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## The legacy of natural species and substantial form for Thomistic evolution

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# **The Legacy of Natural Species and Substantial Form for Thomistic Evolution**

**James R. Hofmann**

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Professor Emeritus: California State University Fullerton**

# **The Riccioli Protocol: When Scientific Evidence Encounters Theological Authority**

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## Two Case Studies

<b>Scientific Issue</b>	<b>Copernicus 1543</b>	<b>Darwin 1859</b>
<b>Theological context</b>	<b>Counter-Reformation</b>	<b>Anti-Modernism</b>
<b>Biblical texts</b>	<b>Joshua</b>	<b>Genesis</b>
<b>Vatican intervention</b>	<b>1616 decree</b>	<b>1909 Biblical Commission</b>
<b>Respondent</b>	<b>Giovanni Battista Riccioli</b>	<b>Erich Wasmann</b>

## Biblical Passages sometimes interpreted to assert that the Earth is stationary

- *Ecclesiastes* 1:5

"...the sun rises and the sun sets, and hurries back to where it rises..."

- *Psalms* 19:6

The sun "rises at one end of the heavens and makes its circuit to the other"

- *Psalms* 93:1

"... the world is firmly established; it cannot be moved."

- *Isaiah* 66:1

"Thus saith the Lord: Heaven is my throne, and the earth my footstool."

- ***Joshua* 10: 10-14**

"Then Joshua spoke to the Lord, in the day that he delivered the Amorrite in the sight of the children of Israel, and he said before them: Move not, O sun, toward Gabaon, nor thou, O moon, toward the valley of Ajalon. **And the sun and the moon stood still**, till the people revenged themselves of their enemies."

