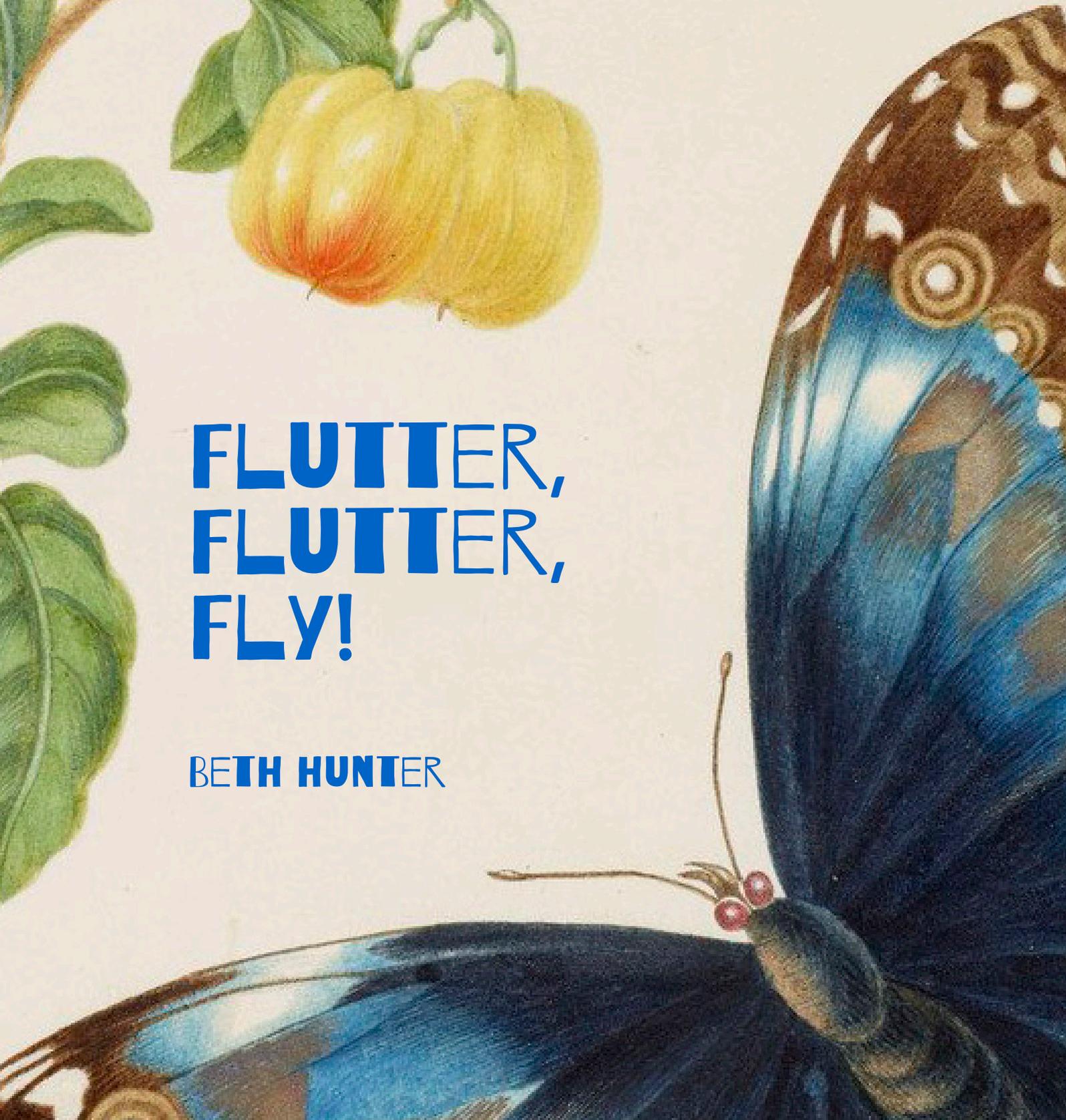




I ♡ STEM Tot

FLUTTER, FLUTTER, FLY!

BETH HUNTER





Maria Sibylla Merian

Scientist, Artist, Scholar

Amsterdam, Dutch Republic (1647–1717)

