

# Unit 4: Artist as Scientist

## Announcements:

midterms handed out at end of class

Art sessions next week bring materials

field trip directions and information posted on website in week 6

We will go over directions Tuesday.

## Wrap up Unit 4

Maria Sibylla Merian

earth map update

## Midterm review

## Hand out midterm



# Unit 4 Lecture Concepts

- Renaissance:
  - Rise of the scientific method
  - Innovative techniques and materials
- Leonardo da Vinci – the Renaissance Man
  - His life and work
- Maria Sybilla Merian – 1<sup>st</sup> lady of Natural History
  - Her life and work

# Unit 4 Activities

- Connections Concept Map
  - Renaissance
- Artist Summary write up : 1 page on each
  - Leonardo da Vinci
  - The life of Maria Sibylla Merian
- Earth map update

# Unit 4 terms

Renaissance

fresco

cabinet of curiosities

spontaneous generation

Surinam, S. America

# CCM5a. The Renaissance 1400 – 1700

- Birth of the Scientific method
- settled agriculture
- Originated in Italy
- Catholic Church remained the ultimate power.
- Pockets of pagan religions existed, stemming from our H/G past.
- Rebirth of the scientific spirit.
- Revival of ancient Greece
- Influenced philosophy, literature, politics, art and technology .
- Led to the expansion of European countries- technological and geographic exploration
- Experimentation was encouraged



## 5B. Art of the Renaissance 1400 - 1700

- Revival of the **realism** of Classic Greece
- Artists gained an important position in society
- Religion-based themes BUT
- Late renaissance- landscape, portraits and still life also became popular
- **Realism based on observation**
- experimentation of art materials
- Mastery of illusion painting techniques
  - Foreshortening
  - Quadratura
  - Sfumato
  - linear perspective



*Lamentation over the Dead Christ, Andrea Mantegna,*

# 5C. Attitude towards Nature

- Human superiority over nature.
- Wilderness = bad evil
- Taming wilderness remains a moral act.
- Learning about nature in order to better understand and control nature.
- Curiosity toward natural processes, concepts, physics and behavior to answer questions about the world and life.
- Viewing nature as a commodity.



# Artist as Scientist

**Maria Sibylla Merian 1647  
– 1717**

The first lady of Natural  
History.

Self-made ecologist,  
biologist and artist

She lived life on her own  
terms, in the male-  
dominated world of  
science.



# Artist As Scientist

Maria was born in 1647 in Frankfurt Germany.

Step-father - Flemish still-life painter

Family-owned engraving business and publishing house

exposed at an early age to natural history and engraving from her step-father.



# Shift in gender position

- Single women could not live alone- married, convent or live with male relative, care taker of parents.
- Divorce was unheard of and could only be initiated by the husband.
- Legally belonged to their husbands.
- Women were not capable of higher thought
- upper classes--Liberal arts education ie music only a few years
  - lower classes-- trades
- No rights to property, to a own business
- It was unheard of for women to travel unaccompanied.
- Lifespan = 55 years average
- Marriage = 16 years for women
- 10+ children for lower classes

# Artist As Scientist

In Germany of the 1600's  
social upheaval and religious  
hysteria.

Pagan or folk religions of our  
Neolithic past were still  
practiced in rural areas.

Threatened the Church

Superstition, suspicion and  
persecution of nature- based  
religions and activities.



# Artist As Scientist

## spontaneous generation:

The popular theory of the origin of the “lower animal” life forms.

the belief that lower forms of life arose from inanimate substances

“lower” life forms were considered unimportant for study.



# Artist As Scientist

1663 Married student of her step father's at 16 years of age

Maria was a very unconventional wife:

1<sup>st</sup> child was born 3 years later

2<sup>nd</sup> born 10 years later

Only 2 daughters 20 years of marriage.



# Artist As Scientist

Tutored by her step father, she had been painting from a very young age.

Early paintings – Flemish still life tradition.

1666 her first daughter was born

1668 she published her 1<sup>st</sup> book of flowers  
-primarily used for embroidery patterns



# Artist As Scientist

Maria continued her interest in insects and plants. Collecting specimens she raised and noted their transformations in her drawings. Discovered and documented their complex life cycles



# Artist As Scientist

- Maria also began to note that specific plants and flowers had certain species of insects were associated with.
- Although not coining the term herself, later this is known as co-evolution
- Two species evolving together and developing a mutually beneficial relationship.

