity of being furnished accordingly, becometh
Lived at June 1665.

Londre Printed for John Starkey, and are

Certain Necessary

DIRECTIONS:

As well

For the Cure

OF THE

PLAGUE

As for preventing the

INFECTION:

WITH

Many Easie Medicines of small Charge,
very Profitable to his Majesties Subjects.

Set down by the Colledge of Physicians.

By the Kings Majesties special Command.

OXFORD,

Re-Printed by His Majesties appointment
for Richard Davis, by William Hall,
Anno Dom. 1665.

PLAGUE

Dr. William Goodford, in St. J.
Close near Gorkowal.
Dr. Movahmmed Nothman in Sa.
near Apfeiler.
Dr. Edward Euloy, in Tomas,
near Crigglazura.
Dr. Thomas Williams in Tire-C
Lant in Flucthorre.

These Places are named, because our Society is now
Colledge, with public Offices, to show the ne-
cessity of being licentiate immediately, before
Licensing is made.

London Printed for John Sturges, and are

As well
For the Cure
OF THE
PLAGUE

As for preventing the
I N F E C T I O N
WITH
Many Easie Medicines of small C
very Profitable to his Majesties Subje
Set down by the Colledge of Physic

15p the Kings Majesties special Comm

O X F O R D,
Re-Printed by His Majesties appo
for Richard Davis, by William H
Anno Dom. 1665.

And having (through Gods blessing) cured these several Persons under written, (and above fifty more) I thought it my duty to publish it abroad in the World, for the benefit and good of others: And have put on a free price on the medicines (very little more then what they cost making) for it is my chiefest aim to do good, and not to get gain: For I thank God I can very well subsist without it, and truly I dare say through Gods blessing, and with careful looking unto, not ten or one hundred will misserve.

The names of rhizoids have been changed.

Henry Conover, and live in his family, being
in North market.
Ben. Warren, his Wife and
his Son, } in Bridge Street.
Mrs. Mearns, }
Ann Bell, }
Mary Rogers, }
and Robert Taylor, }
Fin. Egmont, }
Alfred. Sanders, }
John Sumner, and his }
Nurse, } in St. Giles's.

Four children, }
Mrs. Joan Daughters, }
Mrs. Carter, } in Crown Garden.
Mrs. Aching, }
Anne. Barber, field in Great-lan.
John Brown, }
} in Drury Street.
Elizabeth, }
Mary Waite, in Temple-lane.
Five more in White-chapel-street the Strand.
Sixteen more in Chancery-lane, in Bedford-street.
And more in Chancery-lane in Pall-mall.

Now followeth the MEDICINE

This Powder is **I**f any one is infected, and finds themselves ill, then instantly let them (without delay) take this powder, and then to bed and sweat copiously three hours. And if they are dry, awake with Pains with Sags, or Sores, or Dandruff, and to drink freely in their sweat, or afterwards, and be sure after your heat you keep your self warm. And if any swelling appear, because of drinking any Beer or Ale, hot or cold, keep your selves to the above-said Powder-drink, or Beer, or Ale boiled with a crust of Brown bread, with one blade of Mace and two Cloves. Take the Powder in a Spoon, with a little Beer or Pallet-drink, and swallow it.

Alto this Powder is excellent; good against Small-Pox, Fevers, Agues, and Surfeits; and if it be for a Child, then take but one half of this Powder.

Then when you are out of your sweat, and well rubbed and dried, then take a spoonful of this cordial water, if the party be sick take one spoonful every four hours, if well, do not use it. And if you find any pain in your breast after your sweat, then prudently apply two of these Balms to your Temple, which will give you both ease and cure, and if your pain continues, then take seven or eight four hours.

And if you find any Blisters in any part of your Body, then take some of this Salve out of the Pot, and spread it on Ships-leather, and then lay it to the Sore or Swelling, which Plaster will both ripen, break it, and heal it, the first Plaster, keep it on as long as you can, and when the Sore is broken, then dress it twice every day.

But in case the discomfort becomes a Vomiting and Loosening, or Griping in the Belly, three gills of this Carduus water every three hours two spoonful, until you find ease, and in case you are a dry, drink Mucilage, not too sweet.

