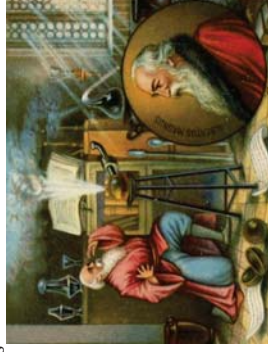


# Catholic Culture—Science

- **Antients Philosophers of Science** (500 BC to 300)
  - Great Scientists of the Ages
- **Medieval Scholars** (1000-1300)
  - Scientific Method, Rise of Universities
  - Influence of Aristotle
- **Discoveries in Astronomy** (1300-1700)
  - Theory of “Impetus” (Buridan, Albert of Saxony)
  - Earth Rotates on its Axis (Oresme)
  - Non-geocentric Universe (Nicolas of Cusa, Copernicus)
  - Elliptical Orbits (Kepler)
- **Catholic Scientists**
  - Math, Medicine, Life Sciences, Optics, Mechanics,
  - Atomic Theory, Electronics, Chemistry, Acoustics, Geology,
  - Egyptology, Mineralogy, Seismology, Aviation, Hydraulics
- **Science vs. Religion Scam**
  - 19<sup>th</sup> Century invention of Secular Academics
  - Frauds: Galileo, Bruno, Campanella
- **True Martyrs of Science**
  - Lavoisier, French Revolution
  - Tchernavin, Soviet Gulags
  - **Soulless Technocrats**, ‘Apolitical’ Nazis



# Pre-Modern Concept of Science

- Until 19<sup>th</sup> century, Science known as **Natural Philosophy**
  - Newton's Opus: **Mathematical Principles of Natural Philosophy**
- Modern Terms had different Meanings
  - **Philosophy** => Love of Wisdom (philo=love, sophia=wisdom)
  - **Science** = > Field of Knowledge acquired by Study (Medicine, Law, etc.)
  - **Physics** = > Nature or Physical World
  - **Soul** => Life Force, Animating Spirit
- **Astronomy** and **Astrology** were not separate fields
  - Christian philosophers distinguished science from superstition
  - Promoted Astronomy, condemned Astrology
- Aristotle's **Physics** investigated causes of movement
  - Analyzed everything in terms of ‘Form and Matter’
  - Aristotle's **On the Soul**, was commentary on Life Sciences
- **Alchemy** was an experimental science
  - Practiced by charlatans as well as best scientists of the day
  - No clear division between “good” and “bad” alchemy



# Ancients Scientists

- **Aristotle**
  - **Physics** and Biology treatise considered authoritative for 1800 years
- **Euclid's**
  - **Elements of Geometry** used as text until 1900's
- **Ptolemy**
  - Ptolemaic model of the Universe used until age of Kepler and Newton.
- **Erathosthenes**
  - Used scientific reasoning and careful surveillance to measure size of the earth accurately in 200 B.C.
- **Hippocrates**
  - Father of Modern Medicine. Trained doctors according to scientific methods.
- **Galen**
  - Catalogued all Medical and Anatomical Knowledge from the Ancients. Used as a reference until 12<sup>th</sup> century.
- **Archimedes**
  - Greatest scientist and inventor of his age. Defined laws of buoyancy.

# Scientific Method

- **Robert Grosseteste** (1240)
  - Established systematic method of performing a Scientific experiment
- **Albert the Great** (1260)
  - Greatest scholar of his age. Published catalog of Natural Sciences. Began integration of Aristotle with Biblical teaching and empirical observation. Teacher of Thomas Aquinas.
- **Roger Bacon** (1270)
  - Credited with writing about and establishing the “scientific method”.
- **William of Ockham** (1330)
  - Known for Ockham's Razor
- Early Universities were centers of learning, tradition of Free Inquiry
  - All teaching in Latin; only “learned” men aware of controversial theories!!!
- Many theories about the world proposed, but no method of proof existed.
- Aristotle was recognized as brilliant, but writings were controversial
  - Condemnations of 1277 Freed Christian Scientists to questions assumptions of Aristotle.
  - Aristotle Scholars were involved in Heretical sects
  - Some translations of Aristotle were disputed.