# Tycho Brahe 1546-1601

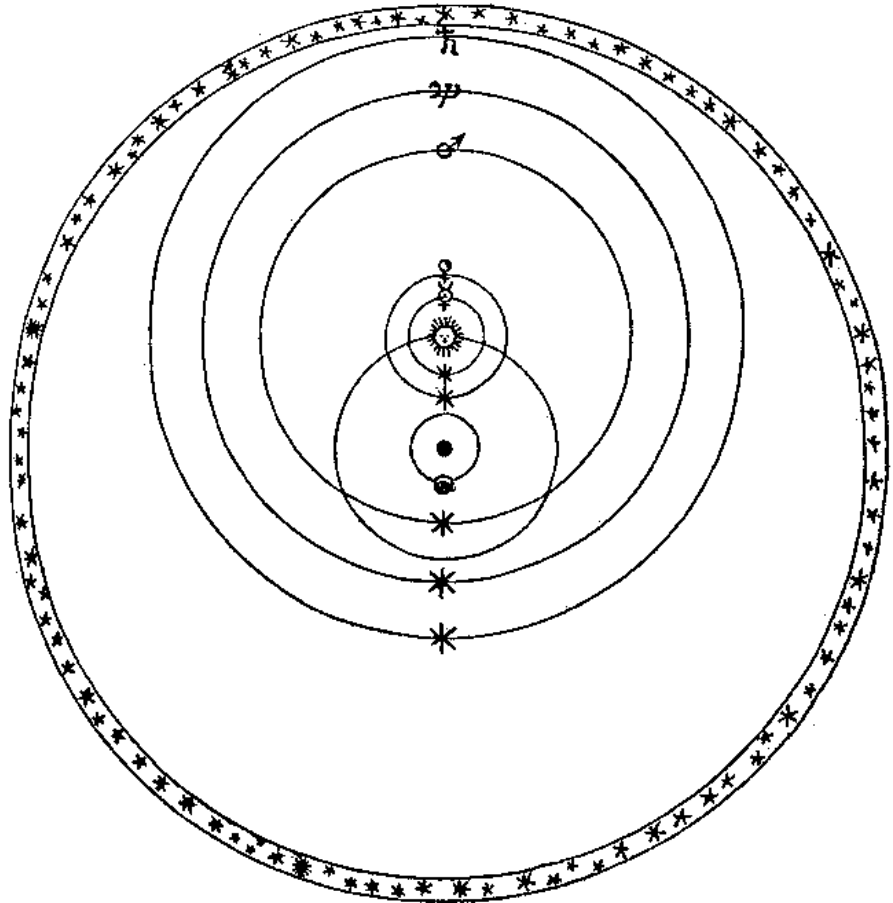


## Tycho's System as published in 1588

*Concerning the more recent  
phenomena of the ethereal  
World (**De mundi**)*

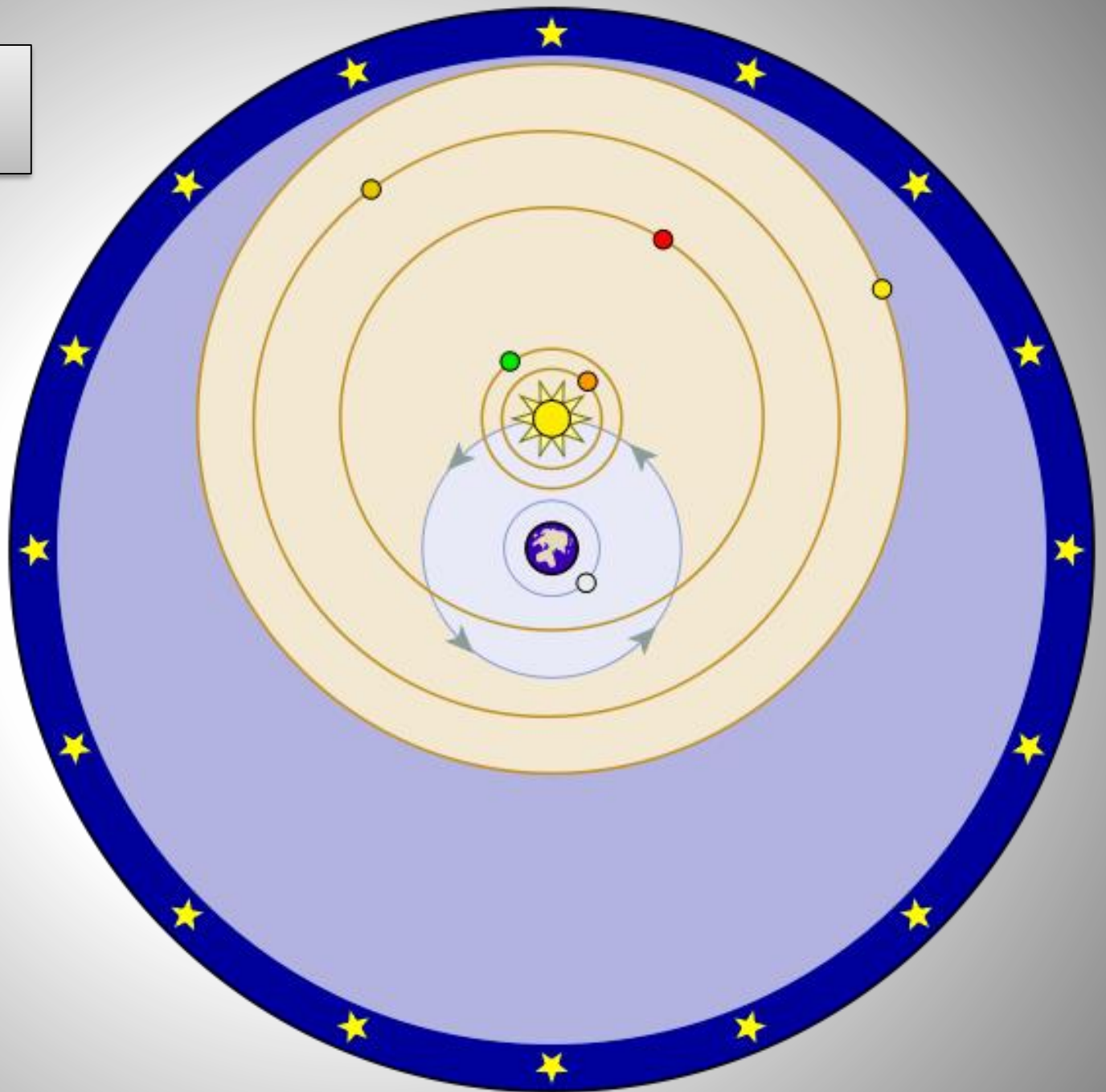
Mercury, Venus, Mars Jupiter and  
Saturn all orbit the sun..

NOVA MVNDANI SYSTEMATIS HYPOTYPOSIS AB  
AUTHORE NUPER ADINUENTA, QUA TUM VETUS ILLA  
PTOLEMAICA REDUNDANTIA & INCONCINNITAS,  
TUM ETIAM RECENS COPERNIANA IN MOTU  
TERRÆ PHYSICA ABSURDITAS, EXCLU-  
DUNTUR, OMNIAQUE APPAREN-  
TIIS CÆLESTIBUS APTISSIME  
CORRESPONDENT.





**Tycho's System as published in 1588**





**Cardinal Bellarmine**, expressed an influential Catholic position in his **1615 [letter to Foscarini](#)**:

“... to say that, assuming the earth moves and the sun stands still, all the appearances are saved better than with eccentrics and epicycles, is to speak well; there is no danger in this, and it is sufficient for mathematicians. But to want to affirm that the sun really is fixed ...and that the earth ... revolves with great speed around the sun, is a very dangerous thing, not only by irritating all the philosophers and scholastic theologians, but also by injuring our holy faith and rendering the Holy Scriptures false.”



The 1616 Congregation of the Holy Office Consultors  
report on the Copernican Model

**I.** The sun is the center of the world and completely devoid of local motion: declared **“formally heretical”**

(directly contrary to a doctrine of faith based in scripture)

**II.** The earth is not the center of the world, nor motionless, but it moves as a whole, and also with diurnal motion: declared

**“erroneous to the faith”**

(a conclusion contrary to scripture because it is inferred from the formally heretical claim that the sun is stationary)

Copernicus' heliocentric book was **“suspended until corrected”**.

The 1616 decree was communicated personally to Galileo by Cardinal Bellarmine who warned him privately not to hold or defend the prohibited views.





## Example of a Copernicus passage to be excised according to the edict of 1616

“So vast, without any question, is the Divine Handiwork of the Almighty Creator.”

(Copernicus’ explanation for why no observations of stellar parallax have been accomplished)

tillantia illorum lumina demonstrant. Quo indicio maxime discernuntur à planetis, quodq; inter mota & non mota, maximam oportebat esse differentiam. ~~Tanta mirum est divina hoc~~

~~Operis Max. fabrica.~~

~~De triplici motu telluris demonstratio.~~

*De hypothese triplicis motus <sup>XI</sup> terre, eiusq; demonstratione.*

**C**Vm igitur mobilitati terrenæ tot tantaq; errantium siderum consentiant testimonia, iam ipsum motum in summa exponemus, quatenus apparentia per ipsum tanquam hypotesin demonstrantur, quem triplicem omnino oportet

*The Inquisition’s censorship of De revolutionibus, in Galileo’s hand in his personal copy.*

1651: Jesuit Superior General Francesco Piccolomini issues the *Ordinatio pro studiis superioribus*