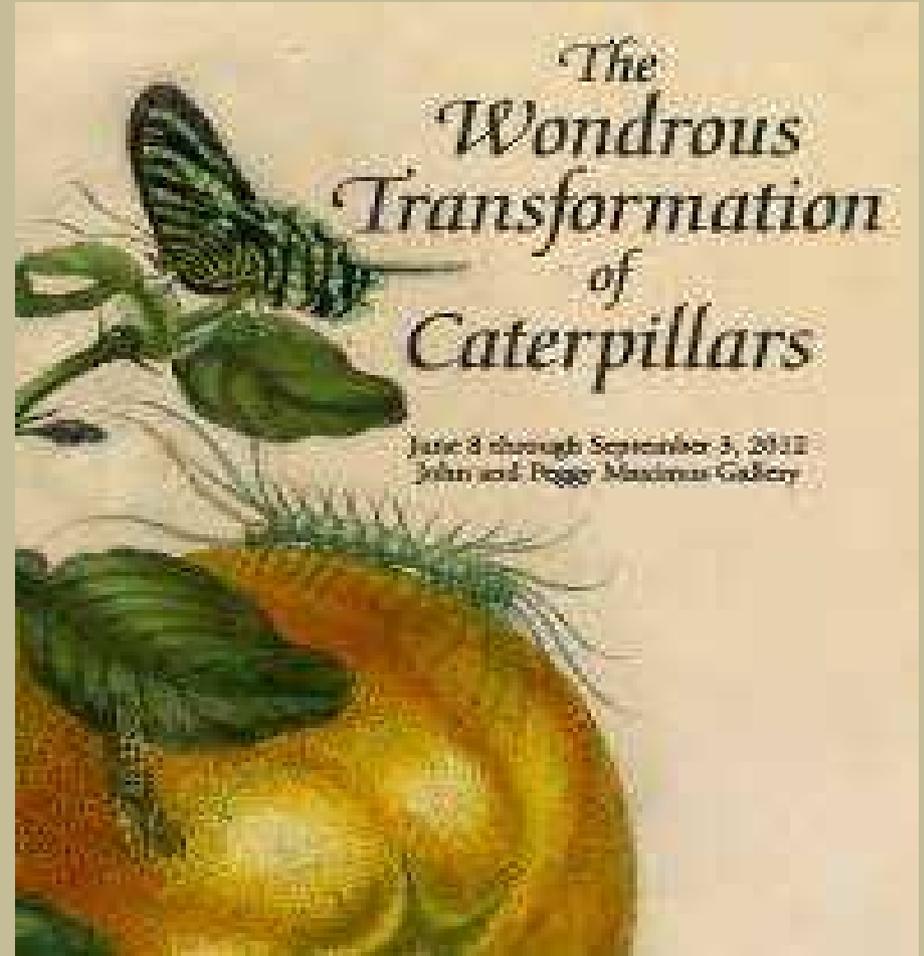


# Artist As Scientist

In 1676 published her 1<sup>st</sup> book on the metamorphosis of caterpillars—

She discovered through observations:

- many insects have distinct life cycles
- certain insects relied on specific plant species for certain stages of their life.
- Larval plant – leaves for larva
- Nectar plant – nectar for adults



# Artist As Scientist

- Fifty full color engravings depicting
  - The plant species
  - The insect associated with that plant
  - All the life stages- caterpillar, chrysalis and the male and female adults
- Copper plate engraving
  - The printing method of the time
  - Very tedious and time consuming



# Copper Plate Engraving

Plate of copper is covered in acid resistant wax

Image is engraved exposing metal

Acid bath to deepen engraved image

Wax then removed

Ink is applied to surface with a cloth.

Excess ink is wiped clean, leaving the ink in the engraved areas only

The plate is run through a press with damp paper which transfers the image to the paper.