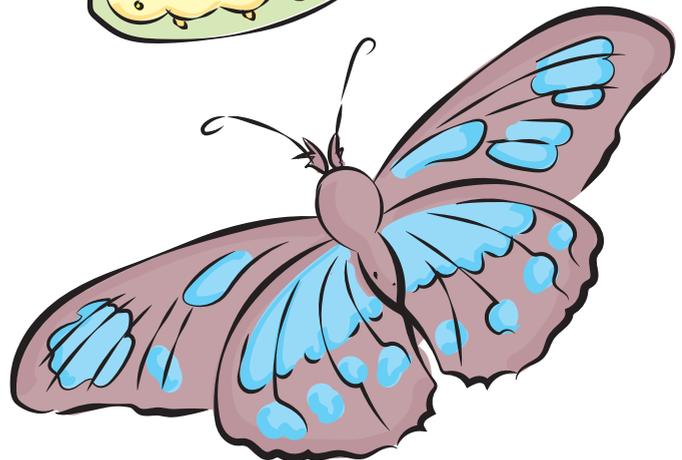
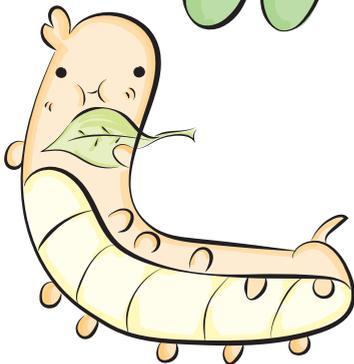
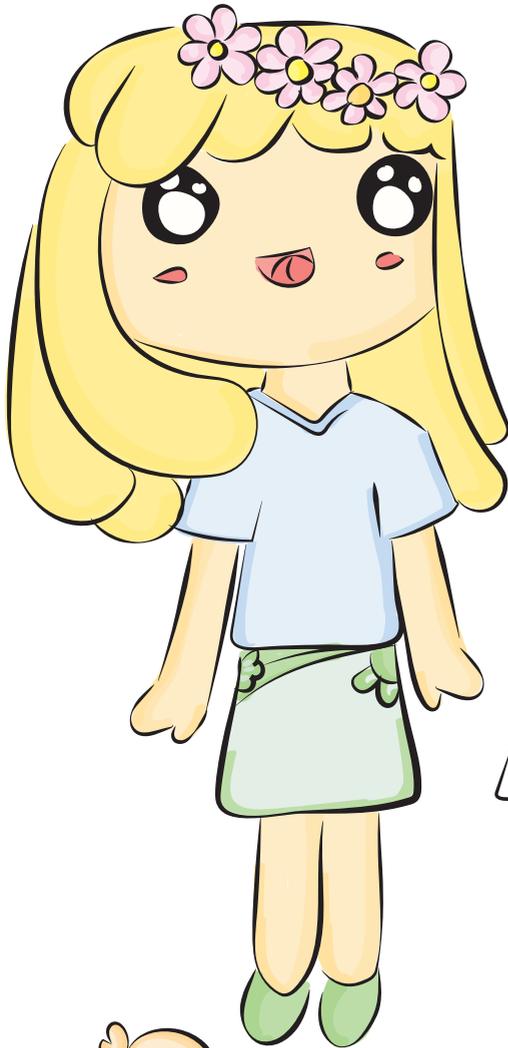
Maria was a naturalist and painter who studied insects. At age 13, she cared for silkworms that were given to her as a gift. At age 28, she published her first book, *Metamorphosis*, in which she documented 186 species showing the metamorphosis of insects on their host plants. She was the first to document the complete life cycles of insects from egg to adult.

(Maria's quotes cited in this article have been revised for clarity and to make them grade level appropriate.)

Paper People

Maria Sibylla Merian-Entomologist

You can be like Maria; just go out and look for bugs. You can find ladybug larvae and caterpillars in your neighborhood to observe their amazing life cycles.





Beth Hunter

Earth Scientist, STEM Taught, California

I loved getting to research the lives of interesting people such as Maria to bring you inspiring learning material. My kids recently found a grub worm and observed its metamorphosis and transformation into a beautiful Hawk Moth. Isn't nature amazing?

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FLUTTER, FLUTTER, FLY!

By Beth Hunter

Illustrated by Maria Sibylla Merian

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Flutter, Flutter, Fly!

This story features the artwork of Maria Sibylla Merian, born in 1647. Look closely at her amazing illustrations. Her curiosity for the natural world is bound to rub off on you. Her discoveries helped people understand that insects have life cycles.

To be a scientist is as
simple as can be.
It just takes someone
who is interested in all
that they can see.

Children are fabulous scientists
because children are always curious.
They stop to look at things for a long, long time.