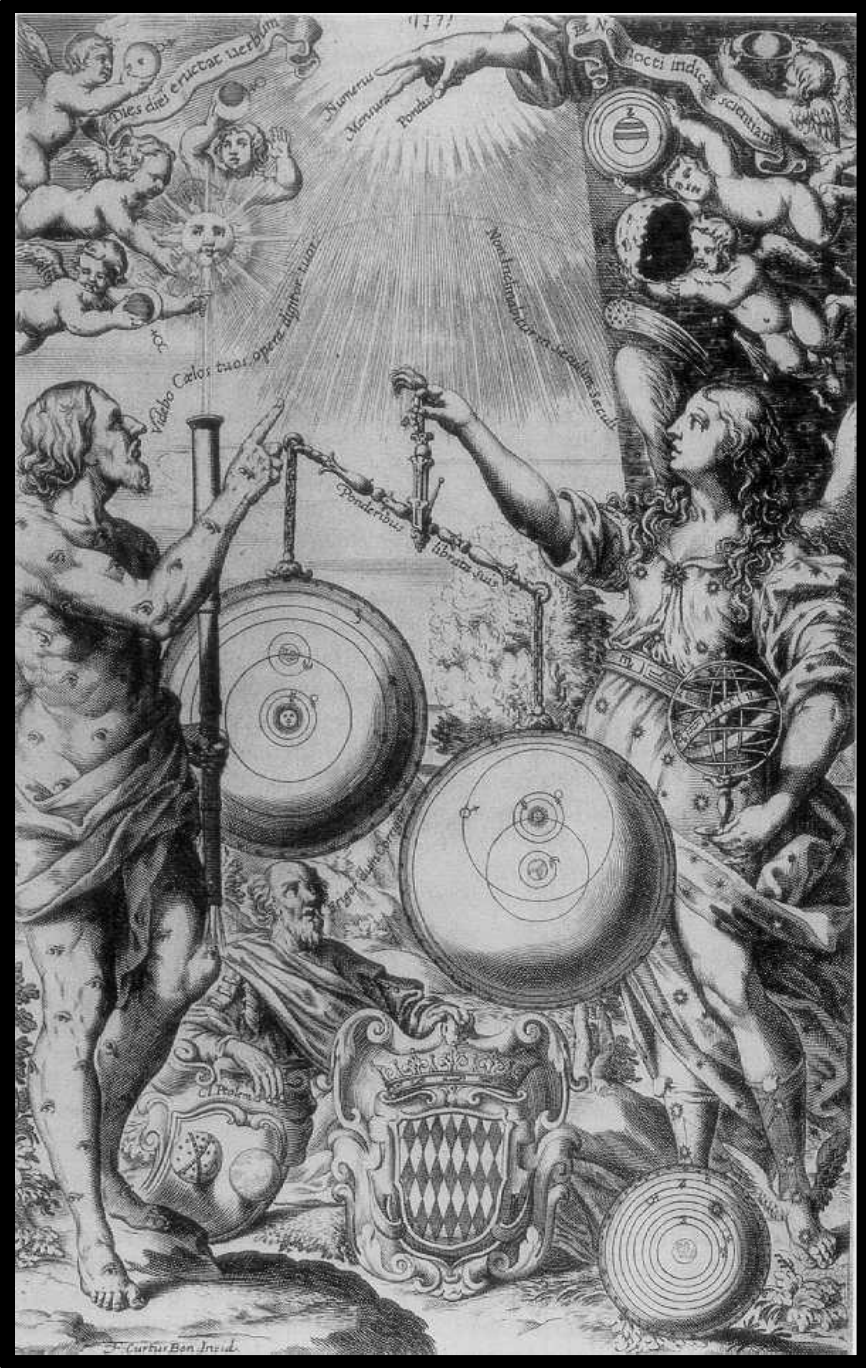
One of the doctrines prohibited in Jesuit schools was the motion of the earth:

35. **Terra movetur motu diurno**; planetae, taquam viventia, moventur ab intrinseco. Firmamentum stat.

**Giovanni Battista Riccioli, S.J.**  
**(1598-1671)**

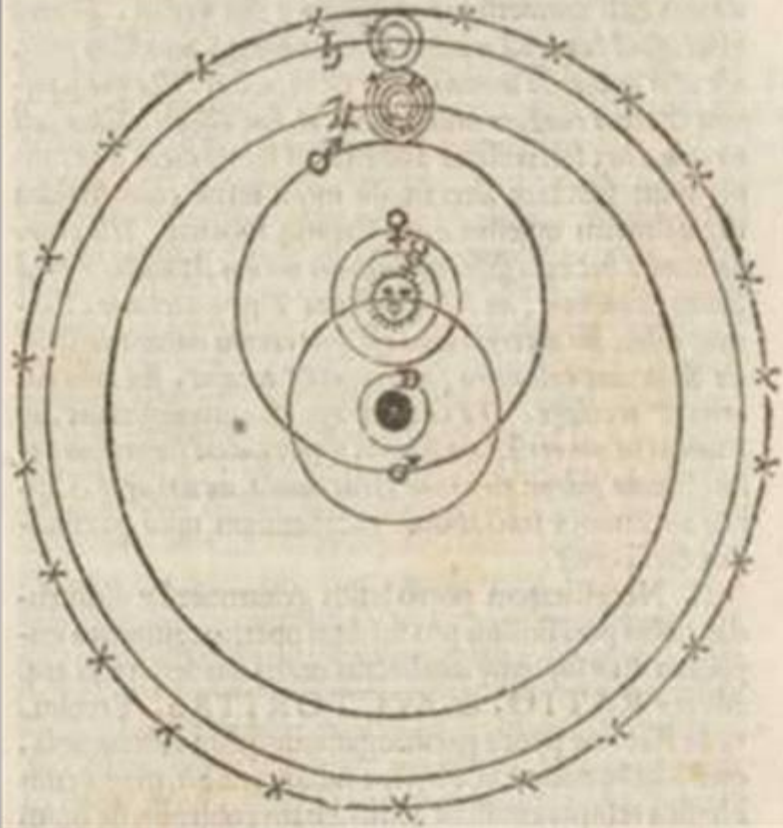


Frontispiece from Riccioli's  
*Almagestum Novum* (1651)





V. Systema Nostrum.



Sol	Mercurius	Venus	Luna
Terra	Mars	Jupiter	Saturnus

## Riccioli's 1651 planetary system:

Mercury, Venus and Mars orbit the Sun  
Moon, Sun, Jupiter and Saturn orbit the Earth





Detail of Riccioli's 1651 frontispiece

## The Riccioli Protocol

When scientific evidence is inconclusive, adopt a theory compatible with both the evidence and the theological consensus.

