THE SCIENCE OF CREATION

The Contribution of Two Catholic Priests

Catholic Priest-Scientists

01

Nicolas Steno

1638-1686

02

Georges Lemaitre

1894-1966

Blessed Nicolas Steno 1638-1686
Father of Modern Geology

- Born in 1638 in Denmark to a Lutheran family
- Steno completed university studies in medicine
- Made notable contributions in the fields of anatomy, crystallography, geology, and paleontology
- Explored various schools of philosophy and theology in Florence and Rome and was a friend and physician to the Medici
- **1667 -- entered the Catholic Church**
- **1675 -- ordained a priest**
- **1677 -- became a bishop, gave away his wealth, and lived in poverty.**
- **Prayed for the unity of the Catholic and Protestant faiths**
- **Died –- 1686 Beatified -- 1988**

Steno — Saliva, Sharks, and Stones

- **Saliva** — Dissection of animal heads led to the discovery of a duct from the parotid salivary gland to the mouth - named it “ductus stenonianus” (1662) -- term still used in anatomy
- **Sharks** — After dissecting the head of a great white shark (1666), he studied the shark teeth and compared them to the *tongue stones* that were found in rocks from certain layers of the earth. Some thought these *tongue stones* grew in the rocks or fell from the sky
- **Stones** — The tongue stones were so like sharks' teeth that Steno proposed that the ocean must have covered the land and the **tongue stones** were actually **shark teeth** captured in the layers of earth as the ocean receded
- He developed, after much geological investigation, a detailed theory of the origin of fossils and of sedimentary rock that was controversial but correct.
- **His discovery meant a new interpretation of the origin of all types of fossils**
- **His discovery meant a new way of thinking about the layers of the earth**

Steno — Science of Stratigraphy 1669

- **The principle of original horizontality**: **All layers of rock are deposited horizontally, parallel to the horizon.** Later they may be deformed so they form an angle with the horizon.
- **The law of superposition**: **The deeper the rock layer, the older it is.** When there are different layers of rock, provided there has been no deformation, the oldest layers are at the bottom and youngest at the top.
- **The principle of lateral continuity**: **Rock layers extend laterally in all directions.** Where similar layers of rock are separated, for example by a valley, it can be assumed these rock layers were originally continuous.
- **The principle of cross-cutting relationships: Any geologic feature that cuts through another is the younger of the two features.**

Steno — Science of Stratigraphy

Cross-cutting

← Horizontal

← Lateral

Oldest is
← Deepest

Steno’s Science and the Creation Story

- Steno’s findings indicated the Biblical Creation Story may not be tied to the actual times
- His principles are statements of relative time, not absolute time: two rock layers, in principle, could have formed millions of years apart or a few hours or days apart.
- He was aware of the biblical story of creation, and his hypotheses are consistent with receding waters and the Flood described in Genesis
- He was the first to use geology to distinguish different time periods in the Earth's history -- an approach that would be used as a paradigm in the work of later scientists even to the present time

Father Georges Lemaitre 1894-1966
Father of the Big Bang Theory

- Lemaître was born in 1894 in Belgium
- From a devoutly Catholic Family, he announced his intention to become a priest at age 9. He was ordained in 1923 at age 29.
- Extremely bright and especially talented in mathematics and physics
- Served in the Army artillery in WWI. Other soldiers were amazed that he could study Physics in the trenches
- Received a doctorate in Mathematics from the Catholic University of Leuven in 1920—became a graduate student in astronomy at the University of Cambridge in England