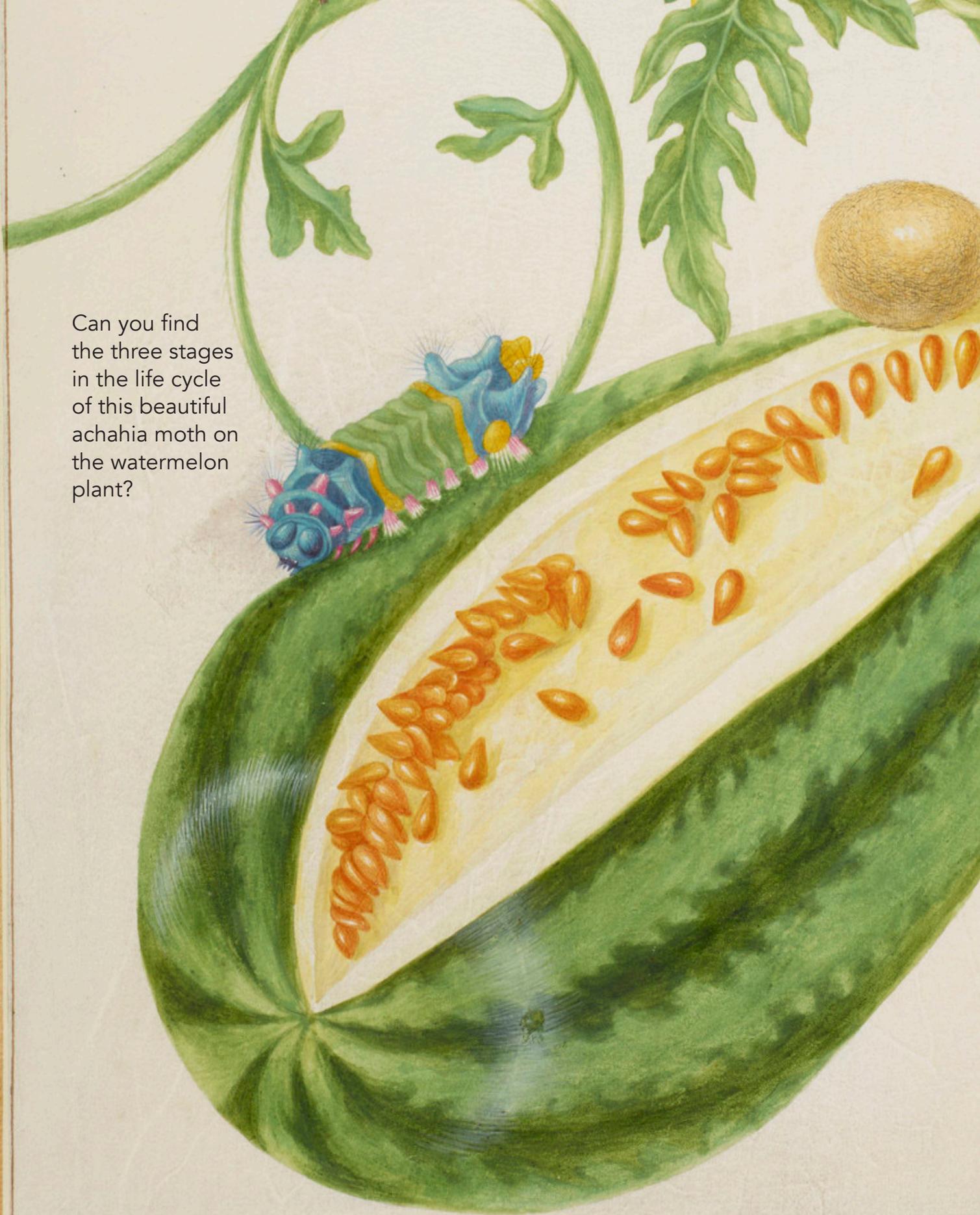


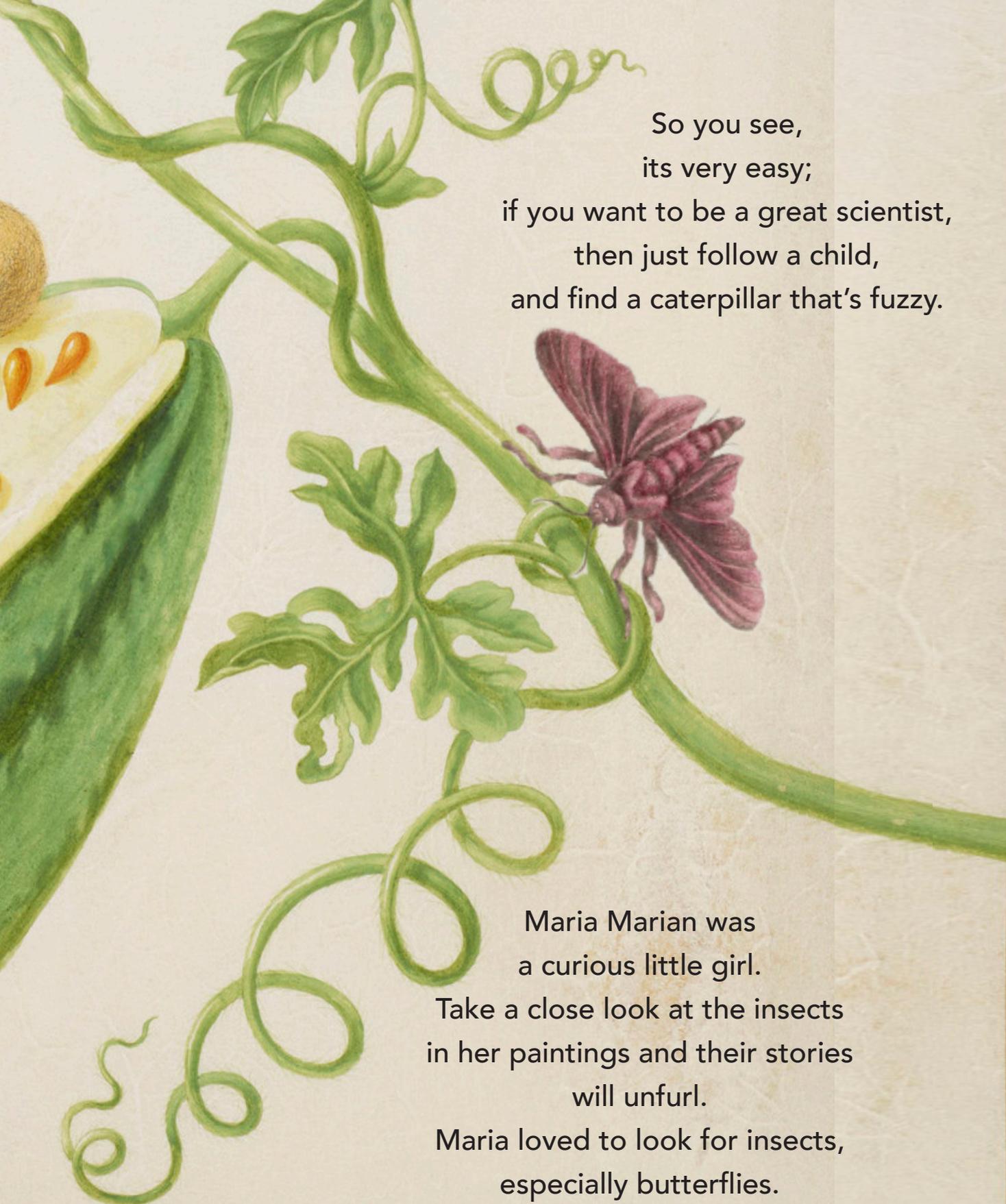


Can you find all three stages of the
life cycle of the beautiful Io moth?
The Io moth caterpillar is well
known for its painful sting.

A scientist must be curious,
and ask lots of questions.
Scientists need to look at things
for a long, long time.

Can you find
the three stages