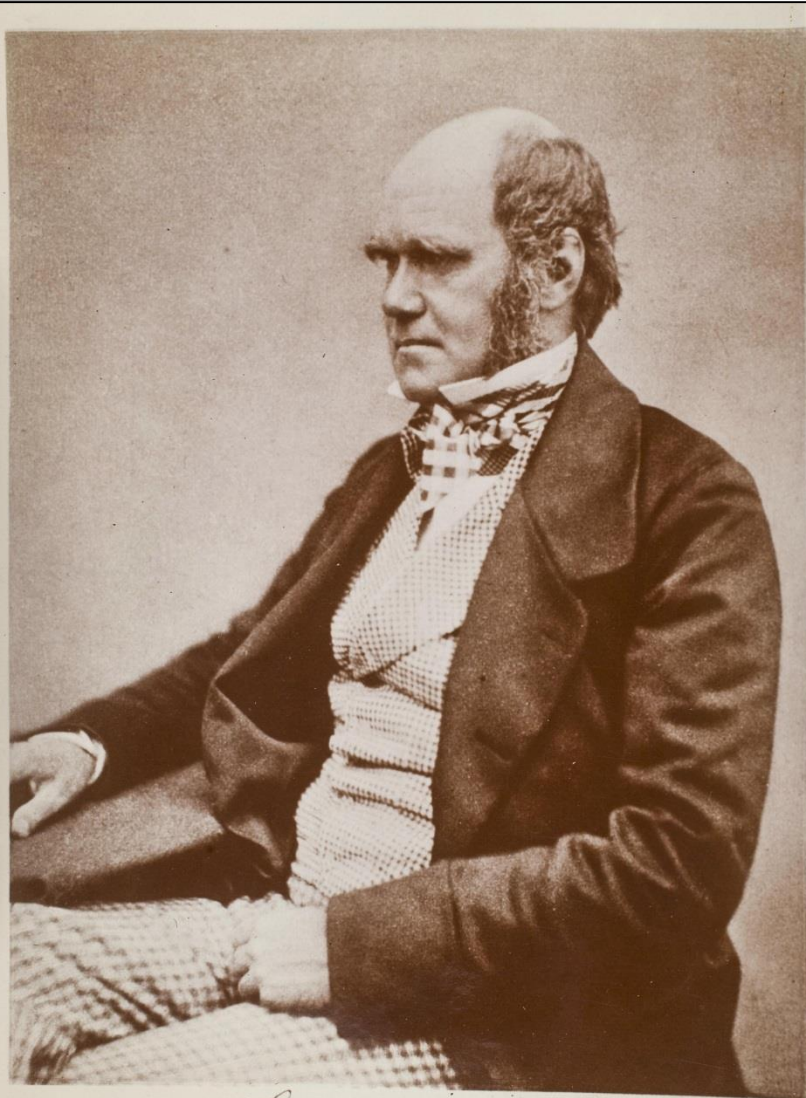
By having the planets orbiting the sun while the sun orbits the earth, Riccioli could:

- account for most of the observational data
- avoid theological controversy

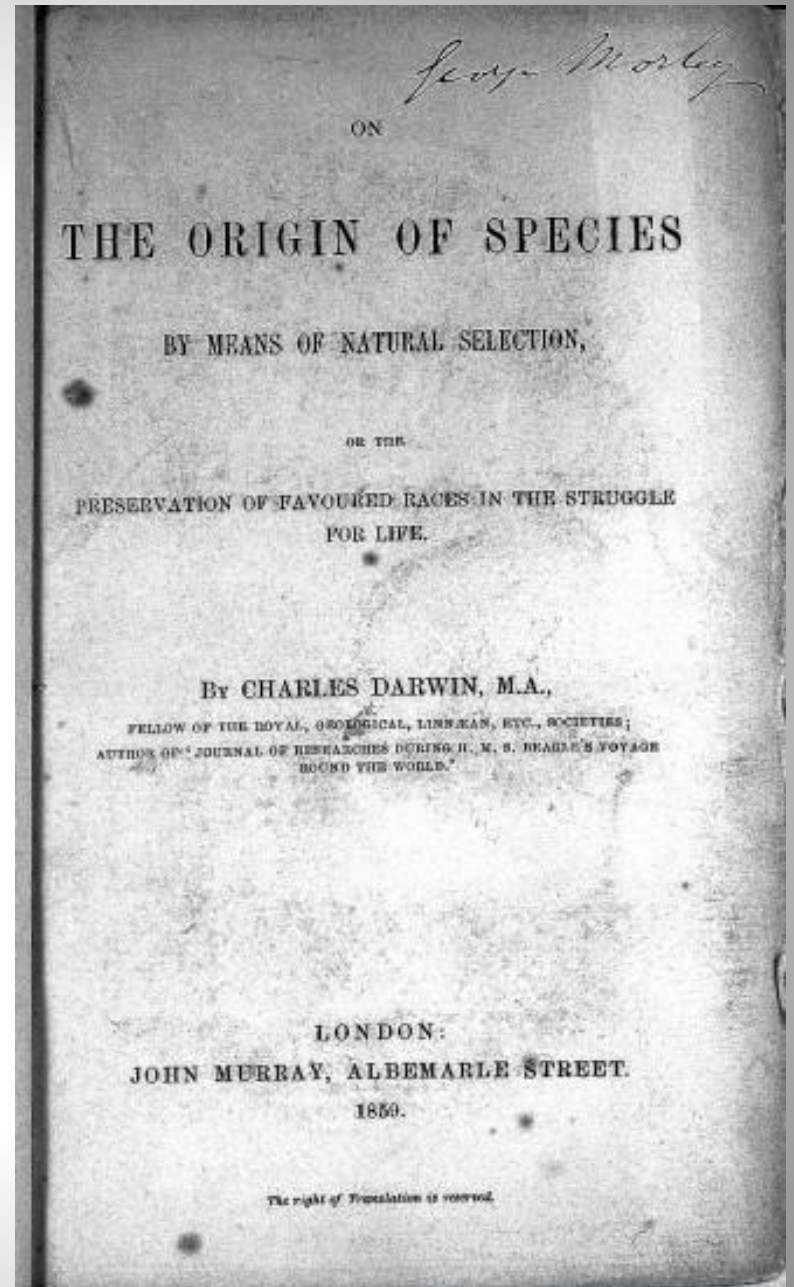
Riccioli: "... all Catholics are obliged by prudence and obedience (*Prudentia tum Obedientia*) not to teach categorically the opposite of what the decree lays down."