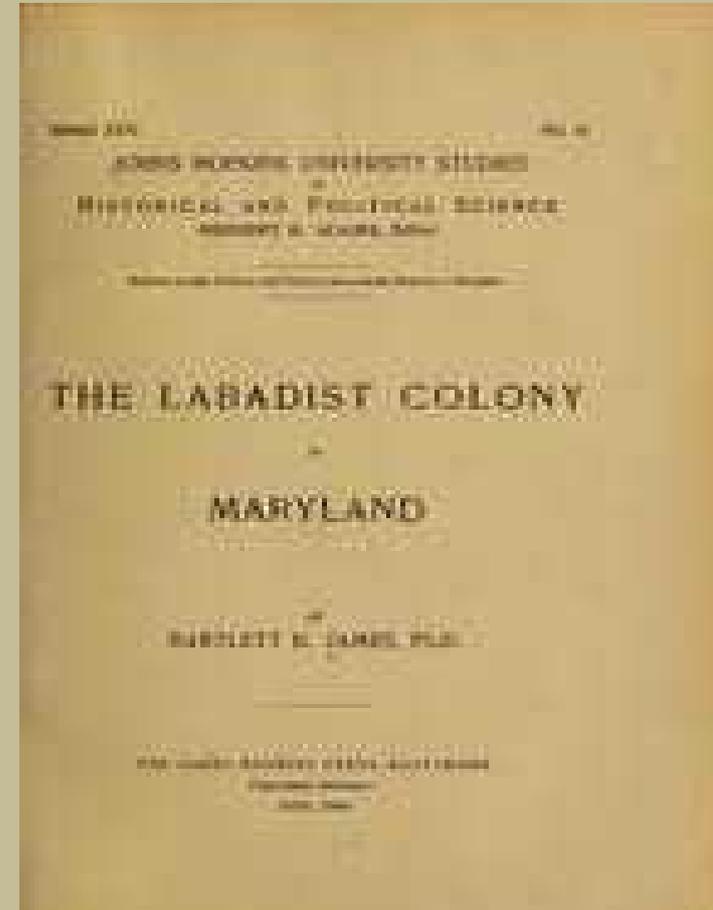
# Artist As Scientist

Divorced in 1683

Labadist colony in the  
Netherlands—

the only place that a single  
mother could make a living  
and support herself.

created an archive of her  
images and focus on her  
work.



# Artist As Scientist

Mother died in 1688

Amsterdam, Netherlands the center of world trade

Dutch East India Company

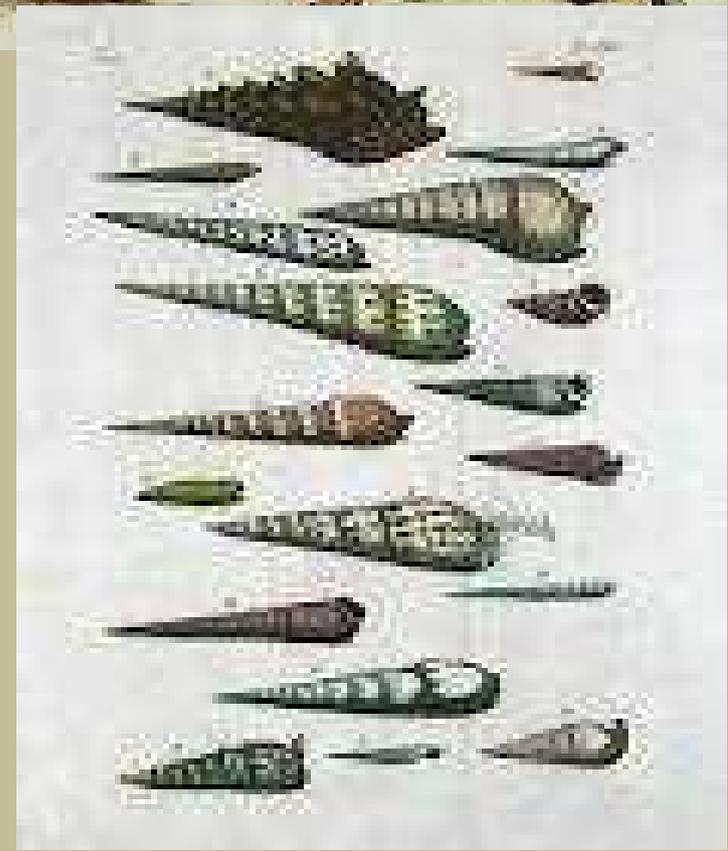
Teaching young daughters of wealthy families to paint.