in the life cycle
of this beautiful
achahia moth on
the watermelon
plant?





So you see,
its very easy;
if you want to be a great scientist,
then just follow a child,
and find a caterpillar that's fuzzy.

Maria Marian was
a curious little girl.

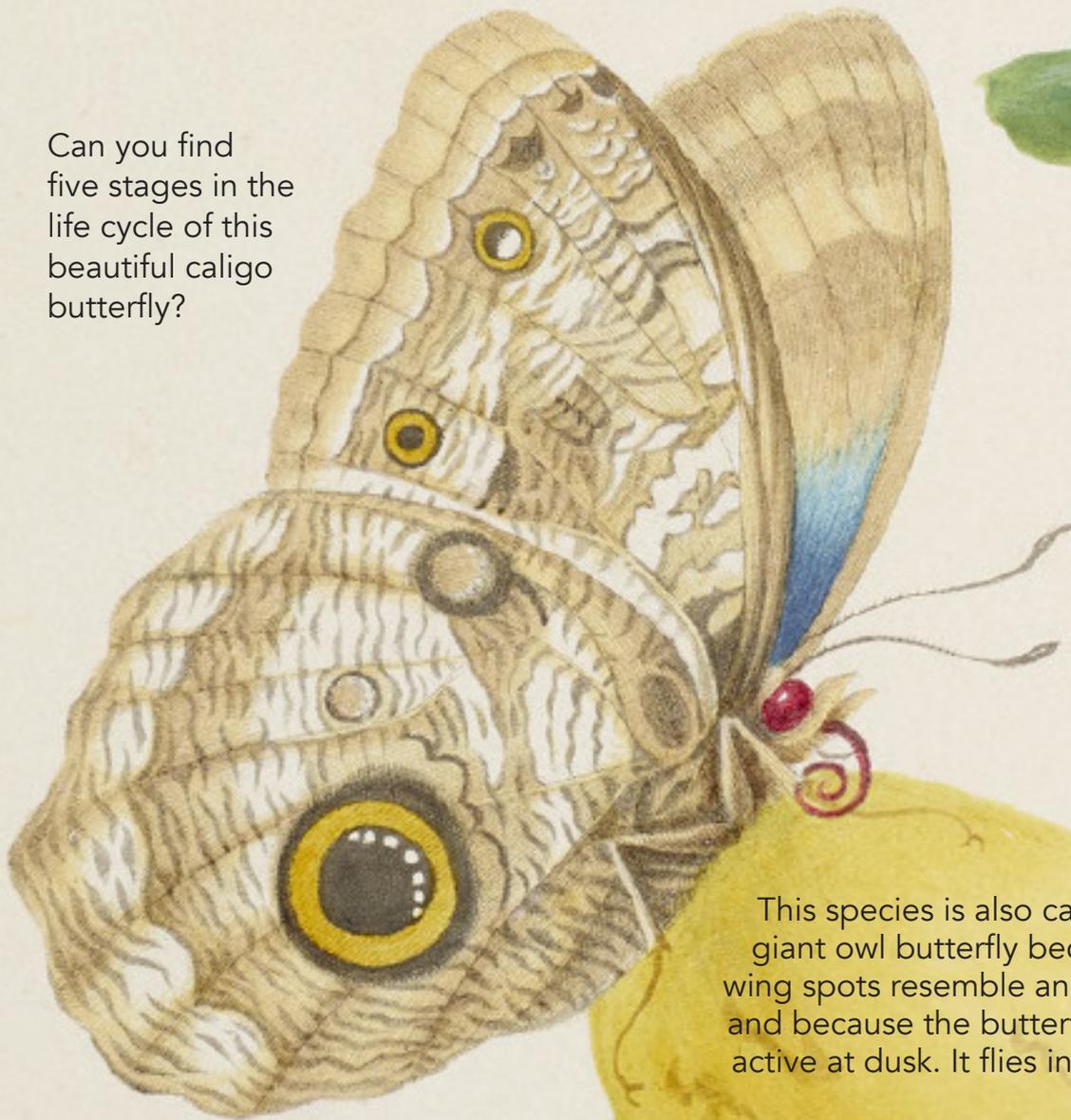
Take a close look at the insects
in her paintings and their stories
will unfurl.

