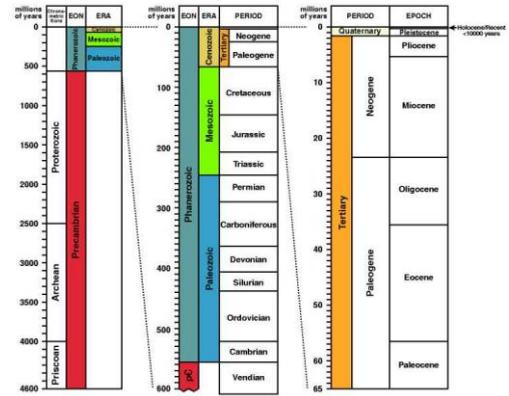
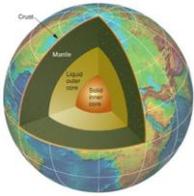


How Old Is the Earth?

and how do we know?



Remember

- ▶ Methods for the identification of strata (**stratigraphy**) came from religiously orthodox individuals such as Niels Stensen (“Steno”).
- ▶ There is **no** assumption of evolution in either stratigraphy or methods for aging strata.
 - These require merely the application of *known physical and chemical processes*

Dating methods prior to 1900

- ▶ Biblical
- ▶ Cooling of the Earth (**Thermodynamic**)
- ▶ Orbital dynamics (George Darwin)
- ▶ Ocean chemistry
- ▶ Erosion and sedimentation

Biblical Estimates of Age

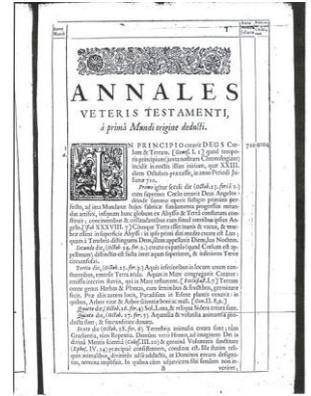
The computation of the ages of the world.

1	From the creation of the world to the deluge	1656
2	From the deluge to the building of the temple	292
3	From the building of the temple to the birth of Christ	414
4	From the birth of Christ to the present time	1560
5	From the creation of the world to the present time	3322
6	From the deluge to the present time	2068
7	From the building of the temple to the present time	2774
8	From the birth of Christ to the present time	1560
9	From the present time to the end of the world	1560
10	From the creation of the world to the end of the world	4882

- ▶ Theophilus - 7,519
- ▶ Eusebius - 7,167
- ▶ St. Basil - 5,994
- ▶ St Augustine - 6,321
- ▶ Alphonso X - 8,952
- ▶ Lightfoot - 5918



Ussher's 1650 estimate of 4004BCE



Edmund Halley

1656-1742



- ▶ Proposed that the age of the Earth could be estimated from the salt content of the ocean (1715).
- ▶ The experiment "is chiefly intended to refute the ancient notion, some have of late entertained, of the eternity of all things; though perhaps by it the world may be found much older than many have hitherto imagined."

John Joly

1857 - 1933



"The quantity of sodium now in the sea, and the annual rate of its supply by the rivers, lead, it will be seen, to the deduction that the age of the Earth is **99 million years.**" (1899)

By 1909 he had revised his estimate to **150 million years.**

Modern Oceanic “Clock” Results

Na	68,000,000	Cu	50,000
Mg	45,000,000	Bi	45,000
Li	20,000,000	Hg	42,000
Sr	19,000,000	Co	18,000
Sediments	14,000,000	Ni	9,000
K	11,000,000	Si	8,000
Ag	2,100,000	Pb	2,000
Au	560,000	Mn	1,400
Mo	500,000	W	1,000
Sb	350,000	Cr	350
Rb	270,000	Th	350
Zn	180,000	Ti	160
Sn	100,000	Fe	140
Ba	84,000	Al	100

Problems with the salt clock

1. Assumption of constant rate of influx across geologic time known to be wrong.
2. Poorly estimated parameters: rates of erosion and solution, rainfall, runoff, continental area, average exposed rock composition over time.
3. Ignores movement of elements out of oceans, movement which occurs at approximately the same rate as influx. Therefore confuses **residence time** with **accumulation time**

Georges-Louis Leclerc

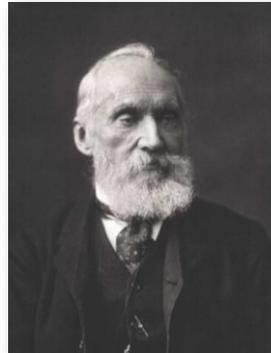
Compte de Buffon, (1707 – 1788)



- ▶ Examined cooling of metal spheres of various diameters
- ▶ Estimated **96,670 years** for Earth to cool to current temperature.
- ▶ Privately believed **3 billion years**.

William Thomson

Lord Kelvin, 1824 – 1907



- ▶ Kelvin scale (1848)
- ▶ Second Law of Thermodynamics (1851)
- ▶ Thermodynamic argument that the age of the Earth was 24 million years.

Assumption: The earth is a warm, chemically inert planet that is cooling.

Assumption: It can be modeled as an infinite plane of infinite thickness.

Assumption: Heat loss is through conduction from the center.

the two sides of a certain infinite plane. The solution for the two required elements is as follows:—

$$\frac{dx}{dt} = \frac{V}{\sqrt{\pi k t}} e^{-\frac{x^2}{4k t}}$$

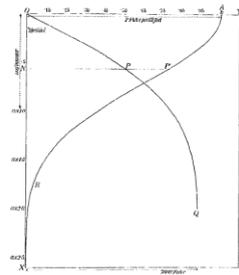
$$x = \frac{2V}{\sqrt{\pi k}} \int_0^t dt e^{-x^2/4k t}$$

where k denotes the conductivity of the solid, measured in terms of the thermal capacity of the unit of bulk;

V , half the difference of the two initial temperatures;
 π , their arithmetical mean;
 t , the time;
 x , the distance of any point from the middle plane;
 θ , the temperature of the point x at time t ;

INCREASE OF TEMPERATURE DOWNWARDS IN THE EARTH.
 05 m.s.
 $NP = \frac{1}{2} \sqrt{\pi k t} \left(\frac{1}{2} \sqrt{\pi k t} \right)$
 $NP = \frac{1}{2} \sqrt{\pi k t} \left(\frac{1}{2} \sqrt{\pi k t} \right)$
 $NP = \frac{1}{2} \sqrt{\pi k t} \left(\frac{1}{2} \sqrt{\pi k t} \right)$

The curve NP shows course of temperature above that of the surface.
 The curve NP shows rate of accumulation of temperature downwards.



So, by 1900 ...

- ▶ **Theologians** had rejected a literal reading of the Bible and the implied young age of the earth
- ▶ **Physicists** seemed to be limiting the age of the Earth to *circa* 25 million years.
- ▶ For **biologists**, this wasn't a problem as they generally didn't subscribe to an evolutionary process that required long periods of time and instead allowed for directed evolution.
- ▶ This was, however, a problem for the **geologists** who felt that long periods of time were needed for formation of the Earth as we see it today.

T.C. Chamberlain, 1899

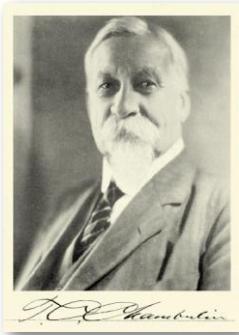


“The fascinating impressiveness of rigorous mathematical analyses, within its atmosphere of precision and elegance, should not blind us to the defects of the premises that condition the whole process. There is perhaps no beguilement more insidious and dangerous than an elaborate and elegant mathematical process built upon unfortified premises.”