November 1859



*Charles Darwin*



**Thomas Huxley**  
**1863**

573.1  
H98

**EVIDENCE**

AS TO

**MAN'S PLACE IN NATURE.**

BY

**THOMAS H. HUXLEY, F.R.S., F.L.S.,**

PROFESSOR OF NATURAL HISTORY IN THE JERMYN STREET SCHOOL OF MINES.

NEW YORK:

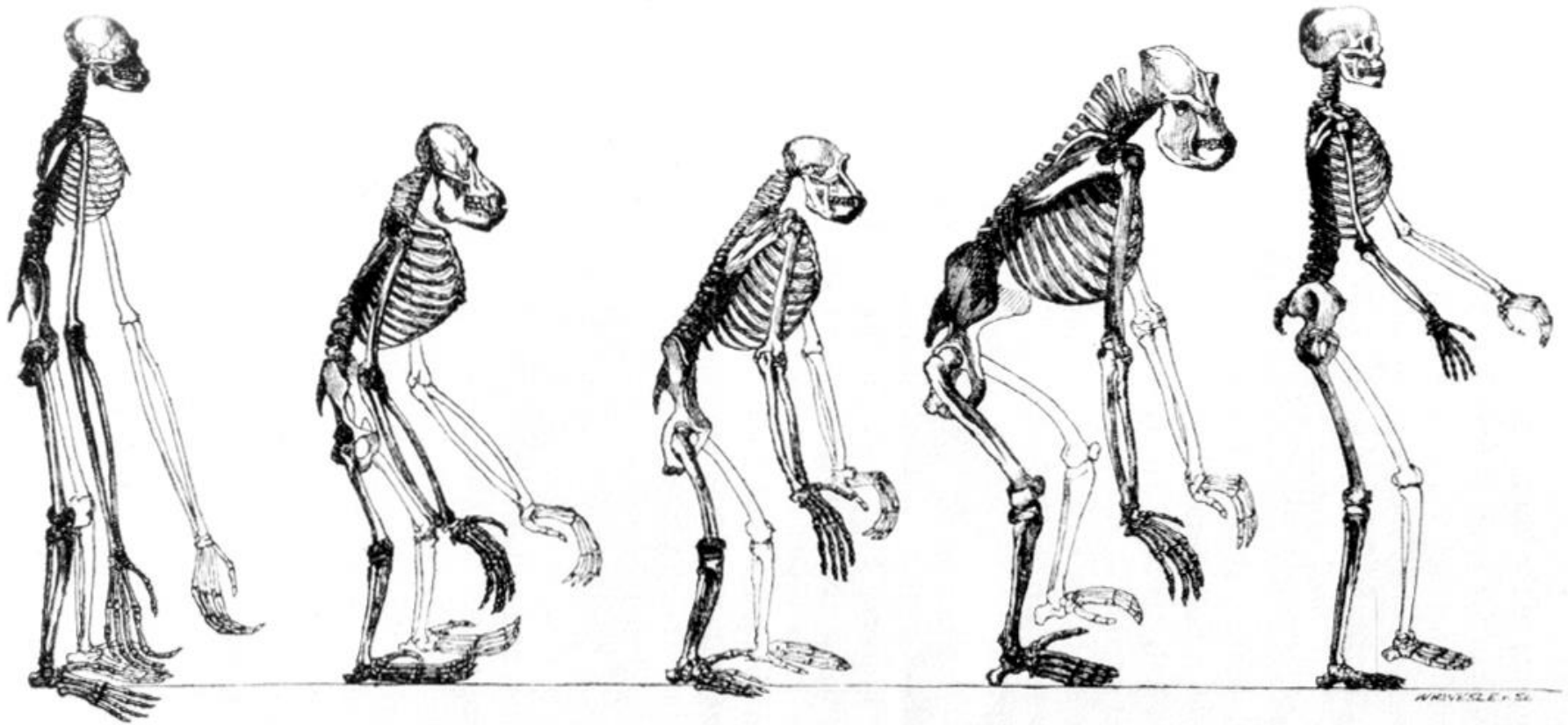
**D. APPLETON AND COMPANY,**

445 & 445 BROADWAY.

1863.