Also here is a small excellent water for a sore mouth, either for Canker, Thrush, or a sore throat by reason of a Fever, being a little warmed, and with a cloth girdle the mouth, and let one drop or two down.

14. An excellent Powder for Men, Women, or Children, troubled with Convulsions, Fits, Falling-sickness, or Fits of the Mother, taken with a little Black Cherry water falling in a morning. The Children be very young, then divide the Paper of Powder into three parts, and for mild and good Children take one half, and for Men and Women the whole Paper.

[illegible]

ADVERTISEMENT

FROM THE
Society of Chymical Physitians,

TOUCHING
MEDICINES by them prepared, in pursuance of his

Majesties Command,

For the Prevention, and for the Cure of the

PLAGUE

Bring a matter sworn by the
yea and nay openly acknowledge
And to God and his Majesty and his
of greater Excellence than any other
them, and that the other being
wholly is clearly given and granted, that the
upon have been by these worthy Persons particularly
placable: These of Pestilential Contagions. We
nourishing this their to be desirable and ingenious
happy Centenary, be it in and that, though
both, as it is a good thing towards a more full
with it, that it is of late have been otherwise
as a more brotherly correspondence, and more
dine, both as to Principles and Practice, according
We therefore, the Society of Chymical Physitians
the charity befalls this great City by the Plague
the use of these common General Medicines,
have thought fit, in obedience to his Majesty's
thoroughly considered about the preparation of such
medicines, as are necessary and use of having
first, which is many things differs from the
Athenian-kind. Which Medicines, so prepared, as
great God, who hath given us a heart and light
and of diseases, will be found our wish, and
own hands, to leave the found, and save the sick.
In pursuance whereof, it is thought meet to
and be furnished with the assistance to be as good
in order to Prevention, and in case of Cure.

Dr. William Gifford, in St. J.
Close near Oldward.
Dr. Mervin North in St.
near Appleton.
Dr. Edward Bullock in James
near Cripplegate.
Dr. Thomas Williams in New-
Court in Fleet-street.

These Places are served, because our Society is now
Colledge, with publick Offices, so that the
necessity of being furnished immediately, becometh
Lived 28 June 1665.

London Printed for John Starkey, and are

Certain Necessary DIRECTIONS:

As well For the Cure OF THE PLAGUE

As for preventing the
INFECTION
WITH
Many Easie Medicines of small
very Profitable to his Majesties Subjects
Set down by the Colledge of Physic

By the Kings Majesties Special Comm

OXFORD,
Re-Printed by His Majesties appo
for Richard Davis, by William H
Anno Dom. 1665.

Famous and Effectual MEDICINE TO CURE THE PLAGUE.

And having (through Gods blessing) cured these several Persons under written,
(and above fifty more) it thought it my duty to publish it abroad in the World.
for the benefit and good of others: And have put in
since (very little more than what they call making)
to do good, and not to get gain: For I thank God I
out it, and truly I dare say through Gods blessing, and
to, not ten in one hundred will miscarry.

The names of those who have been Cu
Henry Concher, and five in his family, being
in their marks.
Rich. Pearce, his Wife and
his Nephew,
Mrs. Murrell,
Ann Pole,
Mary Rogers,
Edward Rogers,
Ellen Rogers,
Margaret Sanders,
Edward Sanders, and his
Nephew.

Now followeth the MEDICIN
If any person is infected, and feels themselves ill, then presently le
this powder, and then to bed and sweat carefully three hours,
Puffs with Saffron, or Senna, and Dandelion, and to drink the
wards, and be sure after your sweat you keep your self warm
because of drinking any Beer or Ale, but as cold, but keep your self
drink, or Beer, or Ale boiled with a crust of brown Bread, with
Cloves. Put the Powder in a Spoon, with a little Beer or Puffin-
All this Powder is excellent good against Small-Pox, Measles, A
be for a Child, then take but one half of this Powder.
Then when you are out of your sweat, and well rubbed and de
this cordial water, if the party be sick, give one Spoonfull every hour
And if you find any pain in your head after your sweat, then
Flaxen to your Temples, which will give you both ease and cure,
then fast every twenty four hours.
And if you find any Blisters in any part of your body, then
the Fox, and spread it on Ships-leather, and then lay it on the So
will both ripen, break it, and heal it, the first Plaster, keep it on
the Sores is broken, then dress it twice every day.
But in case the distemper break out into a Vomiting and Loos
three parts of this Cordial water every three hours two Spoonfuls
call you are a dry, drink Muscadine, not too often.
Also here is a cordial exsiccative water for a fast mouth, either fo
poured by reason of a Fever, being a little warmed, and with a
let one drop or two down.
An infallible Powder for Men, Women, or Children, troubled w
distemper, or fits of the Mother, taken with a little Black Cherry w
the Children be very young, then divide the Powder of Powder in
die aged Children take one half, and for Men and Women the w
The Medicines are to be had at Mr. Thomas Fawcetts, a Book-Binder, a
books, by the Church-yard wall. At Mr. Hymers book, near the
was against the wall. At Mr. Jones on the High Lane in Newgate. At Mr.
At Mr. Hymers in Newgate, and at Mr. Fawcetts in the Church-yard.