Maria loved to look for insects,
especially butterflies.

She brought insects home to watch them and
she discovered amazing things about them.

Maria painted insects to show the world
how they change and grow.
This butterfly started life as a tiny, soft, squishy egg.
Can you find the eggs? Oh no!
I hope the lizard doesn't find her eggs!
When they hatch, they are hungry caterpillars.
Bananas! Yum!
Inside this cocoon is where the caterpillar changes
into a beautiful owl butterfly.

Can you find
five stages in the
life cycle of this
beautiful caligo
butterfly?



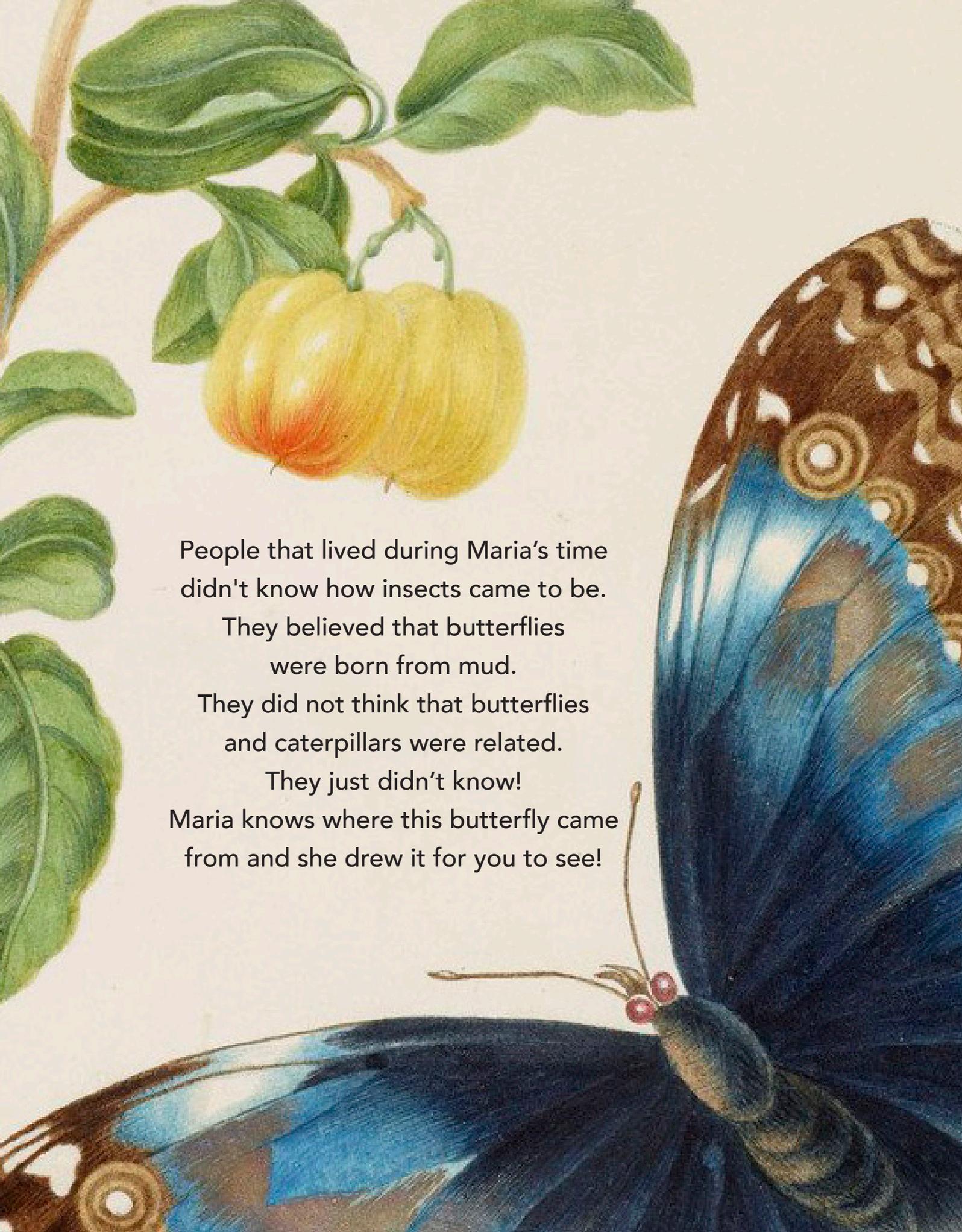
This species is also called the
giant owl butterfly because its
wing spots resemble an owl's eye,
and because the butterfly is most
active at dusk. It flies in the dark.





Can you find three stages in the life cycle of this banded blue morpho butterfly? The cocoon is hard to find. Can you see it?