Problems with Kelvin's method

1. **Parameters** are poorly known (conductivity of rocks; thermal gradient; initial temperature of the Earth; heat released upon crystallization; exact composition and structure of the Earth).
2. Considers conduction but not **convection**, when the latter is a more important source of heat loss.
3. Ignores other **sources** of heat:
 - a. Heat left over from the formation of the Earth, e.g. gravitational energy from compaction, mechanical energy from meteor impacts, chemical energy from the formation of the Fe-Ni core.
 - b. Energy from contraction due to cooling
 - c. Energy from ongoing core expansion
 - d. Radioactivity

T.C. Chamberlain, 1899



“What the internal constitution of the atoms may be is yet an open question. It is not improbable that they are complex organizations and the seats of enormous energies.”

Radiometric dating

How the geologists used physics to show the physicists that they were wrong.



Periodic Table of the Elements

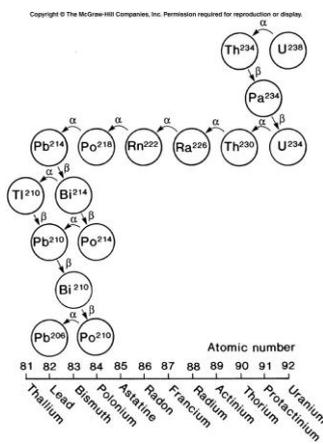
1	2																	10
3	4																	10
11	12																	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
87	88	89	104	105	106	107	108	109	110	111	112	113	114	115	116	118		

* Lanthanide Series

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

+ Actinide Series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr



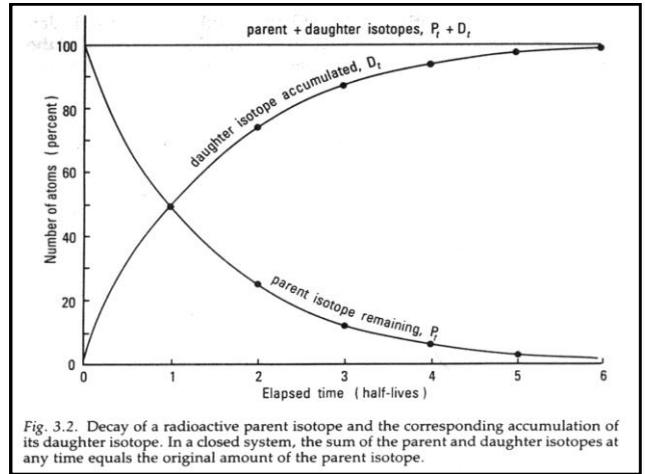
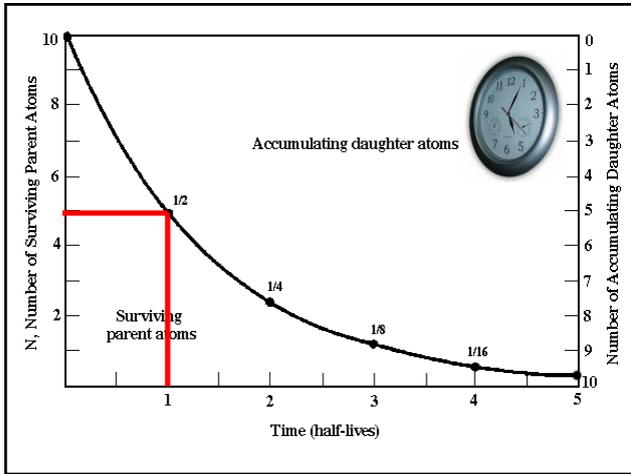


Fig. 3.2. Decay of a radioactive parent isotope and the corresponding accumulation of its daughter isotope. In a closed system, the sum of the parent and daughter isotopes at any time equals the original amount of the parent isotope.

Basic Radiometric Age Equation

$$t = \frac{1}{\lambda} \ln \left(1 + \frac{D}{P} \right)$$

where t is the age of the rock or mineral specimen,
 D is the number of atoms of a daughter product today,
 P is the number of atoms of the parent isotope today,
 \ln is the natural logarithm (logarithm to base e), and
 λ is the appropriate decay constant.

(The decay constant for each parent isotope is related to its half-life,

$$t^{1/2} \text{ by the following expression: } t^{1/2} = \frac{\ln 2}{\lambda}$$

Soddy & Rutherford 1902

Ernest Rutherford, 1906



"The helium observed in the radioactive minerals is almost certainly due to its production from the radium and other radioactive substances contained therein. If the rate of production of helium from known weights of the different radioelements were experimentally known, it should thus be possible to determine the interval required for the production of the amount of helium observed in radioactive minerals, or, in other words, to determine the age of the mineral."

Arthur Holmes

1890 – 1965



- ▶ “The association of lead with uranium in rock–minerals and its application to the measurement of geological time.” *Transactions of the Royal Society* (1911)
- ▶ “One of the greatest pieces of geological literature ever published.” (Peter Wyse Jackson, 2007)

256 *The Association of Lead with Uranium in Rock-Minerals.*

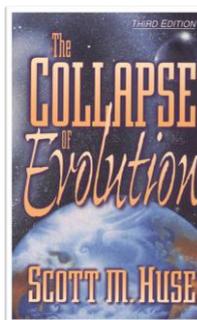
Geological period.	Pb/U.	Millions of years.
Carboniferous	0·041	340
Devonian	0·045	370
Pre-carboniferous	0·050	410
Silurian or Ordovician	0·053	450
Pre-Cambrian—		
a. Sweden	0·125	1025
b. United States	0·155	1270
c. Ceylon	0·180	1310
	0·175	1435
	0·20	1640

Assuming a closed system

250 Mr. A. Holmes. *The Association of* [Mar. 20,

- (a) That no appreciable amount of lead was present when the mineral was formed.
- (b) That no lead has originated by any other radioactive process than that suggested.
- (c) That no lead nor uranium has subsequently been added or removed by external agencies.

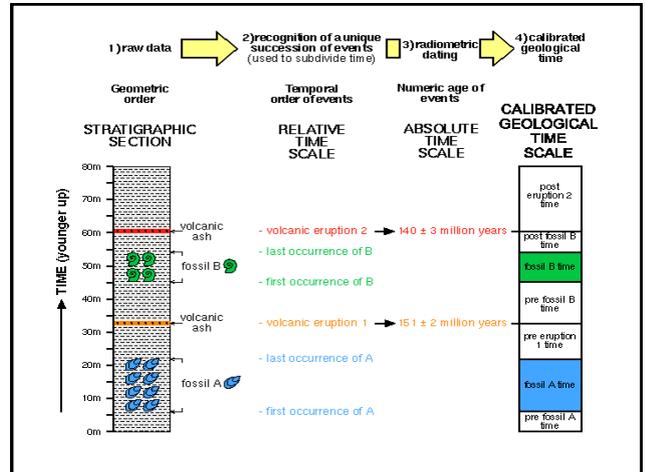
Scott Huse (1997)



“Dates obtained from these techniques are merely circumstantial and are necessarily based on numerous assumptions, which may or may not be true ... none of these assumptions are found to be valid!” [p 65]

Type of Rock and Dating

- ▶ **Metamorphic** - Unsuitable as rocks of this type form with incomplete melting (usually)
- ▶ **Sedimentary** - Unsuitable as these are composed to debris of older rocks.
- ▶ **Igneous** - Useable if they haven't been significantly heated since formation. Can test for this using various methods.