Consilium Anti-Pestilential: OR, Seasonable Advice, CONCERNING Sure, Safe, Specifick, and Experi- mented MEDICINES, both for the Preservation from, and Cure of this Present PLAGUE.

Offered for the Publick Benefit of this
Afflicted Nation,
BY
RICHARD BARKER, Med. Lond.

Gloriam dà Deo pro Misericordiâ,
& reverere Judicia ejus.

London. Printed for the Author, Anno 1665.

AN
ADVERTISEMENT
FROM THE

Society of Chymical Phys

TOUCHING

MEDICINES by them prepared, in pursuance

Majesties Command.

For the Prevention, and for the Cure of the

PLAGUE

It being a matter agreed by the
yea and now openly acknowledged
that in Galenic, Boerhaave and Most
of greater Effectiveness any other
them, and that the other being
wholly it is clearly given and granted, that the
upon have been by these worthy Persons particularly
pleas'd: That of Pestilential Contagions. We
nourishing this their so desirable and ingenious
happy Centenary be exist in and there, teach
both, as it is a good Ounce towards a more fallac
with at once that it is of our have been with
as a more brotherly correspondence, and mean
dine, both as to Principles and Practice, accord
We therefore, the Society of Chymical Phys
the calamity befallen this great City by the P
ing the use of these common Galenic Medicines,
have thought fit, in obedience to His Majesty's
thority established about the preparation of such
medicines, as are now in use, and of having Autho
rest I sh, which is many things differs from the
Authentic. Which Medicines so prepared in
great God, who hath given us a heart and light
ness of diseases, will be found our wish, and
own hands, to leave the found, and save the sick
In pursuance whereof, it is thought meet to li
and be furnished with the Assistance to be as per
in order to Prevention, and in case of Cure.

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Close near Clerkenwell.
Dr. Mowbray Nodden in St.
near Appleton.
Dr. Edward Boleyn, in Joun
near Crispington.
Dr. Thomas Williams in Tice
Court in Fleet-street.

These Places are named, because our Society is now
Colledge, with publick Offices, so that the ne
cessity of being furnished immediately, becom
Lived 28 June 1665.

London Printed for John Starkey, and are

D

P

I

Many

Se

Re-T
fo

THE
Surgeons Assistant.

In which is plainly discovered the
True Origin of most Diseases.

Treating particularly of the
Plague, French Pox, Leprosie, &c.

OF
The Biting of Mad Dogs, and other
Venemous Creatures.

ALSO
A Compleat Treatise of Cancers and
Gangreens.

WITH
An Enquiry whether they have any alliance
with Contagious Diseases.

Their most Easie, and Speedy Method of Cure.
With diverse Approved Receipts.

By John Browne, Sworn Surgeon in Ordinary to his
late Most Excellent Majesty King William III.
and late Senior Surgeon of St Thomas Hospital in
Southwark.

LONDON,
Printed for James Knapton, at the Crown in St Pauls
Church-yard. MDCCLII.

Consilium Anti-Pestilientiale:
OR,
Seasonable Advice,
CONCERNING
Pure, Safe, Specifick, and Experi-
mented MEDICINES, both
for the Preservation from, and
Cure of this Present
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Offered for the Publick Benefit of this
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RICHARD BARKER, Med. Lond.

Gloriam dà Deo pro Misericordia,
& reverere Judicia ejus.