Father Georges Lemaitre — Science

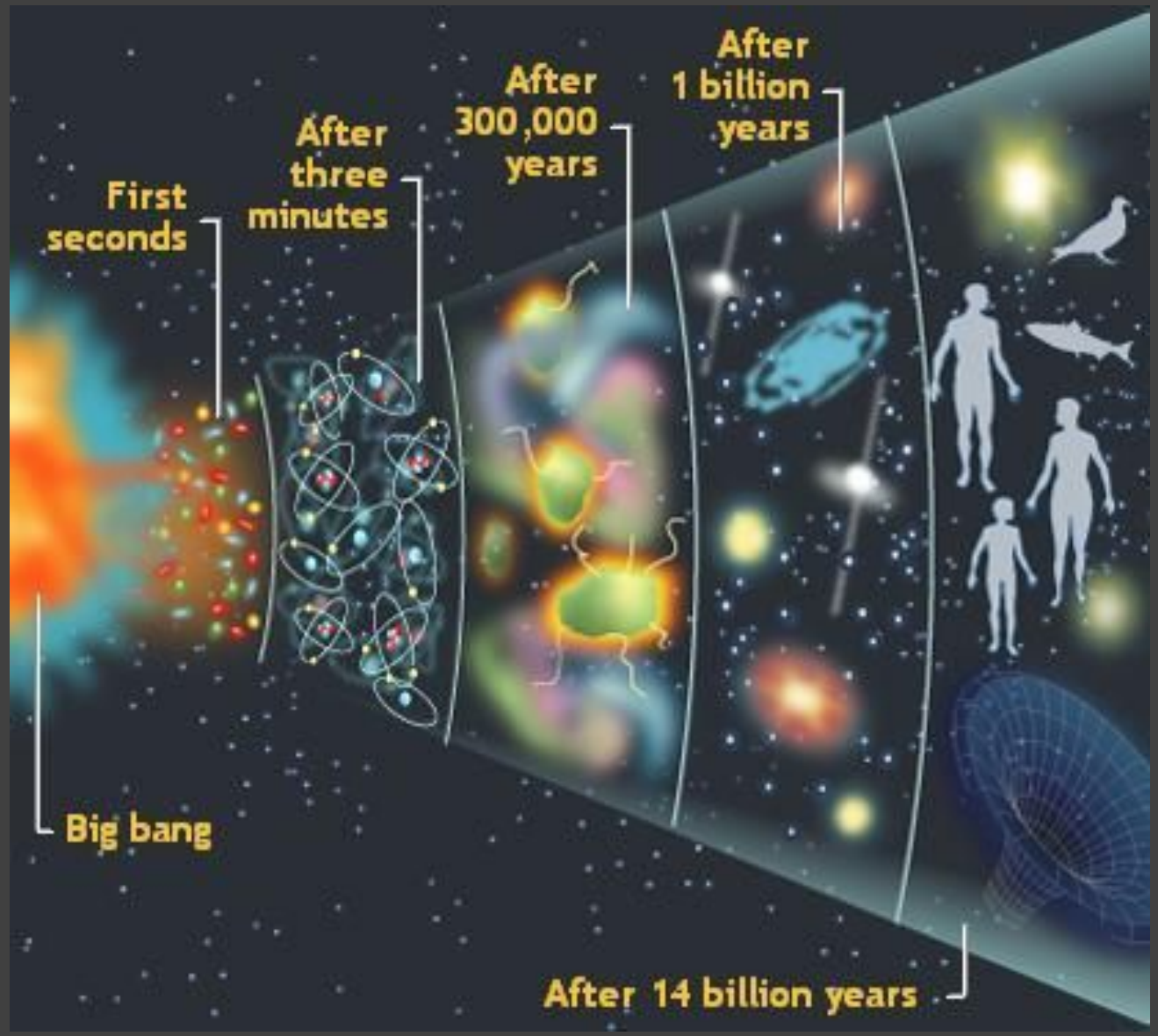
- Used the advanced telescope at Harvard University to collect the astronomy data for his dissertation
- Received a PhD from MIT 1927.
- Einstein's field equations of relativity described a static universe (1917) –Theory of Relativity
- Lemaitre revolutionized the scientific world in 1927, when he discovered a family of solutions to Einstein's equations that described an expanding universe
  - 1) He presented his new idea of an expanding universe,
  - 2) He derived the first statement of what would later become known as Hubble's Law (that the outward speed of distant objects in the universe is proportional to their distance from us), and
  - 3) He provided the first observational estimation of the Hubble constant.
- Based on the data from astronomic observations and supported by mathematics, he proposed what we know today as the **Big Bang Model of Cosmology the Universe from the Cosmic Egg**

THE BIG BANG

The universe has been expanding since it began

Started as a tight package.