# Discoveries in Astronomy

- **Ptolemy's Almagest**
  - Written in 150 AD, included star catalogue, and all known astronomical knowledge
  - Identified planets in correct order, estimated sizes and distances from the sun
  - Estimated size of moon, distance from earth, predicted eclipses.
  - Used “epicycles” to explain planetary orbit. Accurate for navigation.
- **Ancients proposed theories but had no way of proving them.**
  - **Aristarchus of Samos** proposed a heliocentric universe in 250 BC.
  - **Democritus** proposed atomic theory of matter in 400 BC.
- **Ancients knew size of earth, but thought it was stationary**
  - Believe in stationary earth based on scientific observations, not Bible
  - Absence of wind, no visible parallax, seemed to indicate stationary earth
- **Movement of Planets was mysterious**
  - Some ancients thought planets and suns were ‘alive’ and self-propelled
  - Most ancients did not think a frictionless ‘vacuum’ in outer space was possible.
  - Planetary motion was not thought to be caused by same forces as terrestrial motion
- **Even movement of Terrestrial matter was mysterious**
  - Heavy objects reliably fell towards earth but . . .
  - Light objects blew away, birds and insects flew, smoke and fire moved toward heaven
  - **Earth, water, air, fire** (four elements) believed to be guided by independent forces

# Discoveries in Astronomy

- **Church was primary sponsor of Astronomy**
  - Astronomy studied by ALL advanced students, part of Quadrivium
  - Desired to understand God’s creation, and calculate holy days.
  - Church allowed scholars to propose outlandish theories, as long as they weren’t taught as fact.
  - **Almost all scientists and scholars of the Middle Ages were Church men.**
- **Medieval Scholars proposed many theories that informed Newton**
  - **Jean Buridan** proposed frictionless (vacuum) outer space, and perpetual motion of planets.
  - **Buridan and Albert of Saxony** proposed theory of **impetus** to explain motion.
  - **Nicholas Oresme** established ‘proof’ the Earth rotated on its axis (~1370)
  - **Nicholas of Cusa** proposed multiple worlds and a non-geocentric universe
  - **Nicholas Copernicus** proposed heliocentric universe, but his orbits were flawed
  - **Galileo** improved a telescope and discovered moons of Jupiter, phases of Venus
- **Work most essential to Newton was careful measurements**
  - **Tachio Brahe** made meticulous measurements of planets, proposed hybrid model
  - **Kepler** continued Brahe’s work, proposed elliptical orbits
  - Accurate Measurement need to PROVE motion of planets caused by gravity.

# Catholic Scientists

- **MATH**
  - **Pope Sylvester II** (Gerbert of Aurillac)—introduced Arabic numerals
  - **Fibonacci**—popularized Arabic numbers, discovered sequence
  - **Rene Descartes** —developed Cartesian co-ordinate system
  - **Blaise Pascal** —invented first mechanical calculator
- **LIFE SCIENCES**
  - **Andreas Vesalius**—published illustrated book of Human anatomy
  - **Fabricius**—embryology, public dissections for educational purposes
  - **Gregor Mendel**—established science of Genetics
  - **Athanasius Kircher** – disease caused by micro-organisms
  - **Louis Pasteur**—father of Microbiology, vaccines, advances in germ theory

# Catholic Scientists

- **PHYSICS (Before Newton)**
  - **Fr. Grimaldi**—Discovered diffraction of light, investigated free-fall of objects, greatly influenced Isaac Newton
  - **Fr. De Soto**—Proposed constant acceleration of free-falling bodies
  - **Fr. Riccioli**—Used finely calibrated pendulum to measure acceleration of Gravity.
- **PHYSICS (After Newton)**
  - **Fr. Bosovich**—Proposed atomic theory of matter fifty years before John Dalton. Calculated accurate manner of measuring size of celestial bodies.
  - **Charles-Augustin Coulomb** —Coulomb’s law defines attraction of charged particles
  - **Alessandro Volta** —Invented first Electronic Battery
  - **Andre Ampere** —Discovered Electro-magnetism

## Catholic Scientists—New Fields

- **EARTH SCIENCES**
  - **Blessed Fr. Nicholas Steno** — Laid foundations of geology and study of stratified layers of rock. “**Father of Geology**”
  - **Georgius Agricola**— ‘**Father of Mineralogy**’, wrote famous book on mining and metal works
  - **Fr. James Macelwane**— Pioneer in field of earthquake studies. “**Father of Seismology**”.
  - **Fr. Rene Just Huay**— ‘**Father of Crystallography**’
- **OTHER FIELDS**
  - **Fr. Marin Mersene**—Musical theorist, ‘**Father of Acoustics**’
  - **Fr. Rancisco de Terzi** — Studies in flight, known as ‘**Father of Aviation**’. Also created an alphabet for the blind prior to Braille.
  - **Louis Braille** was also a devout Catholic and organist in Paris
  - **Fr. Athanasius Kircher** — Invented field of Egyptology, study of Hieroglyphics (same guy as influenced germ theory)
  - Fr. Benedetto Castelli—Friend of Galileo, did important work in fluids. “**Father of Hydrodynamics**”.