London. Printed for the Author, Anno 1665.



advice of the physician

PROCLAMATION

" 'That no hogs dogs, or cats, ... be kept within any part
of the city' ...

"Wherefore were we ordered to kill all the dogs and cats,
but because as they were domestic animals, and are apt to
run from house to house ...so they are capable of
carrying ... infectious streams ... even in their furs and
hair ... by the advice of the physician, that all dogs and
cats should be immediately killed."

--Defoe, *Plague Years*

Science & Medicine 54

overview

where we're going &
what came before

what happened

trouble for the virtuosi

solving problems

case studies - 2

pox

open science

nasty, brutish, and short



smallpox

Queen Anne (1665-1714)

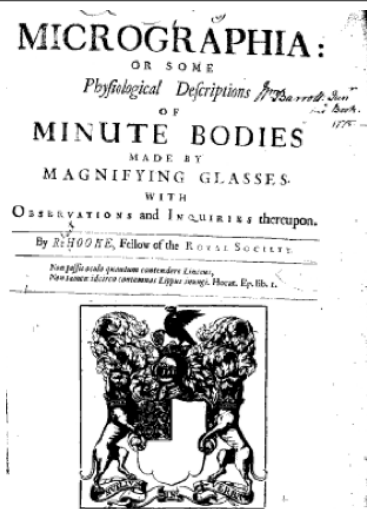
17 pregnancies

3 still births

10 miscarriages

3 died in infancy of **smallpox**

William Duke of Gloucester (1689-1700)



syringing

"the ingenious Invention of that Excellent person, Doctor Wren, of injecting liquors into the veins of an Animal, seems to be reducible to this head: I cannot stay, nor is this a fit place, to mention the several Experiments made of this kind by the most incomparable Mr. Boyle, the multitudes made by the lately mention'd Physician Doctor Clark, the History whereof, as he has been pleas'd to communicate to the Royal Society, so he may perhaps be prevail'd with to make publique himself: But I shall rather hint, that certainly, if this Principle were well consider'd, there might, besides the further improving of Bathing and Syringing into the veins, be thought on several ways, whereby several obstinate distempers of a humane body, such as the Gout, Dropsie, Stone, &c. might be master'd, and expell'd; and good men might make as good a use of it, as evil men have made a perverse and Diabolical. And that the filling of the pores of the skin with some fluid vehicle, is of no small efficacy towards the preparing a passage for several kinds of penetrant juices, and other dissoluble bodies, to insinuate themselves within the skin."

--Hooke, 1665

scientific revolution

inoculation

India: 8th century

China: 10th century

Tibet: 11th century

Africa: ?

Turkey: ? 16th century

England, France, US: 18th century

recurring resistance: 19th century

20th century

inoculation/variolation

England, France, US 18th century



Lady Mary Wortley
Montague
1689–1762

England

Lady Mary Wortley Montague

France

Montpellier, but not Paris

US

Onesimus



Voltaire

[François-Marie Arouet]

1694–1778

mad men

"It is whispered in Christian Europe that the English are mad and maniacs: mad because they give their children smallpox to prevent their getting it, and maniacs because they cheerfully communicate to their children a certain and terrible illness with the object of preventing an uncertain one. The English on their side say: 'The other Europeans are cowardly and unnatural: cowardly in that they are afraid of giving a little pain to their children, and unnatural because they expose them to death from smallpox some time in the future.' To judge who is right in this dispute, here is the history of this famous inoculation which is spoken of with such horror outside England."

Voltaire, *Letters on England*

Science & Medicine 60



John Arbuthnot
1667?–1735

doctors v. quacks

R E A S O N S

Humbly Offered by the

C O M P A N Y

Exercising the Trade and Mystery of

U P H O L D E R S,

Against Part of the BILL

*For the better Viewing, Searching, and
Examining DRUGS, MEDICINES, &c.*



L O N D O N:

Printed in the YEAR 1724.

*K London
Company of
Upholders*

US paradoxes

Boston outbreak 1721

"Inquiring of my Negro-man, Onesimus, who is a pretty intelligent fellow, whether he had ever had the smallpox, he answered both yes and no. He told me that he had undergone the operation which had given something of the smallpox and would forever preserve him from it, adding that was often used in West Africa."