Choose your isotope(s)



Types of decay

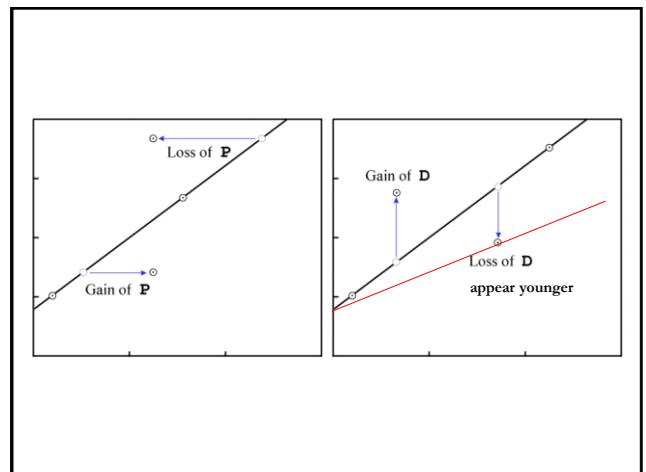
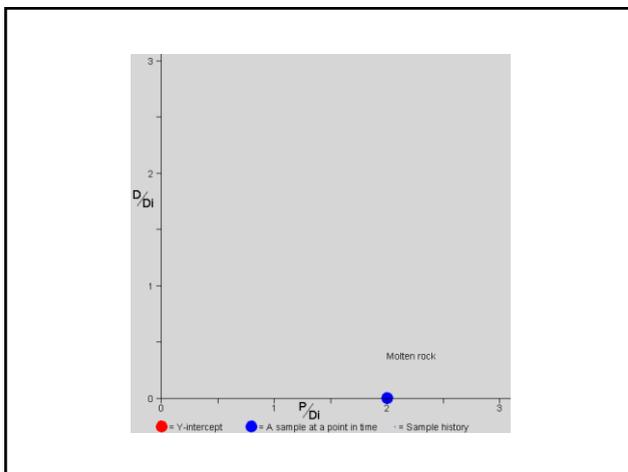
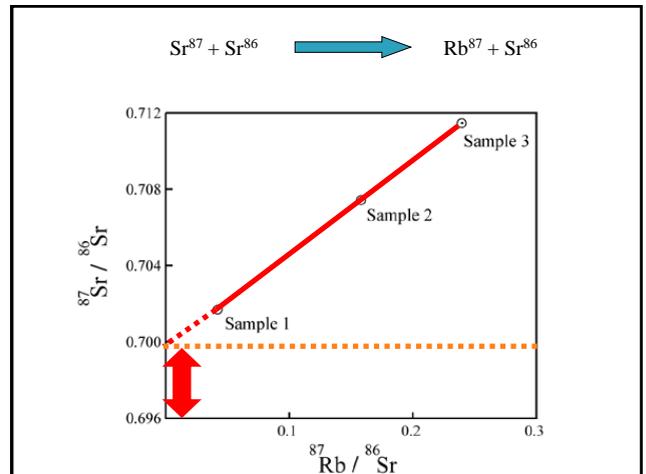
Mode of decay	Participating particles	Daughter nucleus
Decays with emission of nucleons:		
Alpha decay	An alpha particle ($A=4, Z=2$) emitted from nucleus	($A-4, Z-2$)
Proton emission	A proton ejected from nucleus	($A-1, Z-1$)
Neutron emission	A neutron ejected from nucleus	($A-1, Z$)
Double proton emission	Two protons ejected from nucleus simultaneously	($A-2, Z-2$)
Spontaneous fission	Nucleus disintegrates into two or more smaller nuclei and other particles	-
Cluster decay	Nucleus emits a specific type of smaller nucleus (A, Z) smaller than, or larger than, an alpha particle	($A-A_c, Z-Z_c$) + (A_c, Z_c)
Different modes of beta decay:		
Beta-Negative decay	A nucleus emits an electron and an antineutrino	($A, Z+1$)
Positron emission, also Beta-Positive decay	A nucleus emits a positron and a neutrino	($A, Z-1$)
Electron capture	A nucleus captures an orbiting electron and emits a neutrino - The daughter nucleus is left in an excited and unstable state	($A, Z-1$)
Double beta decay	A nucleus emits two electrons and two antineutrinos	($A, Z+2$)
Double electron capture	A nucleus absorbs two orbital electrons and emits two neutrinos - The daughter nucleus is left in an excited and unstable state	($A, Z-2$)
Electron capture with positron emission	A nucleus absorbs one orbital electron, emits one positron and two neutrinos	($A, Z-2$)
Double positron emission	A nucleus emits two positrons and two neutrinos	($A, Z-2$)
Transitions between states of the same nucleus:		
Isomeric transition	Excited nucleus releases a high-energy photon (gamma ray)	(A, Z)
Internal conversion	Excited nucleus transfers energy to an orbital electron and it is ejected from the atom	(A, Z)

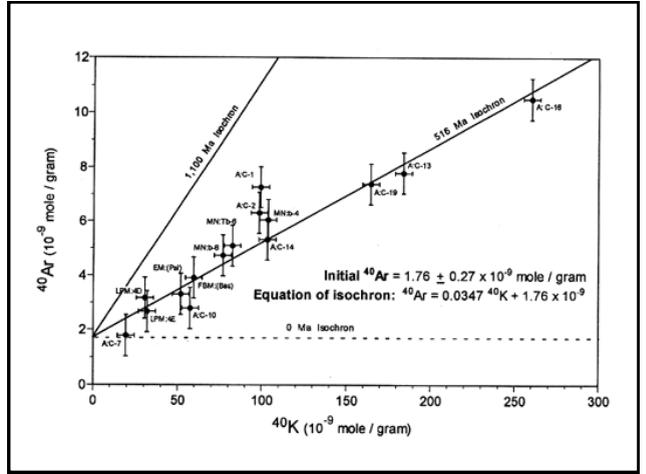
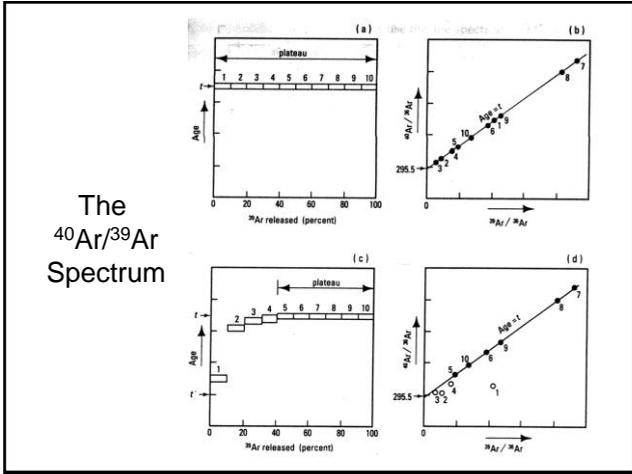
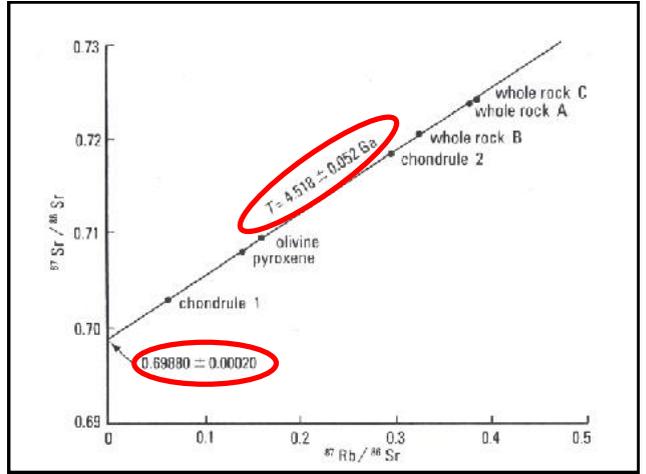
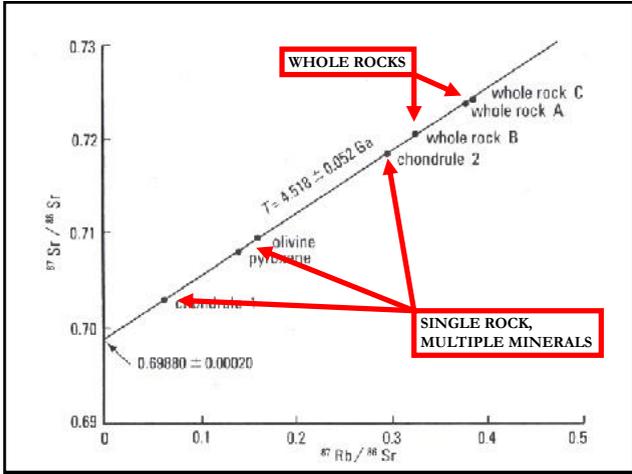
An age-diagnostic diagram