In her journal, Maria described how she wandered far out into the wilderness to find the Blue Morpho caterpillar and butterfly. She wrote, "the butterfly's wings looked like polished silver overlaid with the loveliest ultramarine, green and purple." She wrote, "Its beauty cannot possibly be rendered with the paintbrush."



People that lived during Maria's time
didn't know how insects came to be.

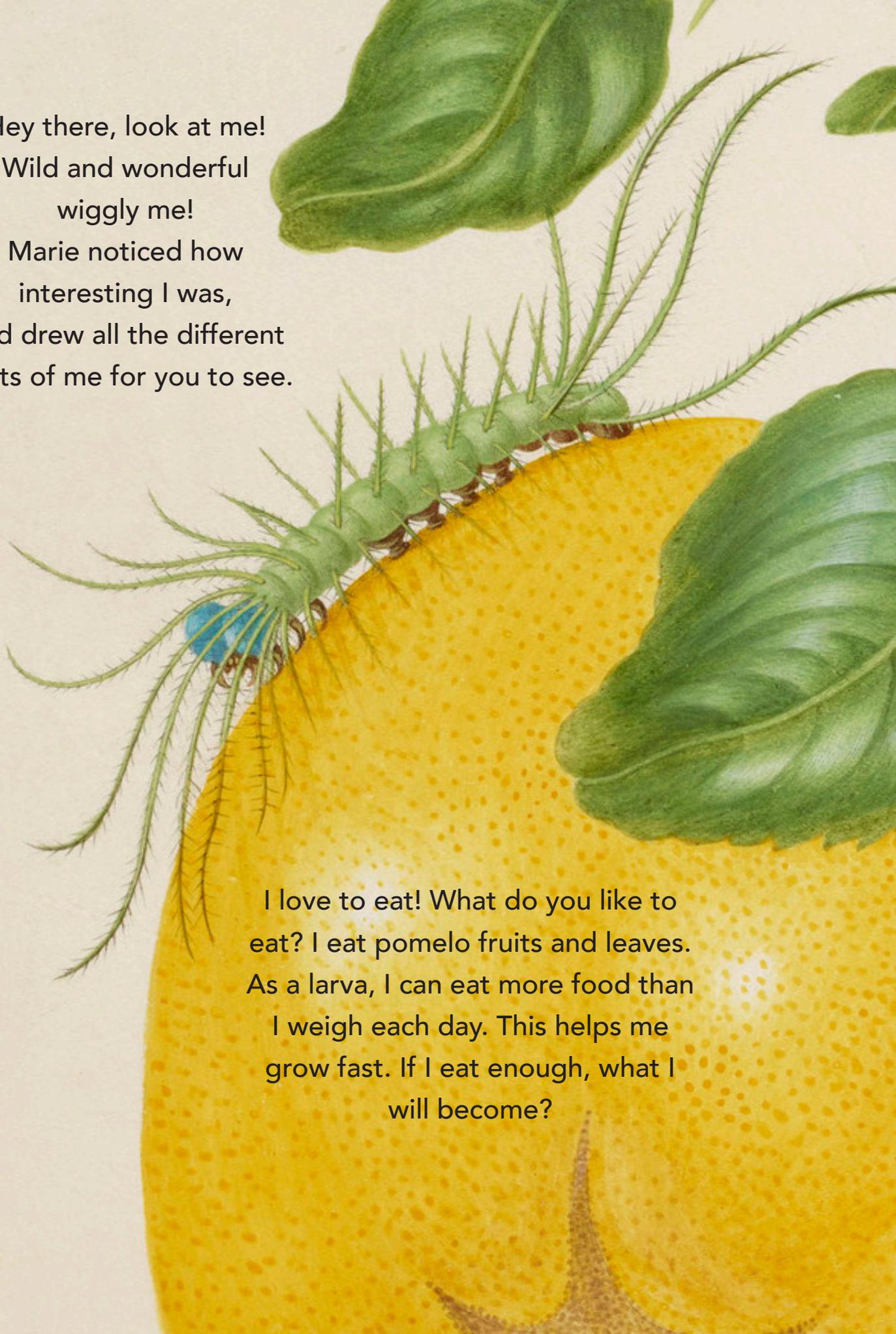
They believed that butterflies
were born from mud.

They did not think that butterflies
and caterpillars were related.

They just didn't know!

Maria knows where this butterfly came
from and she drew it for you to see!

Hey there, look at me!
Wild and wonderful
wiggly me!
Marie noticed how
interesting I was,
and drew all the different
parts of me for you to see.



I love to eat! What do you like to
eat? I eat pomelo fruits and leaves.
As a larva, I can eat more food than
I weigh each day. This helps me
grow fast. If I eat enough, what I
will become?