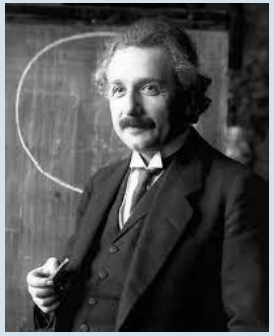
In his words, “hypothesis of the primeval atom” — Cosmic Egg — “exploding at the moment of creation.”



Father of the Big Bang Theory

"If the future development of quantum theory happens to turn in that direction, we could conceive the beginning of the universe in the form of a **unique atom, the atomic weight of which is the total mass of the universe**."

GEORGES LEMAÎTRE
Letters to Nature, 9 May 1931



Einstein (1877-1955) commented in 1933 on the Big Bang, "this is the most beautiful and satisfactory explanation of creation to which I have ever listened"

Lemaitre — Science and Faith

Lamaitre — views from his 1936 lecture on Science and Faith

1. Science and Faith are two different ways to know truth
2. Adamant about keeping Science and Faith separate and independent
3. God cannot be reduced to a scientific hypothesis.
4. The Bible is **not** a book of science therefore we cannot expect science to be hidden in its words… (Augustine of Hippo) Lemaitre said, “Once you realize that the Bible does not purport to be a textbook of science, the old controversy between religion and science vanishes.” 1933, New Your Times interview
5. Nature is a solvable enigma.

> “The believer has the advantage of knowing that the enigma has a solution, that the underlying logic is ultimately the work of an intelligent being, that the problem posed by nature was posed to be solved, and the difficulty is proportionate to our human abilities. This knowledge might not provide him with new investigation resources, but it will help him maintain the healthy optimism without which a sustained effort cannot long endure.”

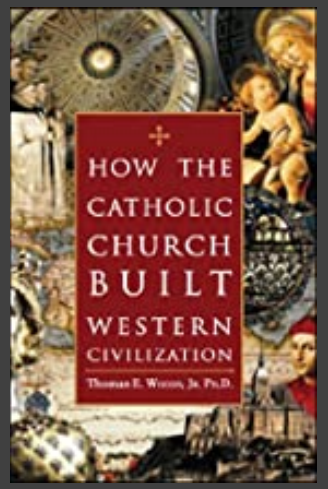
Summary

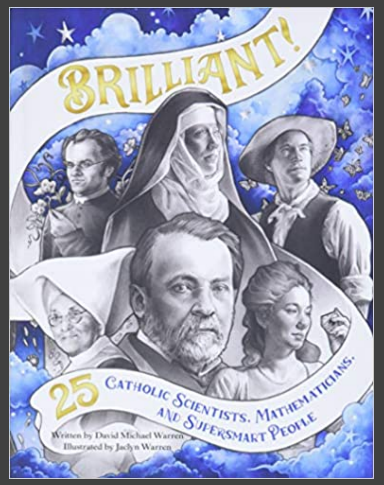
- **Nicholas Steno's** work on the formation of rock layers and the fossils they contain was crucial to the development of geology and history of the development of the earth.
- After his ordination to the priesthood, he suspended his scientific endeavors but what he had accomplished in science earned him the name of Father of Modern Geology

- **George Lemaitre** used scientific data to describe the Universe. He believed that Philosophy and Theology were separate from science. "The existence of God is not the work of science."
- He said, "Science is an exercise in revealing the mind of God."
- Some of his most important discoveries were made during his priesthood and supported by the Church

Yesterday, Today, and Tomorrow

- The popular narrative of today is that faith and science are irreconcilable foes that are locked in a constant battle with one another.
- Nicolas Steno and George Lemaitre are two men of science who saw no irreconcilable differences between their science and their deep Catholic faith; nor did the Catholic Church suppress or condemn their discoveries.
- Looking toward tomorrow, the Catholic Church's support of Astronomy is ongoing including supporting the Vatican Advanced Technology Telescope, Safford, AZ





RESOURCES

- How the Catholic Church Built Western Civilization by Thomas E. Woods, Jr.
- Brilliant: 25 Catholic Scientists, Mathematicians, and Supersmart People by David Warren