- ▶ **Isochrons**
 - Rb-Sr, K-Ar
 - ▶ **Argon Spectrum**
 - $^{40}\text{Ar}-^{39}\text{Ar}$
 - ▶ **Concordia and Discordia**
 - U-Pb
- ▶ Estimate of the amount of daughter initially present
 - ▶ Examination of whether the system was closed
 - ▶ Determination of whether dating is even possible

Methods

Collectively these allow ...





Holmes' Closed System

- ▶ Daughter leakage would yield **younger** ages than the correct one.
- ▶ Parent leakage - which would give older ages - does not occur in the types of rock used
- ▶ Known (and detectable) effects of weathering and thermal stress.

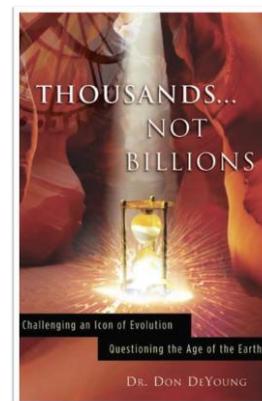


The RATE Project

Radioisotopes and the Age of The Earth

Institute for Creation Research
Creation Research Society
Answers in Genesis

Creation Research Society Board of Directors, 2008



Andrew Snelling



- ▶ Ph.D. in Geology (1982); Worked as mining geologist until 1983 and as consultant thereafter.
- ▶ Lecturer with Answers in Genesis (Editor of *Creation Ex Nihilo*)
- ▶ Associate Professor of Geology at the Institute for Creation Research
- ▶ Developed much of their approach to radiometric dating

Andrew Snelling



“Creationist geologists need to completely abandon the evolutionist's geological column and associated terminology. It is necessary to start again, using the presence of fossils or organic matter as a classification criterion in the task of rebuilding our understanding of geological history within the Biblical framework.” (1983)

Snelling's Scientific Publications 1982 – 1987

- ▶ Giblin, A.M., and A.A. Snelling, Application of hydrogeochemistry to uranium exploration in the Pine Creek Geosyncline, Northern Territory, Australia, **Journal of Geochemical Exploration**, 19, pp. 33–55, 1983.
- ▶ Snelling, A.A., A soil geochemistry orientation survey for uranium at Koongarra, Northern Territory, **Journal of Geochemical Exploration**, 22, pp. 83–99, 1984.
- ▶ Dickson, B.L., B.L. Gulson, and A.A. Snelling, Evaluation of lead isotopic methods for uranium exploration, Koongarra area, Northern Territory, Australia, **Journal of Geochemical Exploration**, 24, pp. 81–102, 1985.
- ▶ Gole, M.J., C.R.M. Butt, and A.A. Snelling, A groundwater helium survey of the Koongarra uranium deposits, Pine Creek Geosyncline, Northern Territory, **Uranium**, 2, pp. 343–360, 1986.
- ▶ Dickson, B.L., B.L. Gulson, and A.A. Snelling, Further assessment of stable lead isotope measurements for uranium exploration, Pine Creek Geosyncline, Northern Territory, Australia, **Journal of Geochemical Exploration**, 27, pp. 63–75, 1987.
- ▶ Dickson, B.L., A.M. Giblin, and A.A. Snelling, The source of radium in anomalous accumulations near sandstone escarpments, Australia, **Applied Geochemistry**, 2, 385–398, 1987.



Snelling's Impact(s) since 1999

1. Radiocarbon in “ancient” fossil wood (2008)
2. The rapid ascent of basalt magmas (2007)
3. Who is Jesus Christ? A challenge to Christians. (2007)
4. Water Activity on Mars: Landscapes and Sedimentary Strata (2007)
5. *Wollemia nobilis*: A Living Fossil and Evolutionary Enigma (2006)
6. Confirmation of Rapid Metamorphism of Rocks (2006)
7. Polonium Radiohalos: The Model for Their Formation Tested and Verified (2005)
8. Rapid Petrification of Wood: An Unexpected Confirmation of Creationist Research (2005)
9. Radioisotope Dating of Grand Canyon Rocks: Another Devastating Failure for Long-Age Geology (2004)
10. Radiohalos – Significant and Exciting Research Results (2002)
11. An Australian Fossil Insect Bed Resulting from Cataclysmic Destruction (2000)
12. Polonium Radiohalos: Still “A Very Tiny Mystery” (2000)
13. Dubious Radiogenic Pb Behavior Places U–Th–Pb Mineral Dating in Doubt (2000)
14. Potassium–Argon and Argon–Argon Dating of Crustal Rocks and the Problem of Excess Argon (1999)
15. “Excess Argon”: The “Achilles’ Heel” of Potassium–Argon and Argon–Argon “Dating” of Volcanic Rocks (1999)

Assumption #1

The amount of parent and daughter isotopes have not been altered by anything except radioactive decay.

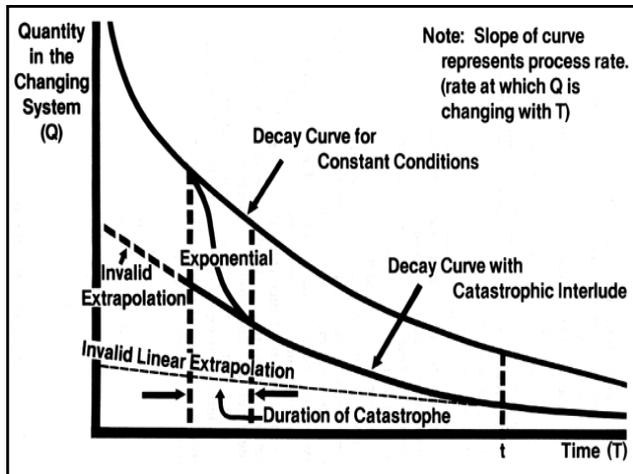
Assumption #2

When the rock was formed, it contained a known amount of the daughter isotopes, in many cases, believed to be zero.

Assumption #3

The decay rate has been constant throughout history.