Access to extensive gardens of the rich and collections

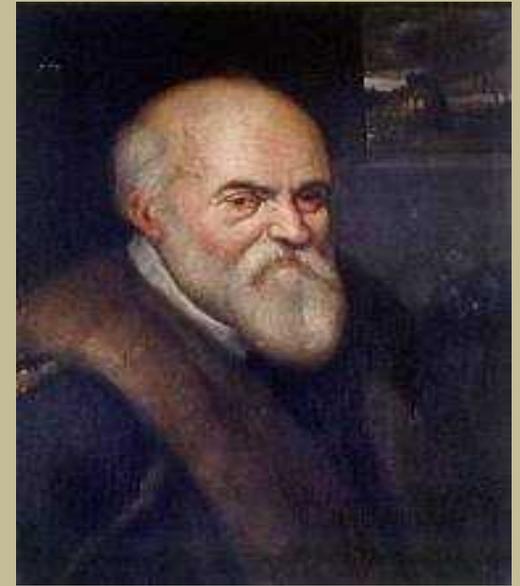
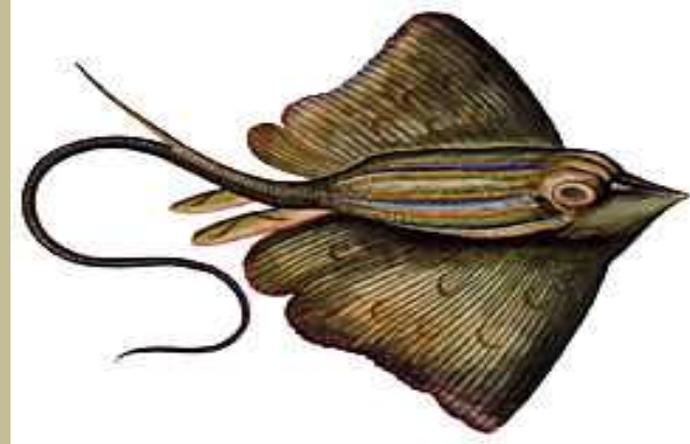
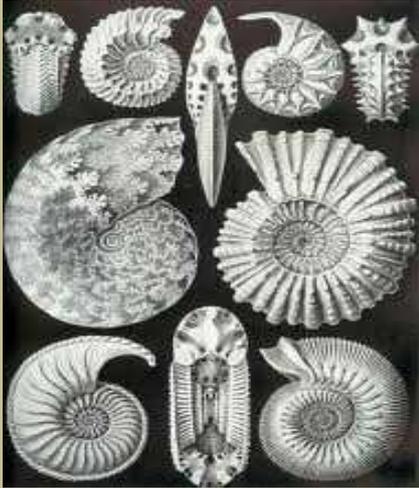
She gained notoriety and respect in local scientific circles.

Set up a business dealing in specimens.

**Cabinets of curiosity**



# Artist as Scientist



# Artist As Scientist

160 watercolor paintings

Drew from dead specimens  
from distant exotic places

Sparked her curiosity about  
these exotic species

What larva did they arise  
from?

What plants did they  
depend on?



# Artist As Scientist

In 1699, at age 52  
South American Dutch  
colony of Suriname  
on the north coast .  
Traveling alone with  
her daughter  
Sold 225 paintings to  
fund the trip



# Artist As Scientist

**Suriname region :**

Smallest country in S.

America

Latitude 5- hot and humid

Northern area populated  
with colonists

Southern area

Tropical rain forest and  
uninhabited savannah  
grassland.



# Artist As Scientist

Conditions were difficult, especially for a 52 year old Victorian woman.

Heat, humidity, dense jungles and unfriendly colonists

Hired local indigenous people to guide her into the jungle.