--Cotton Mather



Cotton Mather
1663-1728

"Cotton Mather, you dog, dam you! I'll inoculate you with this; with a pox to you" [note attached to missile]

US paradoxes

Boston outbreak 1721

"Inquiring of my Negro-man, Onesimus, who is a pretty intelligent fellow, whether he had ever had the smallpox, he answered both yes and no. He told me that he had undergone the operation which had given something of the smallpox and would forever preserve him from it, adding that was often used in West Africa."

--Cotton Mather



Cotton Mather
1663-1728



Benjamin Franklin
1706–1790

To the Author of the New-England Courant,
S I R,

Reading in your last a Story concerning Inoculation, with the News of the intended Expedition against the Eastern Indians; they casually lodged together in the same Apartment of my Brain, and by next Morning formed themselves into the following Project.

A Project for reducing the Eastern Indians by Inoculation.

That there be forthwith enlisted a sufficient number of Inoculators, to be commanded by a Major General Inoculator, who in Quality of a Field Officer, may do Duty on Horseback.

That they be compleatly armed with Incision-Lancet, Pandora's Box, Nut-Shell and Fillet; their Exercise and Discipline to be according the Practice of that able and experienc'd Officer amongst the Turks (our Inoculator General's good Friend and intimate Acquaintance) Capt. General Timonius.

That their Ammunition be of the best Proof, that is, a Composition of Negro Yaws, and constant Small Pox.

That the Inoculators be all Volunteers, who besides their usual Feet, and travelling Charges, may be allowed a Gratuity of 10 l. per Head, of each Indian who survives, conveys and spreads the Infection amongst his Tribe; and of 5 l. per Head for those who blow up too soon (or die) before they reach the Places where Execution is intended.

That in Consideration of the difference of Climate, and other more pressing Occasions, the Timonius directs such Expeditions to be made only in Winter and Spring, ours shall be in Summer, as in all Probability like to do most Execution in that Season.

The three greatest Evils incident to Mankind, are the Sword, Famine and Pestilence. The first, or War, hath been allowed and practised by all Nations in all Ages. The second is also made use of to annoy an Enemy; as in the Instance of Blockading, or starving strong Towns: But the doing of Execution by Infection or Pestilence, seems reserved for the Honour of the Inoculator and his Associates. That it is glorious and Lawful we have had it lately sufficient.

more
paradox



who to trust

Cotton Mather

Wonders of the Invisible World, 1693

Benjamin Franklin

Fellow of the Royal Society

declining scepticism



In 1736 I lost one of my sons, a fine boy of four years old, by the smallpox taken in the common way. I long regretted bitterly and still regret that I had not given it to him by inoculation.

This I mention for the sake of the parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it; **my example showing that the regret may be the same either way, and that, therefore, the safer should be chosen."**

--Franklin, *Autobiography* 1793

Science & Medicine 65

finding "the safer way"