Nuclear decay appears to have been accelerated at different periods during earth's history



Evidence for Constant Rates

- ▶ The radioactive decay rates of nuclides used in radiometric dating **have not been observed to vary since their rates were directly measurable**, at least within limits of accuracy. This is despite experiments that attempt to change decay rates.
 - Only a single variation in decay rate has been reproduced (that of ${}^7\text{Be}$) and that was a variation of only 0.18%, not enough to alter any clock (if there was one using ${}^7\text{Be}$)
- ▶ There is insufficient energy in geological processes to affect the decay rate.
- ▶ The half-lives of radioisotopes can be predicted from first principles through quantum mechanics. **Any variation would have to come from changes to fundamental constants.**

Mark Isaak

“Producing a billion years of radioactive decay in a “**Creation week**” or **year-long flood** would have produced a billion years worth of heat from radioactive decay as well. This would pretty much vaporize the earth. Since the earth apparently has not been vaporized recently, we can be confident that the accelerated decay did not occur.”

<http://www.talkorigins.org/indexcc/CD/CD015.html>

So ...

- ▶ Decay rates are experimentally observed
 - and are constant
- ▶ Not all rocks can be dated
 - but those that can be provide “brackets”
- ▶ We can check for enrichment, leakage and thermal stress

Oldest Rock Outcroppings

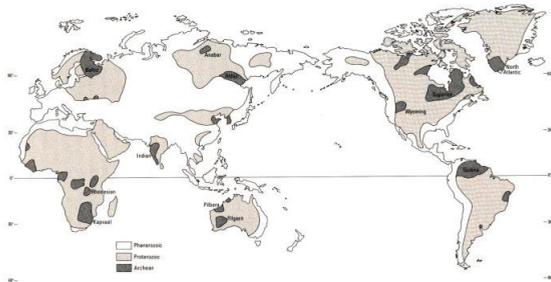


Fig. 4.1. Distribution of Archean and Proterozoic rocks. More than half of Antarctica (not shown) is also underlain by rocks of Precambrian age. (After various sources, including Condie, 1978, 1981; B.C. Burchfield, 1983; and Windley, 1984.)



Greenland / Canada

3.85 billion

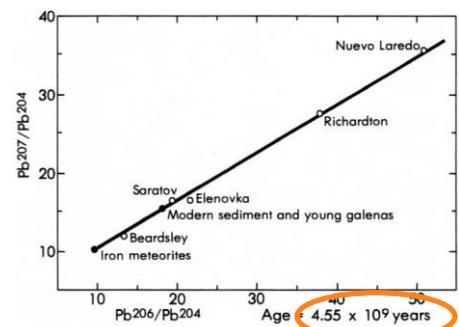
Gneisses
(metamorphic)

How Old Is The Earth?



- ▶ Oldest rocks
 - 3.85 billion years
- ▶ Oldest mineral
 - Zirconium silicate $ZrSiO_4$
 - Contains Thorium & Uranium and thus can estimate *age of crystallization*
 - 4.40 billion years
- ▶ Oldest meteorite
 - 4.55 billion years

Meteorites (extraterrestrial)



4.55 billion years

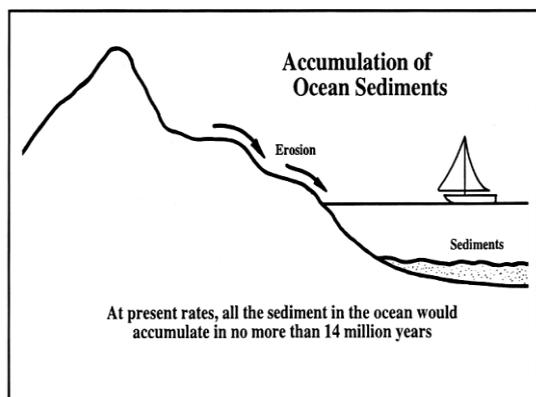
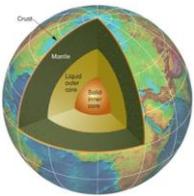


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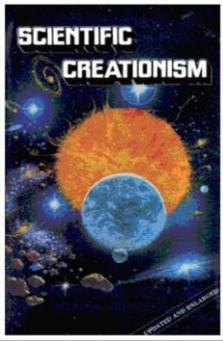
62

Creationist Dating Methods

Is there a **positive** case for a young Earth?



Henry Morris (1974)

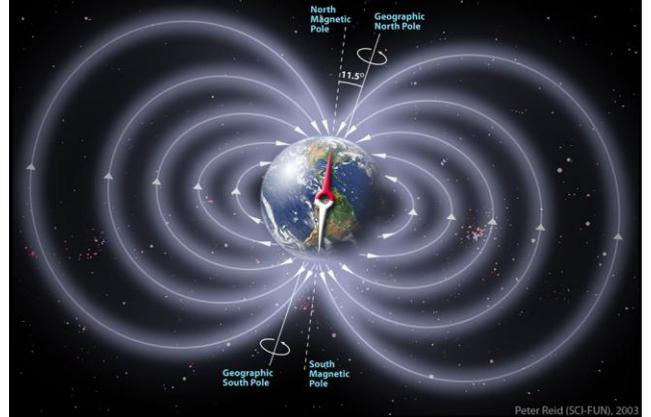


68 methods presented

- 5 give age of zero (~7%)
- 5 give age under 500 years (~7%)
- 9 give age under 5,000 years (~13%)
- 7 give age between 8 and 15,000 years (~10%)
- Rest give older (~63%) with median of 1,000,000

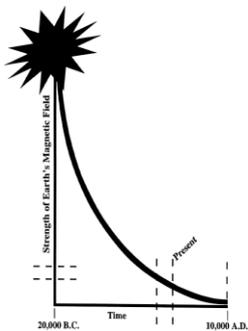
Note: "... based on standard assumptions of (1) zero initial 'daughter' component; (2) closed systems; (3) uniform rate"

The Earth's Magnetic Field

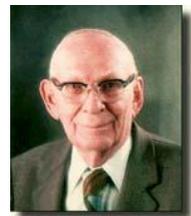
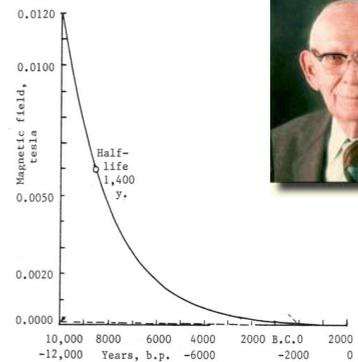


Peter Reid (SCI-FUN), 2003

Some YECs claim ...



- ▶ Magnetic field is decreasing over time
- ▶ Would have a enormous value approximately 10,000 years ago
- ▶ Therefore, this is the maximum age of the Earth



Thomas G. Barnes



“If we went back about 10 thousand years, the Earth’s magnetic field would have been as strong as the field in a magnetic star. A magnetic star is like our sun; it has a nuclear power source. Surely our Earth never had a nuclear source like the Sun. Surely, the Earth never had a magnetic field stronger than that of a star. That would limit the age of the Earth to ten thousand years.”