# Artist As Scientist

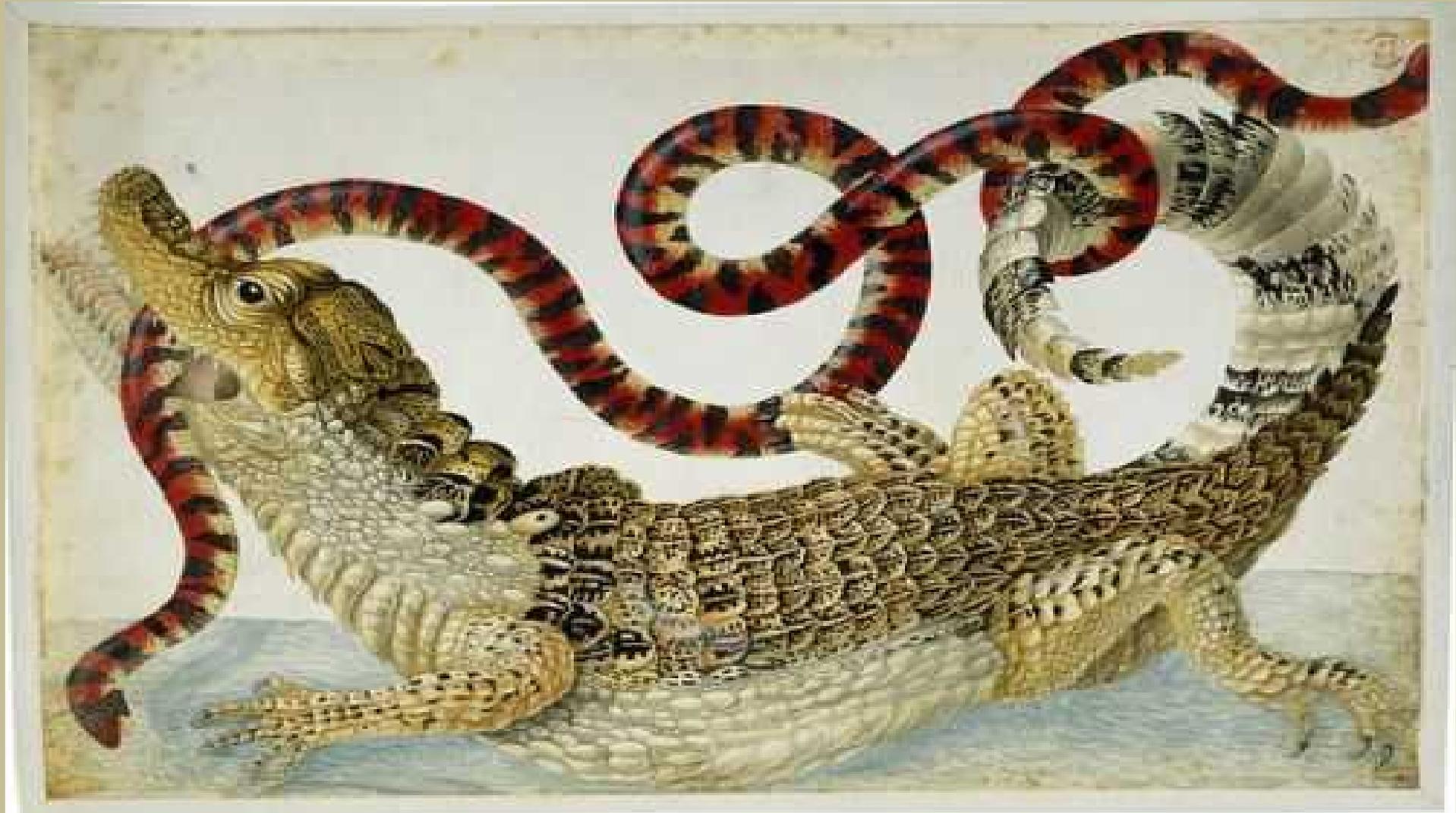
## White Witch moth

One of the widest wingspan of any insect  
- 12 inches

Spent several days upriver, and with the  
aid of the local Amerindians  
she was able to witness the  
metamorphosis of this species of moth  
which had never been done before as



# Artist As Scientist



# Artist As Scientist

Surinam toad  
showing its  
extraordinary  
reproductive method  
which she was the first  
to record.



# Artist As Scientist

1702 contracted malaria  
returned to Europe

In order for her to recuperate  
she needed to leave the  
harsh environment of the  
tropics