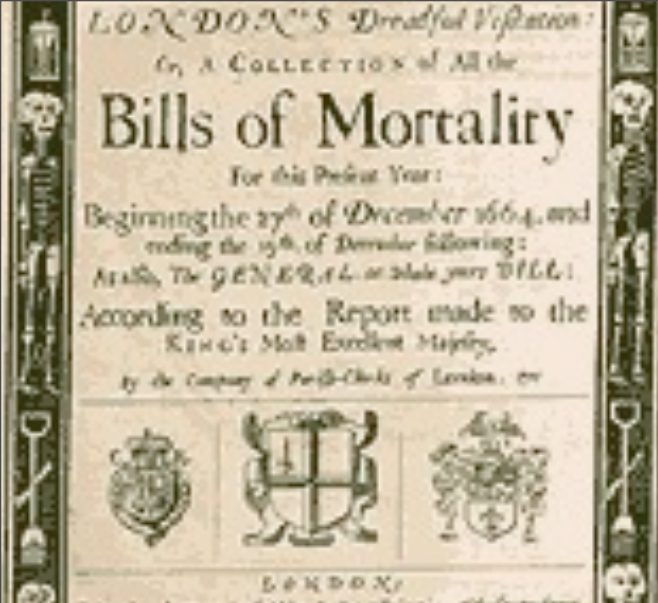
a shortage of numbers

accounting for death

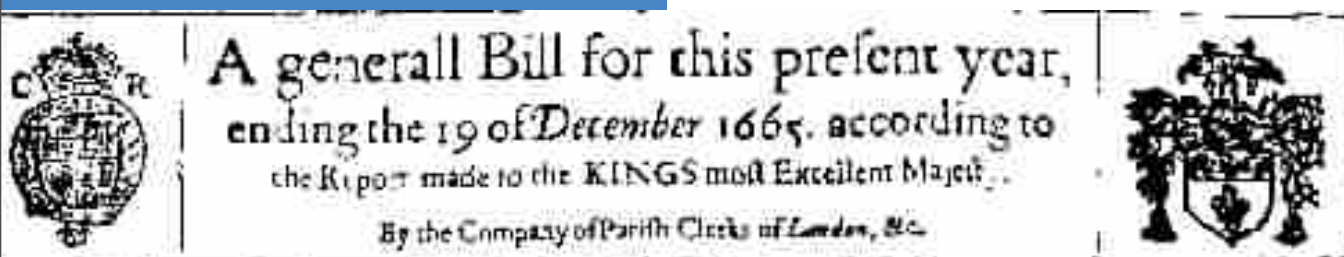
how many sick? how many died? how
many recovered? how many?

tracking population

Graunt, Petty



death rate



The Diseases and Casualties this year.

Bottie and Stillborne	517	Executed	21	Pallie	30
Aged	1545	Flux and Small Pox	655	Plague	68528
Aque and Peaver	5237	Found dead in Streets, fields, &c.	21	Planner	6
Apoplex and Suddenly	116	French Pox	86	Plurisie	13
Adrie	10	Frighted	23	Poysoned	6
afind	5	Gout and Sciatica	27	Quinsie	35
eeding	16	Grief	46	Rickets	137
oodly Flux, Scurving & Flux	187	Gripping in the Guts	1238	Killing of the lights	197
urnt and Scalded	8	Hanged & made away themselves	7	llapure	14
elentire	3	Headmouldshot & Mouldfallen	14	Scurvy	107
ances, Gangrene and Fiftula	56	jaundies	120	Shingles and Swine pox	2
anker, and Thrush	121	Imposume	227	Sores, Ulcers, broken and heilled	82
illdoed	623	Kild by severall accidents	46	Limbs	14
hirlomes and Infants	1258	Kings Evil	88	Spleen	14
old and Cough	66	Leprouse	2	Spotted Fever and Purples	1929
ollick and Winde	134	Lethargy	14	Stopping at the stomack	332
onsumption and Tiflick	4808	Livergreen	21	Stone and Strangury	28
onvulsion and Morice	1056	Meagrom and Headach	82	Sustet	1202
illtasted	5	Mealles	7	Teeth and Worms	2014
rouse and Turpany	1476	Mortified and Shot	9	Vomiting	51
rowned	52	Overjaud & Starved	45	Vunn	7

♂ Males	5114	Buried	♂ Males	48569	Of the Plague	68528
♀ Females	4853		♀ Females	48717		
In all	9967		In all	97286		

Increased in the Burials in the 130 Parishes and at the Pest-house this year.	79002
Increased of the Plague in the 130 Parishes and at the Pest-house this year.	68528

1603: regular bills of mortality

1611: incorporation of parish clerks counting by "searchers"