The Earth, A Young Planet? (1983)

Some Magnetic Fields (Gauss)

▶ Galactic magnetic field	0.00001
▶ Solar Wind	0.00005
▶ Interstellar molecular cloud	0.001
▶ Earth's field at ground level	1.00
▶ The Sun	1 - 5
▶ Massive star typical field	100
▶ Refrigerator magnet	100
▶ Sun spot field	1000
▶ Magnetic Stars	11,500
▶ White Dwarf star surfaces	1,000,000
▶ Neutron star surface field	1,000,000,000,000

Magnetic Moment in “Earth units”



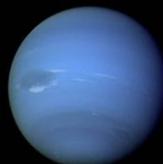
Jupiter
20,000



Uranus
50



Saturn
600

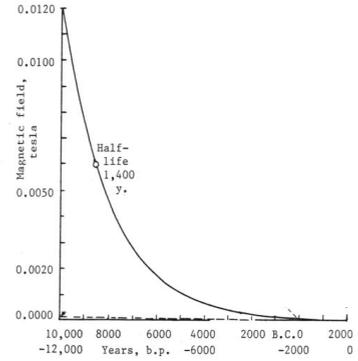
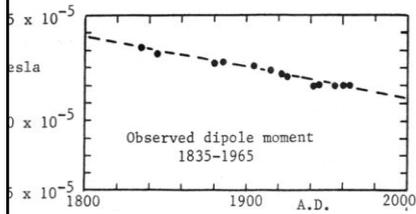


Neptune
25

Magnetic field strength: 5 to 10,000 Gauss



From Barnes (1973) *Origin and Destiny of the Earth's Magnetic Field*
 I.C.R. Technical Monograph No. 4



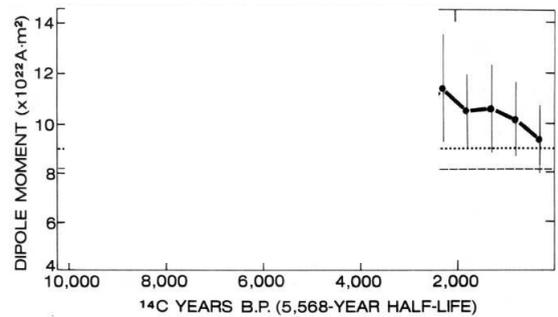
D. Russell Humphreys



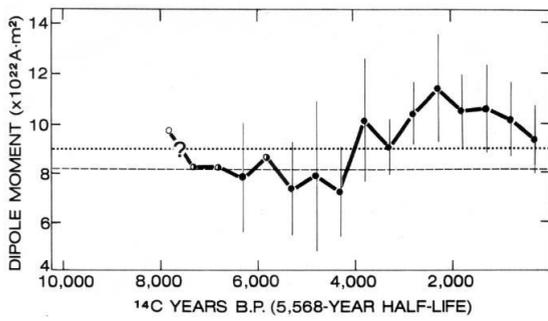
"The earth's magnetic field is decaying at a certain rate right now, it would take about 1400 years to decay down to half its present strength, and we know from archaeomagnetic data that it has been decaying at that rate for about 1000 years. ... Historically it has been measured for the past 150 years, actually 170 years. Its followed that nice decay path, K curve, right on down. But before that it did complicated things, and we think the complicated things are the result of reversals of the earth's magnetic field that happened during the Genesis flood. ... In other words, one week, during the Genesis flood, the magnetic field was pointing north and the next week the magnetic field was pointing south."

Creation Matters, Dec 2001

Data from lava flows and archaeological finds



Data from lava flows and archaeological finds

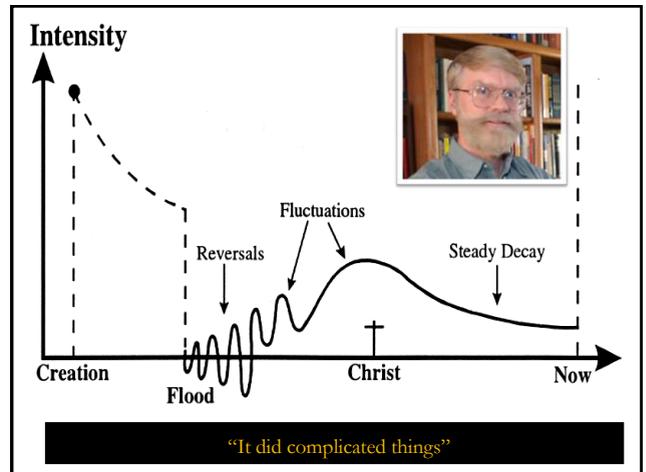
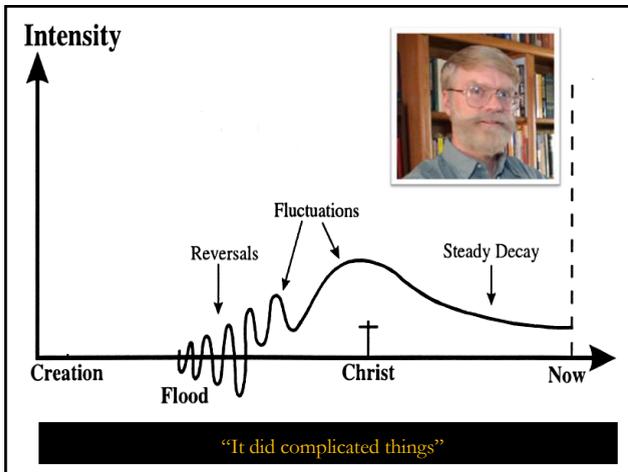


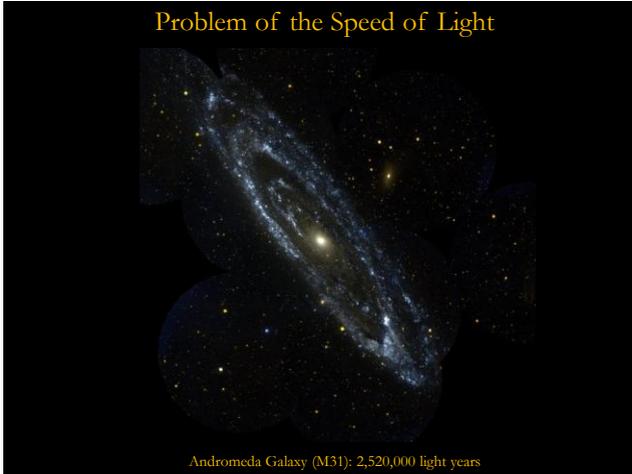
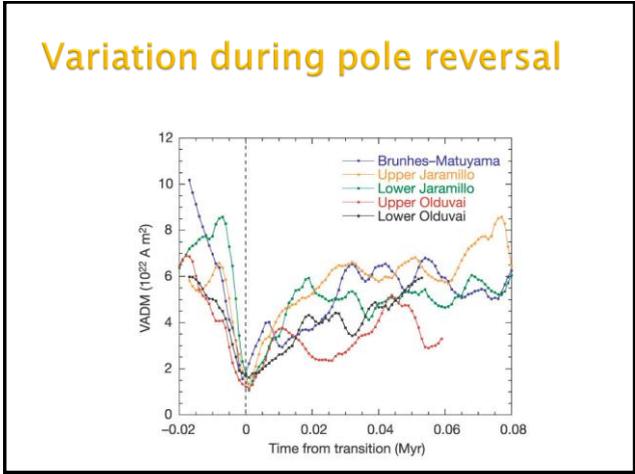
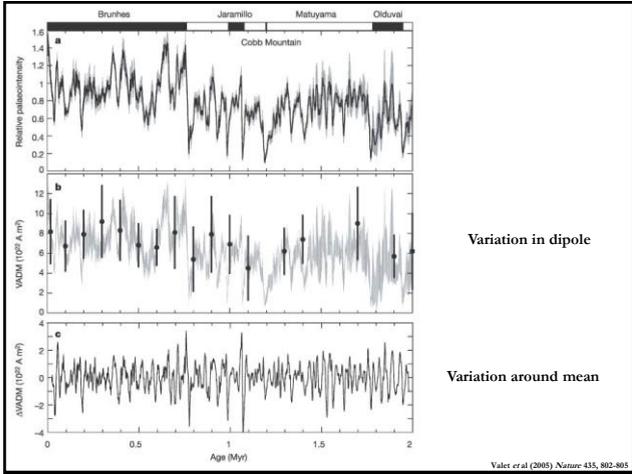
D. Russell Humphreys



"[My theory] is straightforward, based on sound physics, and explains many features of the field: its creation, rapid reversals during the Genesis Flood, intensity fluctuations (up and down) until about the time of Christ, and a steady decay since then. This theory matches paleomagnetic, historic, and present data."