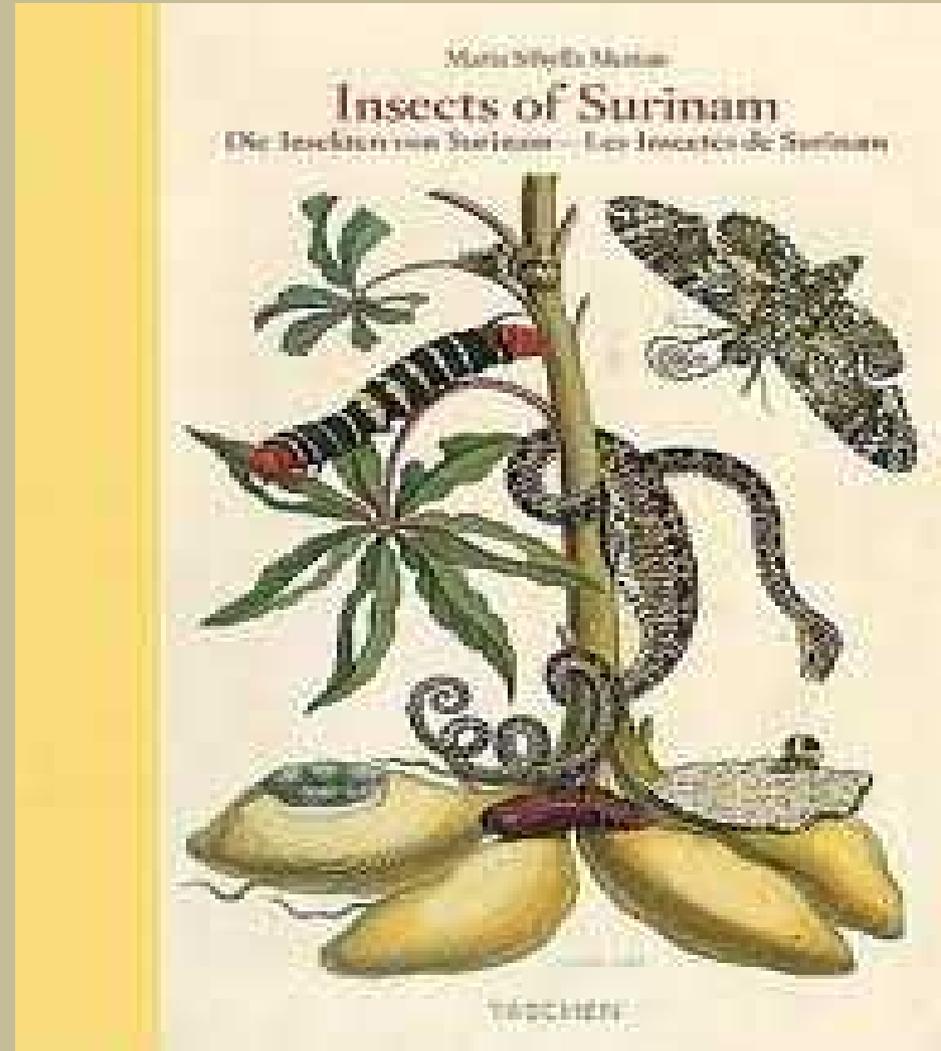
# Artist As Scientist

After her return to Amsterdam:  
1705 published her most well  
known book

“The Metamorphosis of Insects of  
Surinam”

60 full color plates with text in  
English

she published and funded the  
project herself.



# Artist As Scientist

Each image in the book showed the different life cycles, putting them on their food plant.

the first natural history book of it's kind giving important information she learned from direct observation.



# Artist As Scientist

Publishing the book herself, cost her more than she saw in returns.

The book brought her commissions for floral paintings



# Artist As Scientist

Maria spent her remaining years in Amsterdam living with her eldest daughter and continuing her research, writing and engraving.

She died in poverty, 1717 at 70 years old.

Her daughters continued her work

today the few copies of her books are carefully preserved in rare book collections in Europe and at Yale University.