# T. H. Huxley, *Evidence as to Man's Place in Nature*, 1863



GIBBON.

ORANG.

*Skeletons of the*  
CHIMPANZEE.

GORILLA.

MAN.

*Photographically reduced from Diagrams of the natural size (except that of the Gibbon, which was twice as large as nature), drawn by Mr. Waterhouse Hawkins from specimens in the Museum of the Royal College of Surgeons.*



THE  
DESCENT OF MAN,

AND  
SELECTION IN RELATION TO SEX.

By CHARLES DARWIN, M.A., F.R.S., &c.

IN TWO VOLUMES.—Vol. I.

WITH ILLUSTRATIONS.

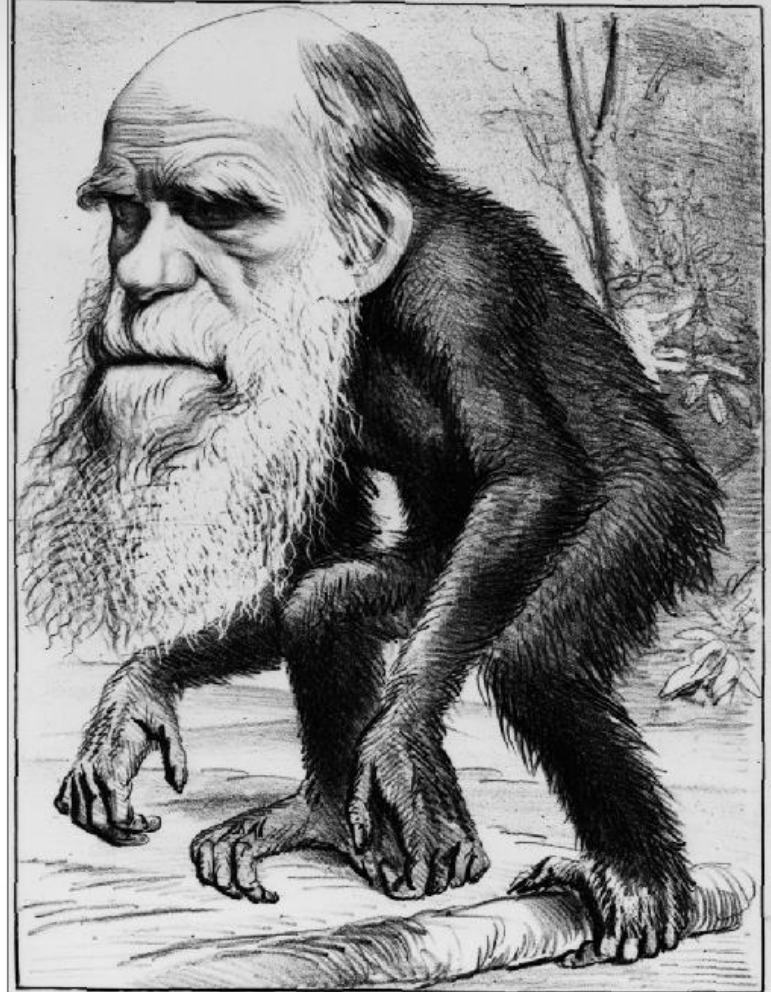
LONDON:  
JOHN MURRAY, ALBEMARLE STREET,  
1871.

[The right of Translation is reserved.]

WEDNESDAY.]

THE HORNET.

[MARCH 22ND, 1871.



A VENERABLE ORANG-OUTANG.  
A CONTRIBUTION TO UNNATURAL HISTORY.

*The Hornet* March, 1871

## The Anti-Modernist theological context

- 1864 **Pius IX**: the Syllabus of Errors
- 1879 **Leo XIII**: *Aeterni Patris*  
(the Neo-Thomist revival)

### **Pius X [1903-1914]**

- 1907 *Lamentabili sane exitu*
- 1907 *Pascendi* (contra Modernism)
- 1909 decree of the Pontifical Biblical Commission on *Genesis 1-3*
- 1910 Oath against Modernism required (till 1967)
- 1914 the 24 Theses of Thomism



## **Some Thomistic doctrines relevant to natural history**

- 1. Hylomorphism: living organisms are composites of matter and substantial form.**
- 2. Created life constitutes a hierarchy of static substantial forms: plants, animals, human**
- 3. Aquinas' commentary on Genesis kinds or "species": bears, lions, serpents, lizards, tortoises, deer, goats etc**

# Problem Areas for Thomistic Evolution

1. Adjustment of the concept of substantial form to allow new forms (species) to emerge through gradual natural processes
2. Reconciliation of human evolution and the doctrine of original sin

## Three approaches to Catholic Theistic Evolution: late 19<sup>th</sup>- early 20<sup>th</sup> centuries

- **Teilhard de Chardin (1881-1955)**  
[1926: “Aristotelian hylomorphism represents the projection of modern evolution on a world without duration”.]
- **Reliance upon Secondary Causation**
- **Reliance upon “Natural Species”**

Theological acceptability

## Examples: 19<sup>th</sup> century reliance upon secondary causation

- England: **St George Jackson Mivart**  
*On the Genesis of Species* 1871

- France: **François Maria Dalmace Leroy** O.P.  
*The Evolution of Organic Species* 1887  
*Evolution Limited to Organic Species* 1891

- United States: **John Zahm**  
*Evolution and Dogma* 1896

“theistic evolution” and “derivative creation”



## Examples: 20<sup>th</sup> century reliance on secondary causation

France: **Henry de Dorlodot** (1855-1929)

*Le Darwinisme au point de vue*

*de l'Orthodoxie Catholique* (1921)



England: **Ernest C. Messenger** (1888-1951)

*Evolution and Theology:*

*The Problem of Man's Origin* (1932)