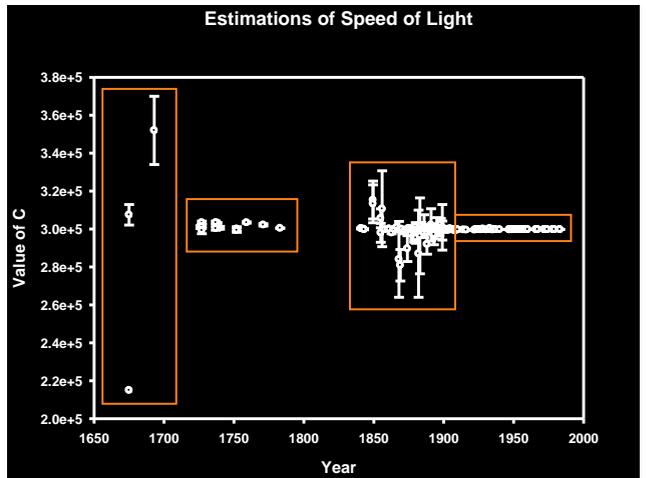
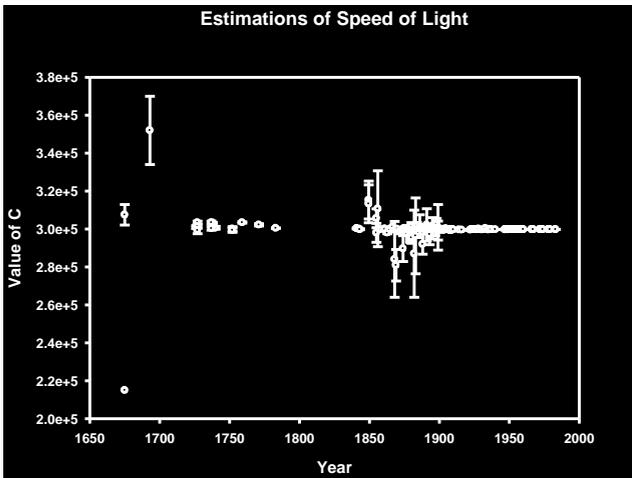
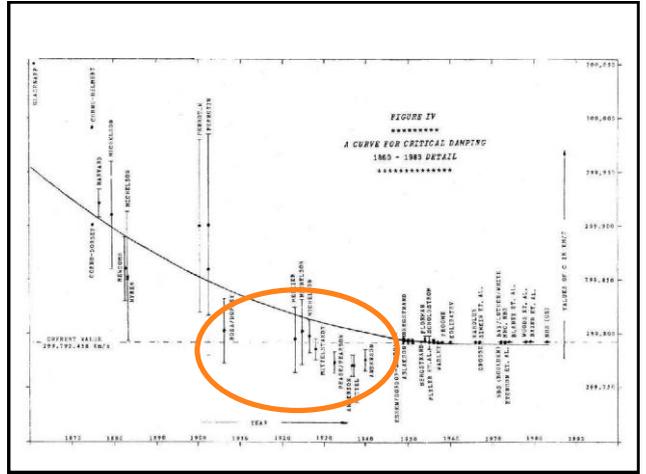
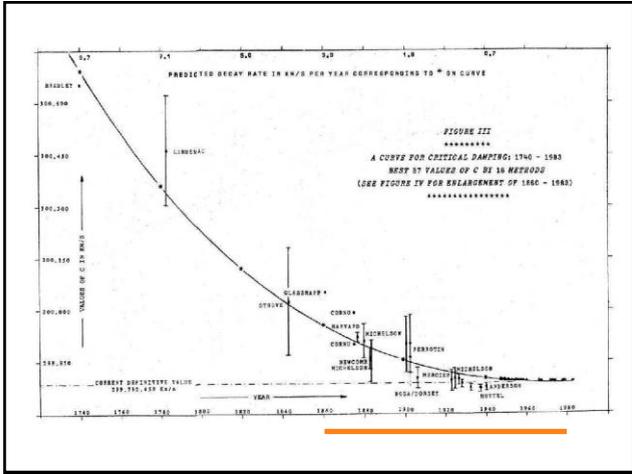
Creation Ex Nihilo, 1991

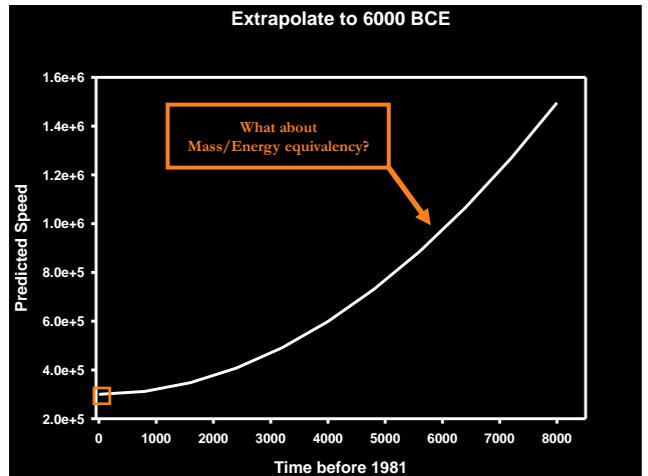
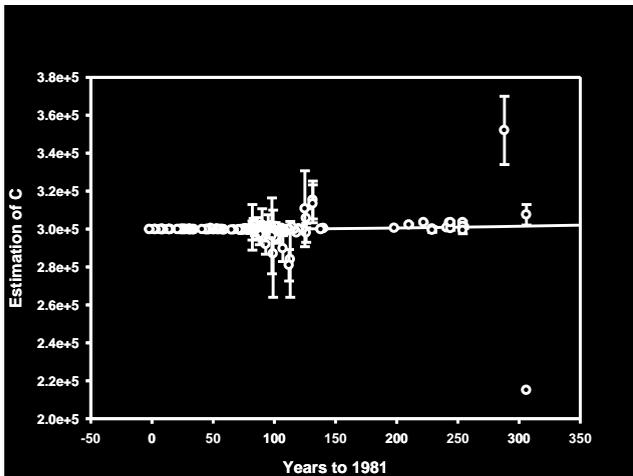
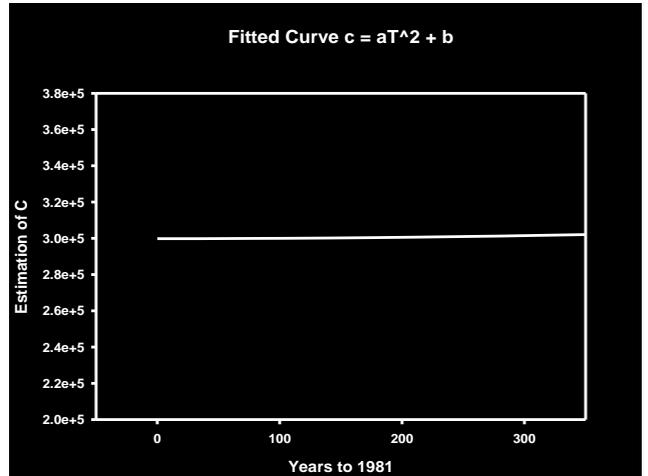
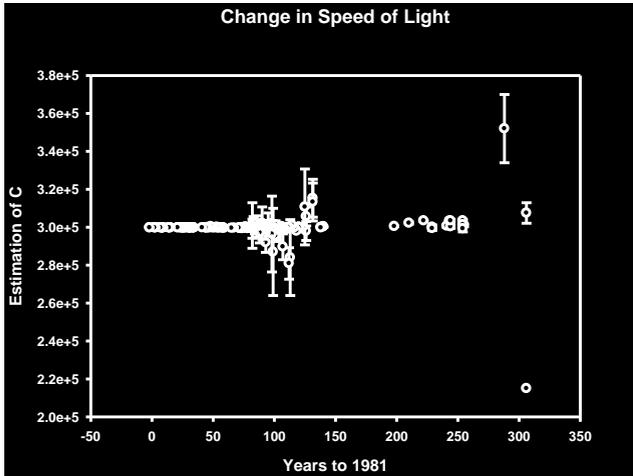