# Artist As Scientist

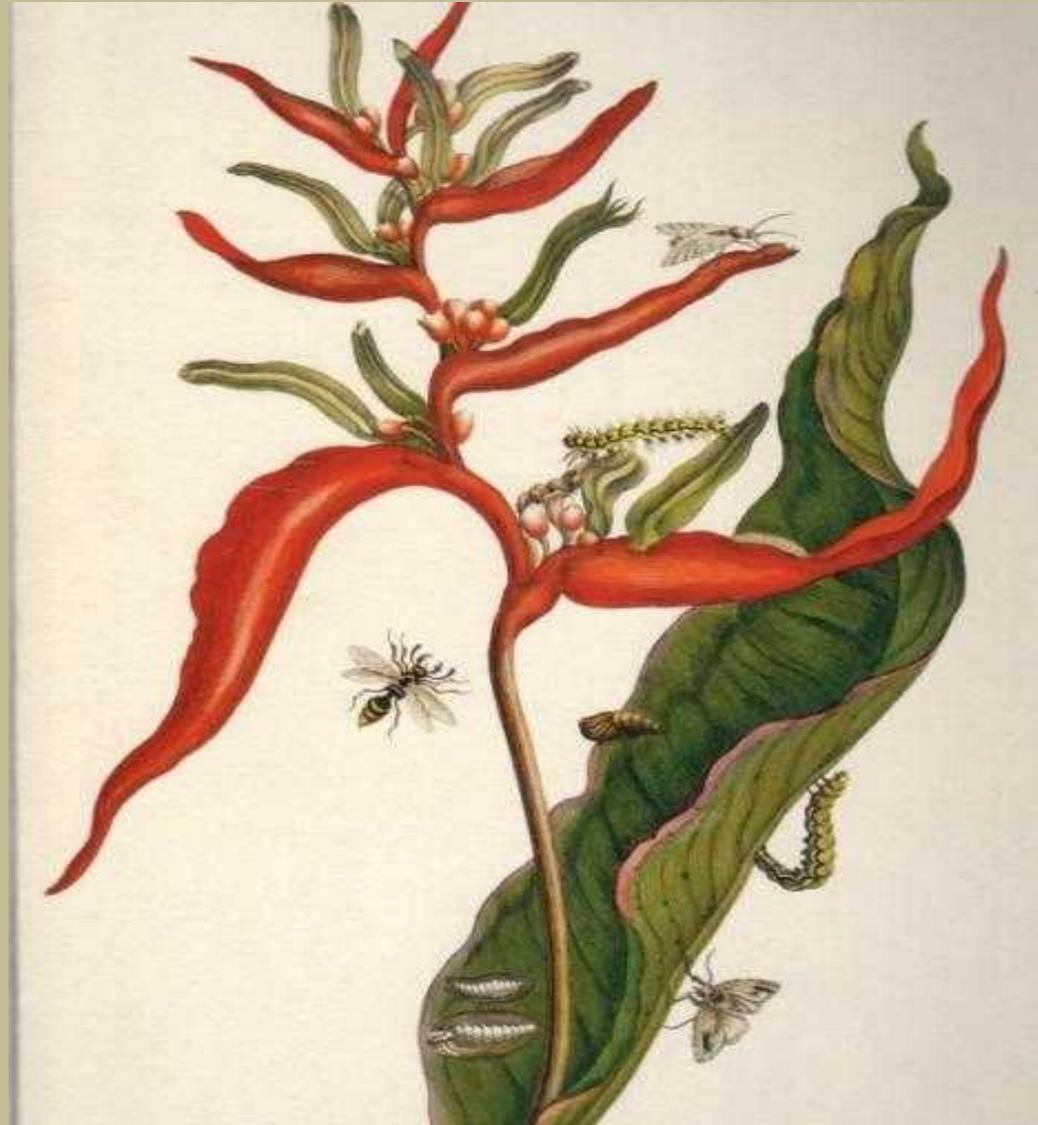
She had an unmistakable style

She depicted species with accuracy and detail but incorporating her talents in design creating pleasing compositions

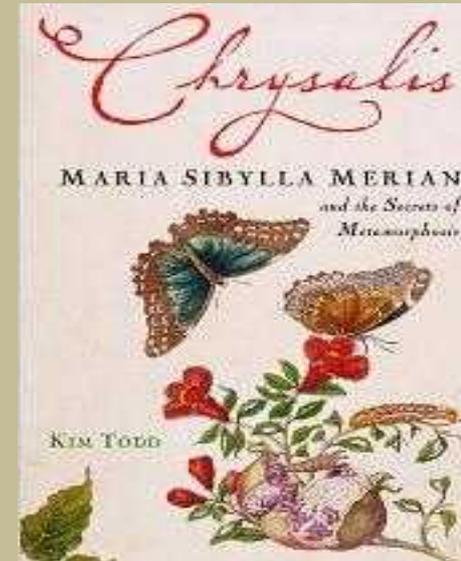
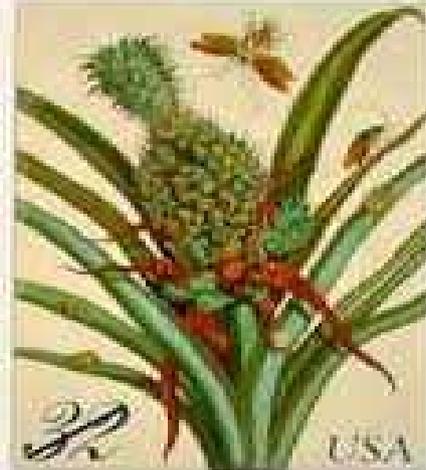
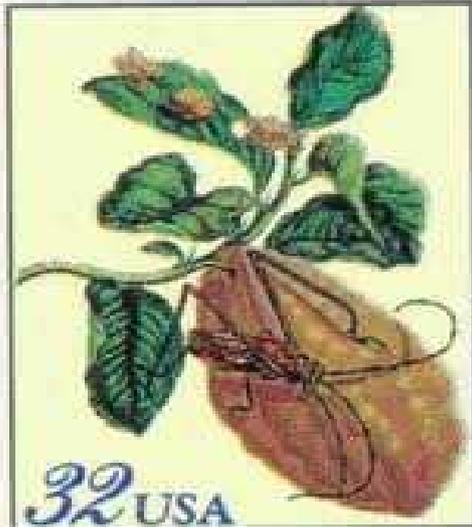
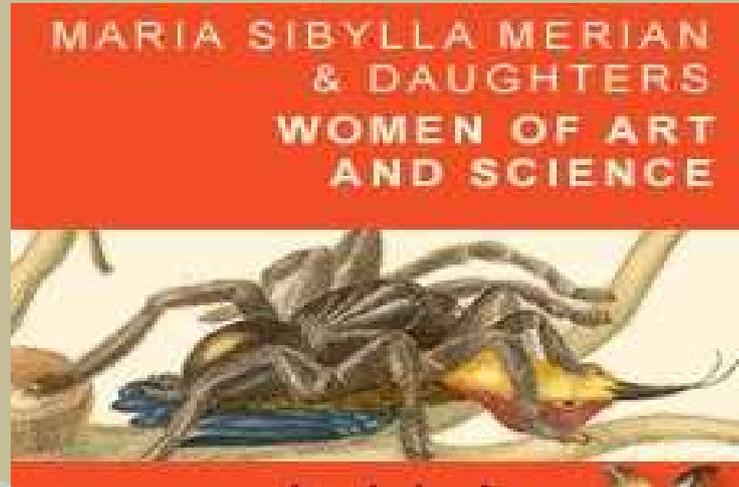
Created an interest in “lower” forms of life ie insects that up to this time weren’t readily studied.