**Erich Wasmann**  
(1859-1931)

Born in Meran, Austria  
Entered the Jesuit novitiate in  
Exaten in 1875  
Ordained in 1888



Wasmann in approximately 1900





**Erich Wasmann (1859-1931)**

World renowned entomologist, widely published author and public lecturer; co-author with Hermann Muckermann of the “evolution” articles in the 1909 volume 5 of *The Catholic Encyclopedia*

**polyphyletic evolution** of “systematic species” within the lineages of distinct “natural species”

Rejection of monophyletic evolution (universal common descent)

# Haeckel and Wasmann

Häckel und Wasmann



H. Ja, Verehrtester, bei Gebrauch dieser Lupe wird Ihnen das Kreuz wohl immer hinderlich sein.

**Haeckel:**

**“Yes, dear fellow, by using that glass, the cross is always going to get in the way”.**

[*Kladderadatsch* 1907]

Wasmann  
after 1910

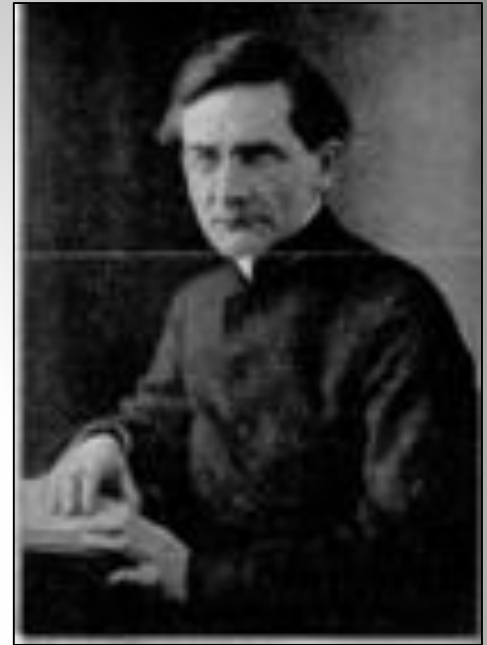




**Erich  
Wasmann**  
(1859-1931)

## Natural species [*natürlichen Arten*]

- Are scientifically motivated and are identified by empirical data
- Are distinguished from the “systematic species” [*systematischen Arten*] that evolve in diverse lineages
- Are **not** identified with particular biblical “kinds”



**Hermann  
Muckermann**  
(1877-1962)



**Melchior Neumayr**  
(1845-1890)

“A **natural species** consists of the members of one series of forms, connected phylogenetically by descent. This definition of the natural species was given by **Neumayr** many years ago, and so it is by no means an invention of theologians, as the monists constantly assert. It is true that Neumayr spoke of ‘palaeontological’, and not of ‘natural’ species, but he meant exactly the same thing.”  
(Wasmann 1910, 488)