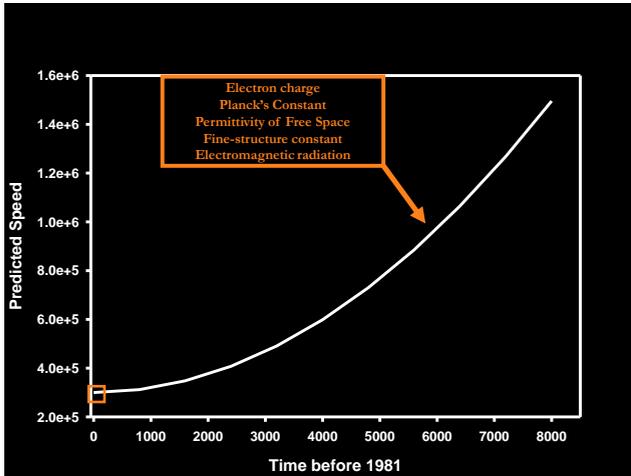


Barry Setterfield

STAR BENT
STAR BRIGHT
FIRST SEEN
I FOUND
I SEE TWILIGHT



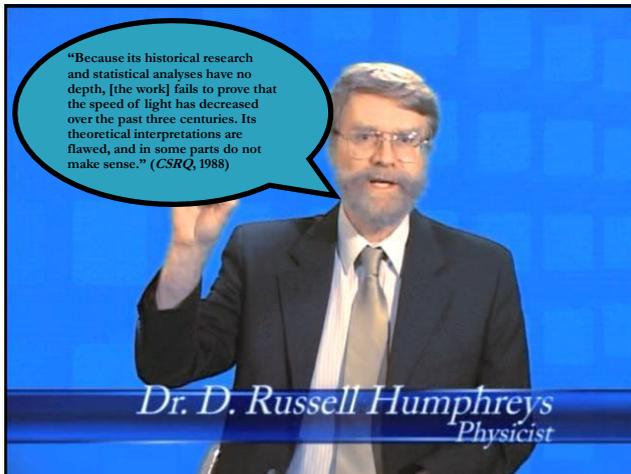




Gerald E. Aardsma

▶ Professor, Geophysics Department, Institute for Creation Research Graduate School (1987 - '94)

▶ "At the present time, it appears that general support by the creationist community of the decay of the speed of light hypothesis is not warranted by the data upon which the hypothesis resets" (*Impact* #179, 1988)



What do other YECs say?

Gerald E. Aardsma

- ▶ Professor, Geophysics Department, Institute for Creation Research Graduate School (1987 - '94)
- ▶ Rejects arguments from:
 - decrease in speed of light,
 - magnetic decay,
 - changing decay constants
- ▶ Uses C-14 dating on research in Israel.



The Earth is young because of biblical statements. Scientifically, there is not enough evidence to indicate the Earth is young.

Kurt Wise

Paul Nelson & John Mark Reynolds



"Recent creationists should humbly agree that their view is, at the moment, implausible on purely scientific grounds."

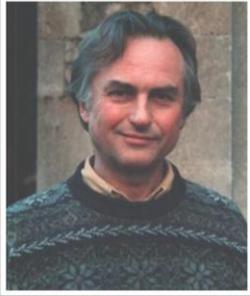


Why maintain YEC position?



"There are, however, two very good reasons to maintain a young earth position during the struggle [against theistic and secular naturalism]. First, recent creationism is **intellectually interesting** ... Second, a coherent recent creationism would be a **great boon to religious belief.**"

Would this lead you to accept evolution?



"There are, however, two very good reasons to maintain an evolutionary position during the struggle [against religious belief]. First, evolution is **intellectually interesting** ... Second, a coherent evolutionism would be **a great boon to atheism.**"

Nelson & Reynolds

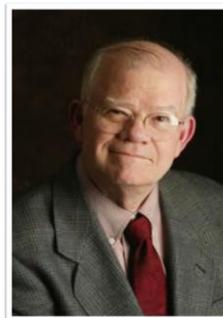
"[W]e can admit that as recent creationists we are defending a very natural biblical account, at the cost of abandoning a very plausible scientific picture of an 'old' cosmos. But over the long term, this is not a tenable position. In our opinion, old earth creationism combines a less natural textual reading with a much more plausible scientific vision. There are fewer 'problems of science'. At the moment, this would seem the more **rational** position to adopt."

Three reasons for taking Young Earth Creationism seriously

- ❑ Young earth creationism has grown and developed intellectually over time
- ❑ Young earth creationism has been the overwhelming view of the traditional church
- ❑ Young earth creationism is intellectually exciting

We believe these reasons **alone** are sufficient to allow a **reasonable** person to call himself provisionally 'young earth'

Phillip E. Johnson (2004)

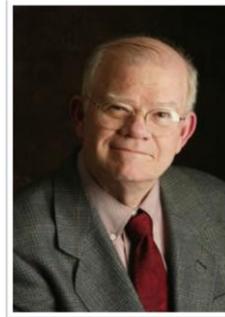


"I have consistently said that **I take no position on the age of the earth**, and that I regard the issue as not ripe for debate yet. I have also rejected all suggestions that I should denounce the YECs and instead have said that I regard **high-quality YECs like Andrew Snelling** as respected allies."



Tour of the United Kingdom,
October 26th to November 13th 2004

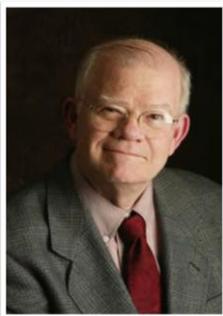
Phillip E. Johnson



"[W]e're the ones that stand for **good science**, objective reasoning, assumptions on the table, a high level of education, and freedom of conscience to think as we are capable of thinking."

Reclaiming America for Christ, 1999

Phillip E. Johnson



"I'm on the religious side myself as a believer in divine creation but on the other hand many errors come out of our camp as well as out of the other one. And it's good that they should be challenged."

The Monkey Trial, PBS, 2005