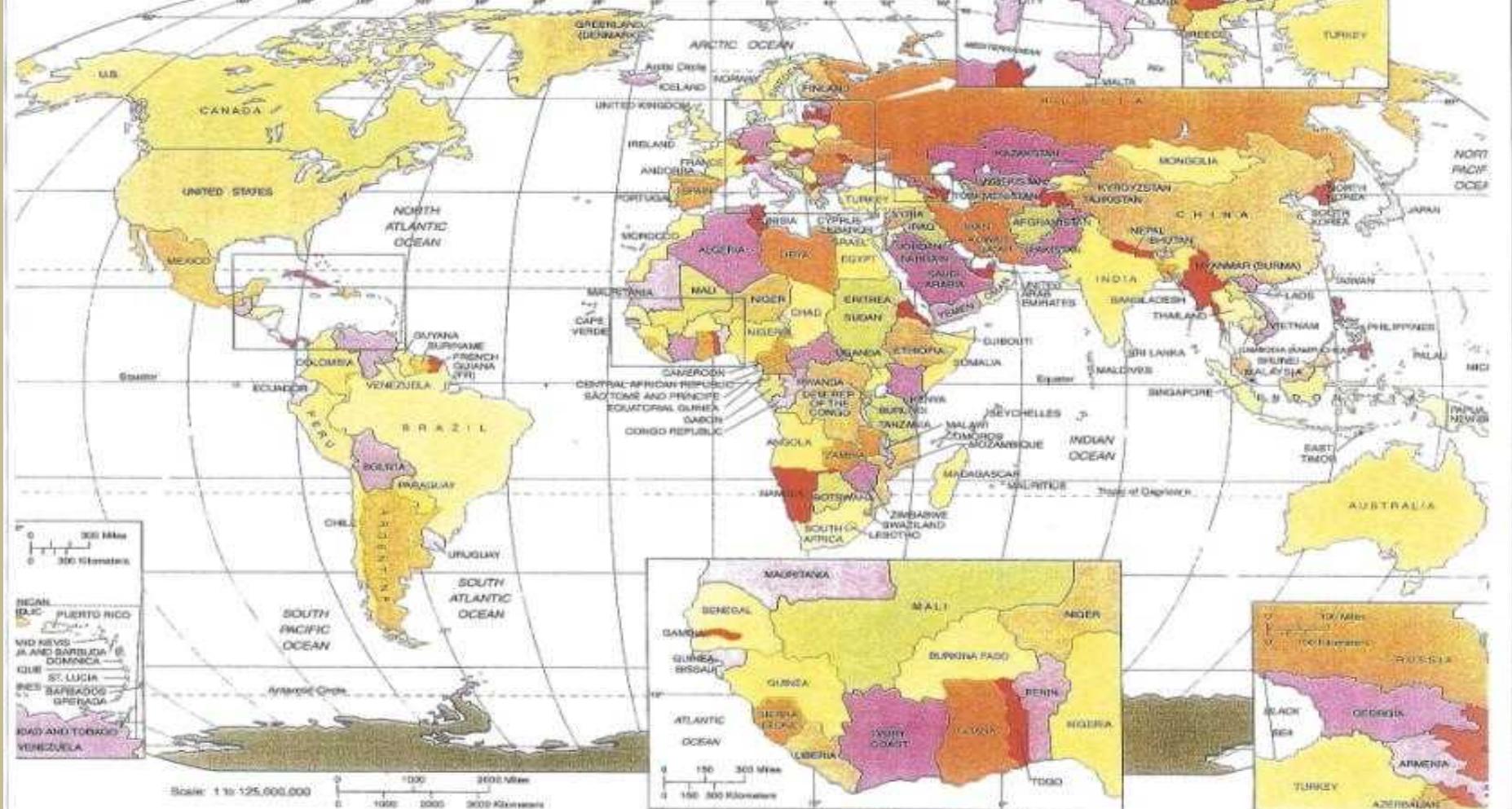
Discounted the theory of spontaneous generation

Helped to establish the field of entomology



# Artist As Scientist





**Unit 4 Earth Map update:**

**4a.** Italian Renaissance, Italy

**4b.** Maria Sibylla Merian- Surinam , South America

**4c.** “ “ - Amsterdam, Netherlands