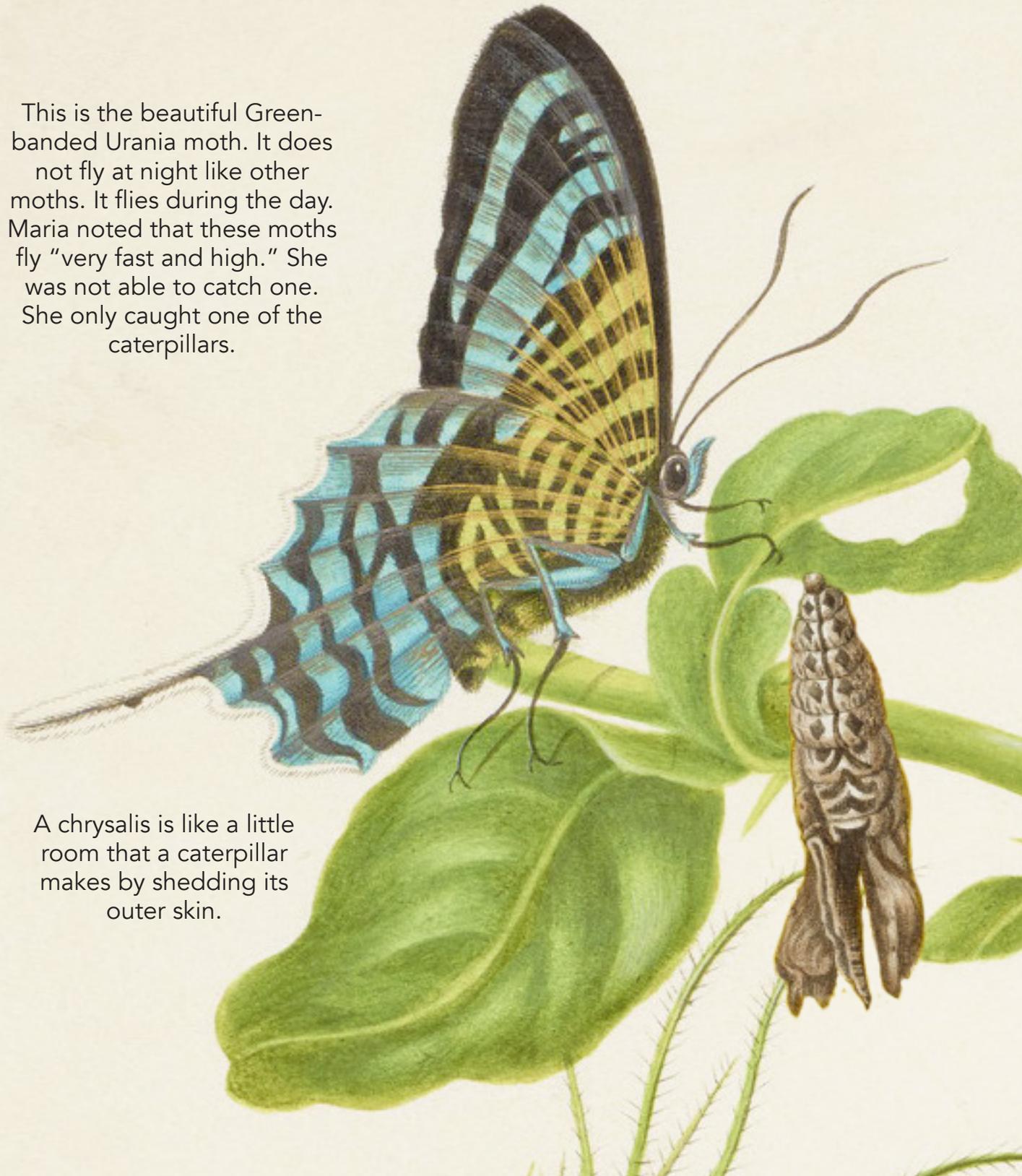


What color
butterfly do
you think I will
become?