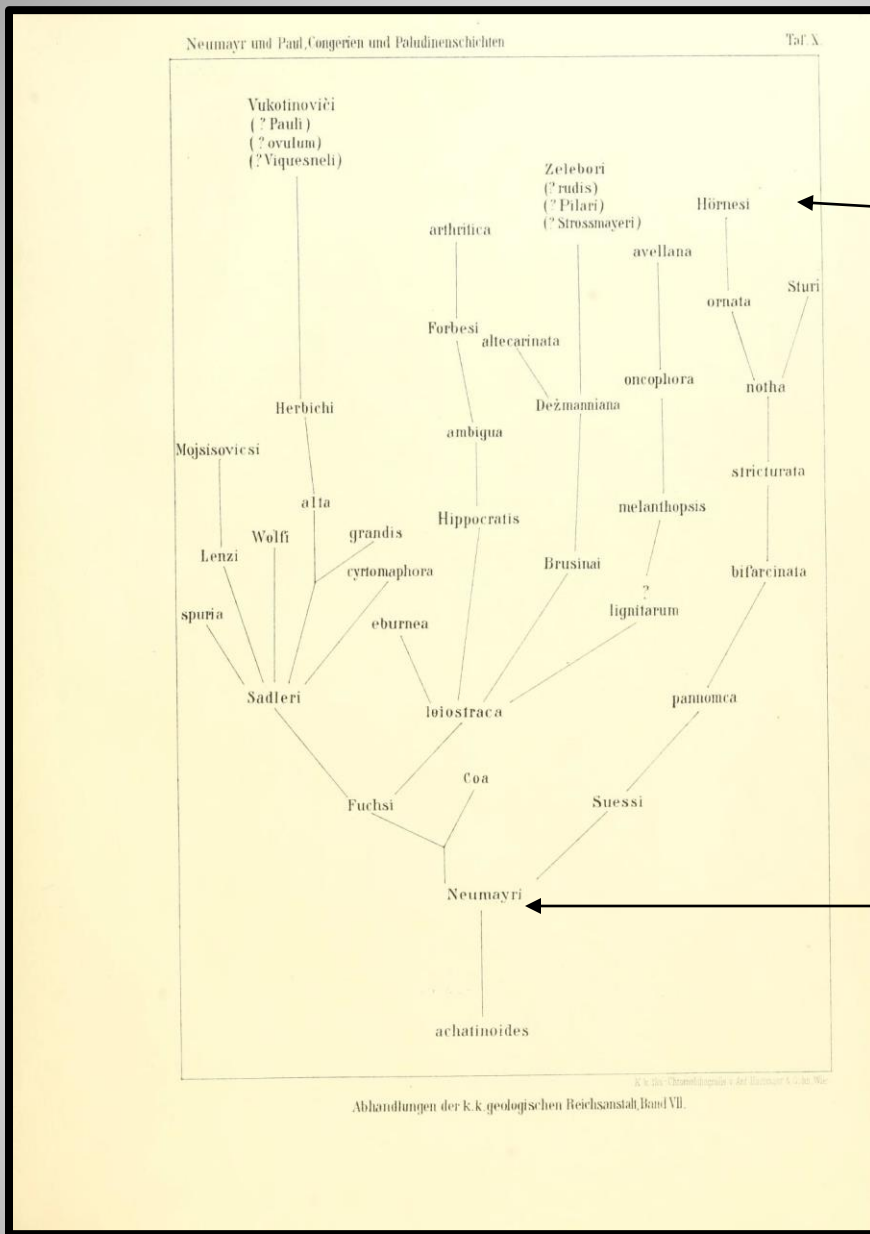




Preuss. Lith. Anst. v. M. 1875. 12

J. K. W. Neumann, Neudamm, 1875. 12. 11.

Neumayr's illustration of a gradual fossil sequence from *Vivipara neumayri* (1-4) through several transitional forms (5-20) culminating in *Vivipara hörnesi* (21). Neumayr & Paul 1875; plate IV



*Vivipara  
hörnesi*

*Vivipara  
neumayri*

Neumayr's Table X showing a tentative phylogenetic tree for *Vivipara* (Neumayr & Paul 1875)



## From Wasmann's Berlin lectures

“... man would have become man completely only when the organized matter had so far developed through natural causes, as to be capable of being animated with a human soul. The creation of the first human soul marks the *real creation of the human race*, although we might assume that a natural development lasting millions of years had preceded it.”

**March 1908: letter of admonition to Wasmann  
from Jesuit Superior General Xaver Wernz**

1909 decree on Genesis  
by the Pontifical Biblical Commission

Do the various exegetical systems excogitated and defended under the guise of science to exclude the literal historical sense of the first three chapters of Genesis rest on a solid foundation?

Answer: In the negative

## Dubium 3: 1909 decree on Genesis by the Pontifical Biblical Commission

In particular may the literal historical sense be called in doubt in the case of facts narrated in the same chapters which touch the foundations of the Christian religion: as are, among others, the creation of all things by God in the beginning of time; the special creation of man; the formation of the first woman from the first man ... [negative]

## From Wasmann's Notes

The internal submission which the decree requires of us is not an act of faith (through which we hold something as true *fide divina*, since it is revealed by God). It further demands, not an unconditional, but only a conditional belief in the contents of the decree. It is, expressed positively, an internal act of divine veneration (*religio*), a willing submission of our intellect to the teaching authority of the Church as an institution instated by God, and indeed an act of limited strength. While it requires firm consent, it nevertheless is curtailed by two important restrictions, the first being more general and the second of a more specific nature. The first restriction applies to all and reads: "I hold it as true until the teaching profession of the Church decides otherwise". The second restriction depends on one's level of knowledge: if he as an expert has sound evidence against the objective correctness of the decree, he has no obligation of internal consent to its truth, but nevertheless the obligation of obedient silence (*silentium obsequiosum*), which already pertains to external submission.

“... if he as an expert has sound evidence against the objective correctness of the decree, he has no obligation of internal consent to its truth, but nevertheless the obligation of **obedient silence** (*silentium obsequiosum*), which already pertains to external submission.”

“... Wenn für ihn als Fachmann evidente Gründe gegen die objective Richtigkeit des Dekretes vorhanden sind, hat er nicht die Verpflichtung der inner Zustimmung zur Wahrheit derselben, wohl aber die Verpflichtung zum **gehorsamen Schweigen** (*silentium obsequiosum*, das bereits zur äusseren Unterwerfung gehört.”



# Wasmann's Natural Species as a Riccioli Protocol: [an analogue to geostatic planetary models]

Giovanni Riccioli

Erich Wasmann



Reliance upon natural  
species and progressive  
creation (1903-1931)

## Other examples of early 20<sup>th</sup> century usage of natural species

- **Joseph Gredt** (1863-1940)  
*Elementa Philosophiae Aristotelico-Thomisticae*,  
13 Latin editions 1900-1961 & German translation 1935
- **Ludwig Ott**  
*Grundriss der Katholischen Dogmatik* 1952
- **Richard P. Phillips** (retired 1961)  
1934. *Modern Thomistic Philosophy: An Explanation for Students*  
vol 1: *Philosophy of Nature*
- **Mortimer Adler** (1902-2001)  
1940: *Problems for Thomists: The Problem of Species*
- **Anthony C. Cotter** (1879-1954)  
1947: *Natural Species: An Essay in Definition and Classification*

## Implications for future Catholic Theistic Evolution

- After 1950 and especially after Vatican II, progressive creation gave way to acceptance of universal common descent within theistic evolution.
- The “natural species” concept was dropped from the lexicon of Catholic theistic evolution.
- Can Thomistic versions of evolution continue to invoke substantial forms in the absence of natural species?

## **Pius XII 1950 *Humani generis***

For these reasons the Teaching Authority of the Church does not forbid that, in conformity with the present state of human sciences and sacred theology, research and discussions, on the part of men experienced in both fields, take place with regard to the doctrine of evolution, in as far as it inquires into the origin of the human body as coming from pre-existent and living matter - for the Catholic faith obliges us to hold that souls are immediately created by God.

## **Pius XII 1950 *Humani generis***

When, however, there is question of another conjectural opinion, namely polygenism, the children of the Church by no means enjoy such liberty. For the faithful cannot embrace that opinion which maintains that either after Adam there existed on this earth true men who did not take their origin through natural generation from him as from the first parent of all, or that Adam represents a certain number of first parents. Now it is in no way apparent how such an opinion can be reconciled with that which the sources of revealed truth and the documents of the Teaching Authority of the Church propose with regard to original sin, which proceeds from a sin actually committed by an individual Adam and which, through generation, is passed on to all and is in everyone as his own.