## Science vs. Religion Scam

- **Catholic Universities were dedicated to Free Inquiry**
  - Contradictions and difficulties of religion were openly discussed
  - Entire scholastic method based on debate, disputation, and making distinctions
  - Aquinas showed there was no conflict between Faith and Reason
- **Contributions of Catholic Scientists were overwhelming, indisputable**
  - Invention spread throughout Christendom by Church, network of Monasteries
- **Anti-Catholic ideas about education spread during “Enlightenment”**
  - French “Free-thinkers” led by Diderot published “Encyclopaedia”
  - Voltaire and others mocked Church, equated supernatural with superstition.
- **Controlling Education was high priority of Revolutionary governments**
  - Revolutionary France CLOSED UNIVERSITIES, EXECUTED OPPONENTS
  - Secular, state-controlled education Top Priority of ALL totalitarian states

## Science vs. Religion Scam

- Galileo story is foundation of “Science vs. Religion” propaganda
  - No other incidents of Catholic oppression of scientists
  - **Bruno, Campanella** inquisition trials had nothing to do with science.
- “Conflict Thesis” arose in late 1800s after Darwin controversy
  - Led by academics who wanted ‘Secular’ control of education
  - Widely repeated falsehoods traced to John Draper, Andrew D. White.
- **Andrew Dickson White**
  - Wrote widely cited **History of Warfare of Science and Theology**
  - Founded Cornell University with “Radical new” (secular) approach to education
  - Politician and Diplomat, traveled often to Prussia (leader of mandatory, public-funded, secular schools)
- Anti-Catholic “Church vs. Science” screeches still cite A.D. White as primary source.

## Typical Anti-Catholic Rant

<http://www.huppi.com/kangaroo/1-sciencechristianity.htm>

- The Church has never been on the cutting edge of science -- on the contrary, it has been the one persecuting scientists. The list of those who earned the wrath of the Church reads like a Who's Who of Science: Copernicus, Bruno, Galileo, Descartes, Newton, Halley, Darwin, Hubble, even Bertrand Russell.
- The Church has also been on the wrong side of the social sciences for over 1,500 years, actively promoting slavery, anti-Semitism, the torture and murder of women as witches, sexual repression, censorship and the Inquisition, Crusades and other aggressive wars, and capital punishment for misdemeanors.
- This has given rise to a Christian field called *apologetics*, which attempts to defend the Church's errors, even claiming that science and Christianity are compatible friends, not enemies. But the atrocities and scientific errors were too profound, and stretched on for too many millennia, to be defended in any reasonable manner.



### Endnotes:

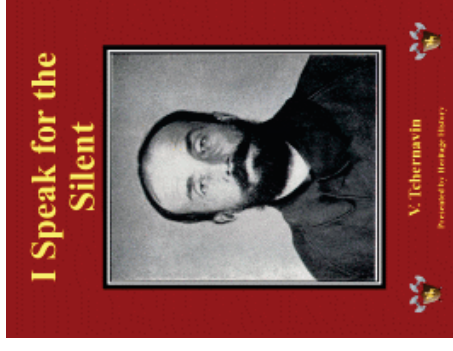
1. Unless otherwise indicated, all history concerning the Church's conflict with the natural sciences comes from Andrew White, *The Warfare of Science with Theology* (1895). This excellent and exhaustive work, whose scholarship has stood the test of time (and been enlarged by modern scholars), can be found online at [http://www.infidels.org/library/historical/andrew\\_white/Andrew\\_White.html](http://www.infidels.org/library/historical/andrew_white/Andrew_White.html).

# Rebuttle from Historian

- From a contemporary of White, and M.D. an historian of Medicine:
  - “The story of the supposed opposition of the Church and the ecclesiastical authorities to science is founded entirely on mistaken notions. Most of it is quite imaginary. Much of it is due to the exaggeration of the significance of the [Galileo incident](#). Only those who know nothing about the history of medicine and of science continue to harbor it.
  - “That Dr. White’s book, **contradicted as it is so directly by all serious histories of medicine and of science**, should have been read by so many thousands in this country, and should have been taken seriously by educated men, physicians, teachers, and even professors of science, only shows how easily even supposedly educated men may be led to follow their prejudices rather than their mental faculties, and emphasizes the fact that [anti-Catholic prejudice] still dominates the intellects of many educated people.”

# The ‘Real’ Martyrs of Science

- Meet **Vladimir Tchernavin**
  - Fisheries Scientist working for Soviets in Murmansk
  - Arrested and imprisoned for “wrecking”
  - Tortured to denounce fellow Scientists
  - Sent to slave labor camp; “played nice” for a year
  - Escaped with wife, child across Finland wilderness
- Wrote **I Speak for the Silent** in 1933
  - First book by escapee from Soviet camps
  - Written **\*\*BEFORE\*\*** Stalin’s great purge.
  - Ignored by press as “anti-Communist propaganda”
  - Caused ‘defection’ of American communists
  - Still not well known
- Tells stories of scientist/engineers imprisoned by Soviets
  - Hundreds of scientists and academics, imprisoned, killed, exiled
  - Their Crime was pointing out problems with “five year plan.”
  - Thousands denounced as “anti-Revolutionary” wreckers



# Modern Persecution of Science

- Modern examples of persecution of scientists include “Intelligent Design” and “Global Warming skepticism”