1629: other deaths

1728: age of deceased

1837: last bills

political arithmetic

politics and population

William Petty, RS

surveyor

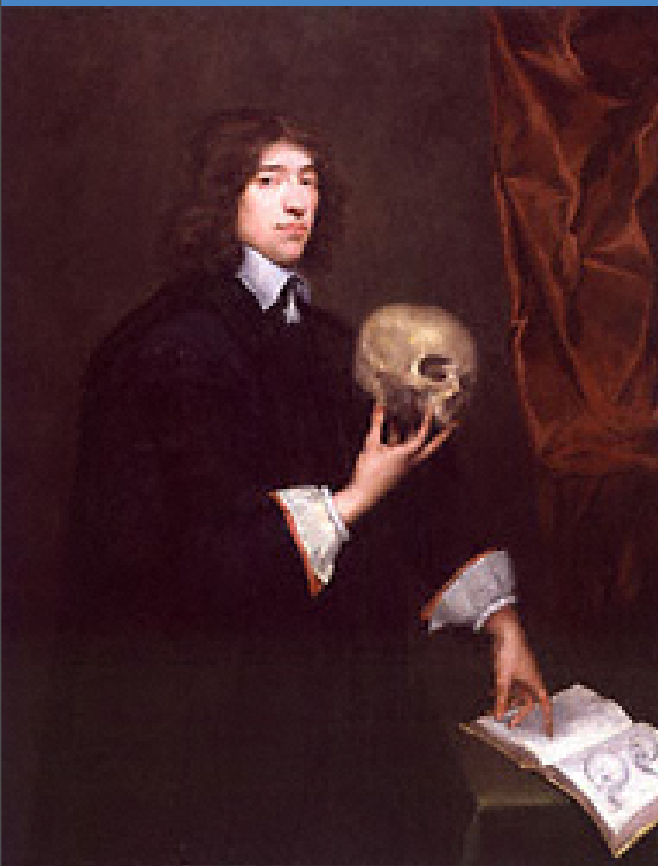
Political Arithmetic of Ireland

velocity of circulation

natural vs market price

economic surplus

population change



William Petty
1623–1687

An Extraēt of two Essays in Political Arithmetick concerning the comparative Magnitudes, &c. of London and Paris by Sr. William Petty Knight. R. S. S.

whose count
counts?

The excellent Author of these two Essays, has in several former of the same Nature made it appear that Mathematical Reasoning, is not only applicable to Lines and Numbers, but affords the best means of Judging in all the concerns of humane Life. In the present he endeavours to prove *London*, as it now is, the most considerable City now in being, by shewing it much to exceed *Paris*, (which not only the *French* but foreigners have asserted to be the chief City of *Europe*.) both in People, Housing, and Wealth: The first by comparing the Bills of Mortality, whereby he finds that the People of *London* are as many as those of *Paris* and *Rouen* put together. The second by comparing the number of Houses, which by the Chimny-Books are found above 80000 in *London*, whereas a great Author among the *French*, (who seldom fail to magnifie their own things,) reckons but 50000 Houses in *Paris*. As to the third, to wit the Wealth, he conceives that there is yet a much greater disproportion, there being no comparison between them for Trade, and besides a good argument drawn from the Law-Suites of both places, he concludes from the *Paris* bills of Mortality, that two 5ths of the People of *Paris* are so poor

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A further Assertion of the Propositions concerning the Magnitude, &c. of London, contained in two Essays in Political Arithmetic; mentioned in Philos. Transact. Numb. 183; together with a Vindication of the said Essays from the Objections of some Learned Persons of the French Nation, by Sr. W. Petty Knt. R.S.S.

1. **I**T could not be expected that an Assertion of *Londons* being bigger than *Paris* and *Roven*, or than *Paris* and *Rome* put together, and bigger than any City of the World, should scape uncontradicted, and 'tis expected that I (if continuing in that Perswasion) should make some Reply to these contradictions.

2. I begin with the Ingenious Author of the *Novelles de la Republique des Lettres*, who saith that *Rey* in *Persia* is far bigger than *London*; for that in the 6th. Century of Christianity (I suppose *An. 550*) It had 15000, or rather 44 thousand *Moschees* or *Mahometan Temples*. To which I reply, that I hope this Objector is but in jest, for that *Mahomet* was not borne till about the Year 570, and had no *Moschees* till about 50 Years after



John Graunt
1620–1674

"His Majesty gave this particular charge to His Society, that if they found any more such Tradesmen, they should be sure to admit them all, without any more ado."

--Sprat

in a class of his own?

John Graunt, RS
*Natural and Political
Observations ...
upon the Bills of Mortality*
1662

Natural and Political
OBSERVATIONS
Mentioned in a following INDEX,
and made upon the
Bills of Mortality.
By *JOHN GRAUNT*,
Citizen of
LONDON.

With reference to the Government, Religion, Trade,
Growth, Age, Diseases, and the several Changes of the
said CITY.

counting difficulties

An INDEX of the Positions, Observations, and Questions contained in this Discourse.

1. **T**he Occasion of keeping the Account of Burials arose first from the Plague, Anno 1592, page 3
2. Seven Alterations, and Augmentations of the published Bills, between the years 1592, and 1662, pag. 4, 5, 6, 7, 8, 9, 10
3. Reasons, why the Accounts of Burials, and Christnings should be kept universally, and now called for, and pursued by the Magistrate, p. 11
4. A true Account of the Plague cannot be kept, without the Account of other Diseases, p. 12
5. The ignorance of the Searchers no impediment to the keeping of sufficient, and usefull Accounts, p. 13
6. That about one third of all that were ever quick die under five years old, and about thirty six per Centum under six, p. 14
7. That two parts of nine die of Acute, and seventy of two hundred twenty nine of Chronical Diseases, and four of two hundred twenty nine of outward Grievs, 14, 15
8. A Table of the Proportions dying of the most notorious, and formidable Diseases, or Casualties, p. 16
9. That seven per Centum die of Age, bid.
10. That some Diseases, and Casualties keep a constant proportion, whereas some other are very irregular, p. 16, 17
11. That not above one in four thousand are Starved, p. 17
12. That

shame

"The Old-Women Searchers, after the mist of a Cup of Ale, and the bribe of a two-grout fee ... cannot tell whether this emaciation or leanness were from a phthisis, or from an Hectick Fever, Atrophy, &c. or from an Infection of the Spermatick parts ... onely hated persons, and such, whose very Noses were eaten off were reported by the searchers to have died of this too frequent Malady."

principle

fear

Science & Medicine 71

"to commit the
work to the care
of such men, who,
by the freedom of
their education
the plenty of
their estates, and
the usual
generosity of
Noble Blood, may
be well suppos'd
to be most averse
from sordid
considerations"
--Sprat

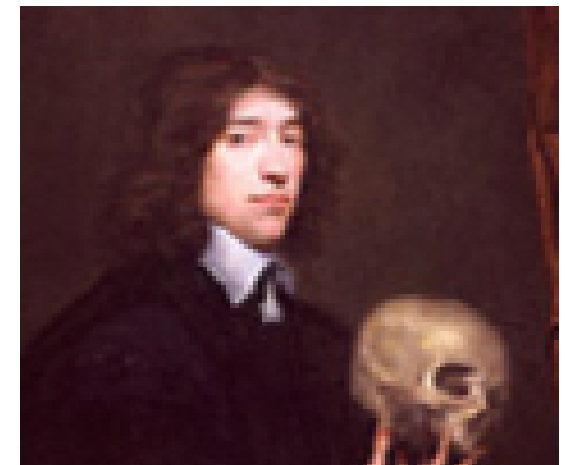
"the distribution
of credibility
followed the
contours of
English society"
--Steven Shapin

encountering difficulties

Hooke's
subordination

Graunt's
"shop arithmetic"

Petty
Anne Greene



overview

where we're going &
what came before

what happened

trouble for the virtuosi

solving problems

case studies

open science



Robert Boyle
1627–1691

open science

matters of trust

in *judgement*

in *machines*

in *books*

in *people*



trust & reputation

Let us consider the matter in this way: If the wise man or any other man wants to distinguish the true physician from the false, how will he proceed?

.... He will consider whether what [the physician] says is true, and whether what he does is right, in relation to health and disease?

... But can any one attain the knowledge of either unless he have a knowledge of medicine?

... No one at all, it would seem, except the physician can have this knowledge; and therefore not the wise man; he would have to be a physician as well as a wise man.

--Plato, *Charmides*

authority & not experience

Nullus in Verba?

open to closed
the university

"Men did generally think, that no man was
fit to meddle in matters of this
consequence, but he that had bred himself up
in a long course of Discipline"

--Sprat

fighting back

"experience ... tells us, that greater things are
produc'd, by the free way, than the formal" --Sprat

US 19th Century medicine

dismantling medical societies

resisting vaccination

opposing controls on medicine

"between 1860 and 1906 over 190 bills were
presented to Congress to regulate the quality of
food and drugs"

--James Kane,

"Populism, Progressivism, and Pure Food," 1964

summary

beginnings of science

*from facts and curiosities to evidence and
calculation*

from certainty to trust

*from "diligent and laborious individuals" to
credentials and institutions*