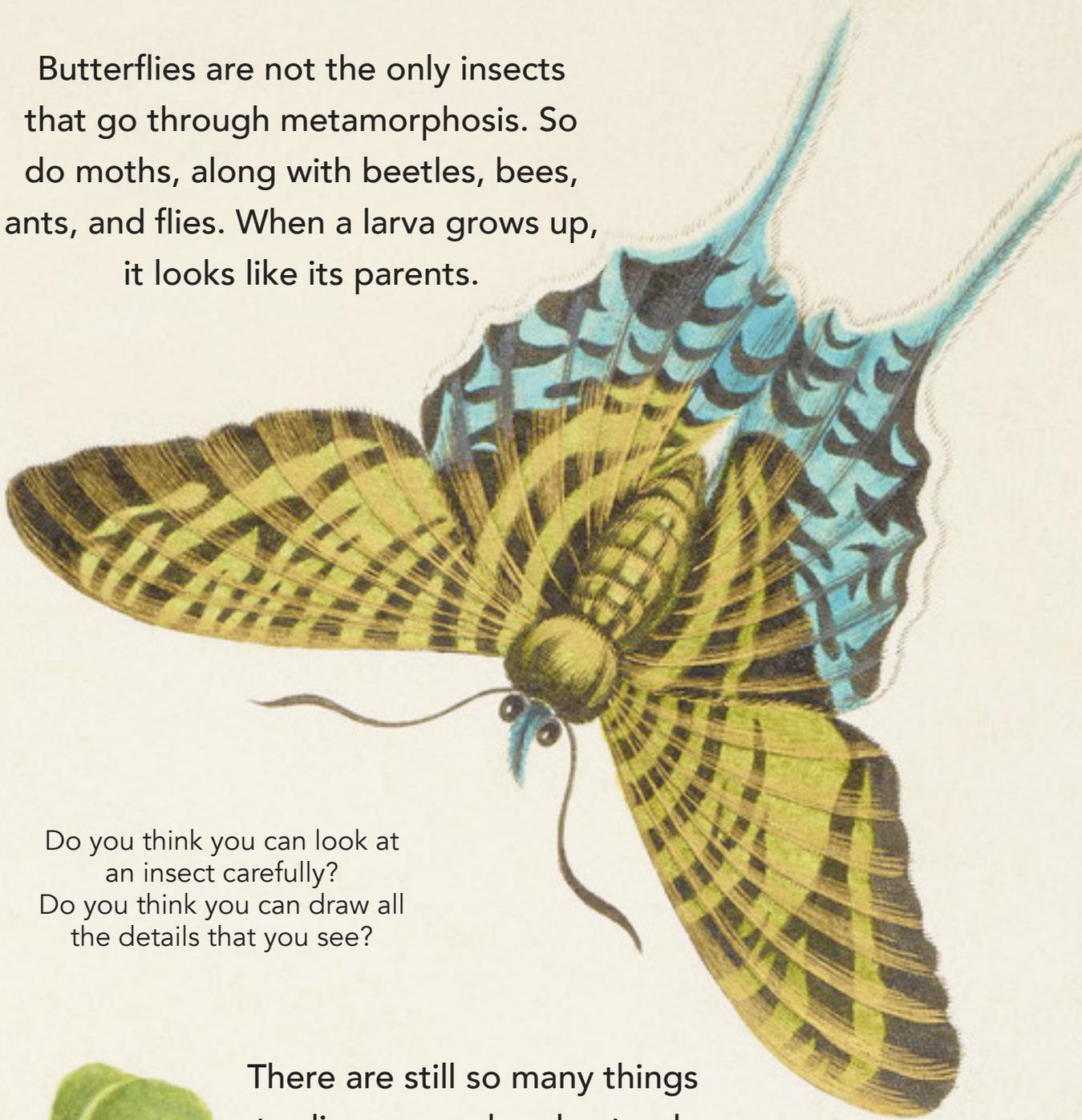
Flutter! Flutter! Fly! Now I am a blue butterfly.
After three months hidden in my chrysalis,
I don't look like the caterpillar that munched on leaves before,
I changed into this! Amazing metamorphosis!

This is the beautiful Green-banded Urania moth. It does not fly at night like other moths. It flies during the day. Maria noted that these moths fly "very fast and high." She was not able to catch one. She only caught one of the caterpillars.

A chrysalis is like a little room that a caterpillar makes by shedding its outer skin.



Butterflies are not the only insects that go through metamorphosis. So do moths, along with beetles, bees, ants, and flies. When a larva grows up, it looks like its parents.



Do you think you can look at an insect carefully?
Do you think you can draw all the details that you see?

There are still so many things to discover and understand.
The world needs you to be a scientist too!

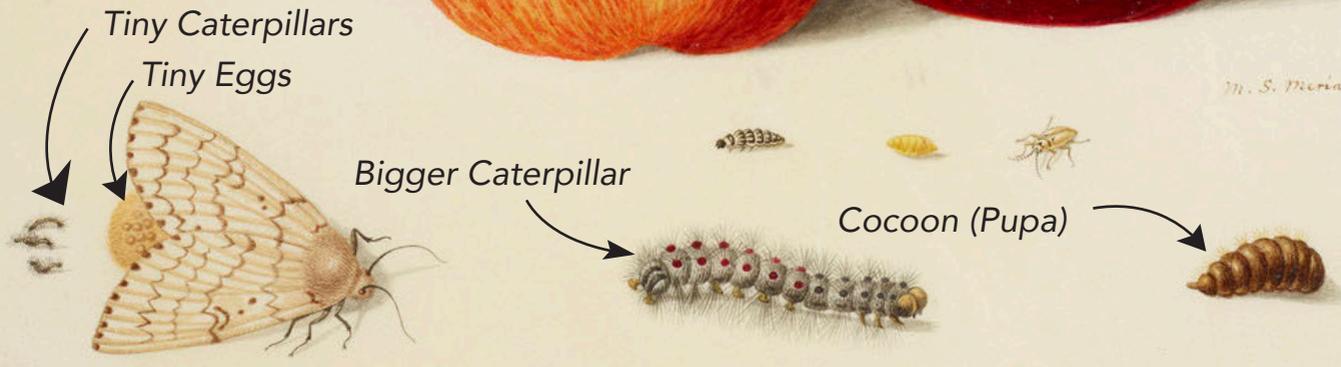
Maria Sibylla Merian lived in the 17th century more than 300 years ago. The 1600s were an amazing time in history. Galileo saw Jupiter's moons in his telescope for the first time. Van Leeuwenhoek discovered tiny microorganisms with his own handmade microscopes. Sir Isaac Newton explained how gravity works. Maria was a scientist who also made amazing discoveries about animals and insects that astounded the world.

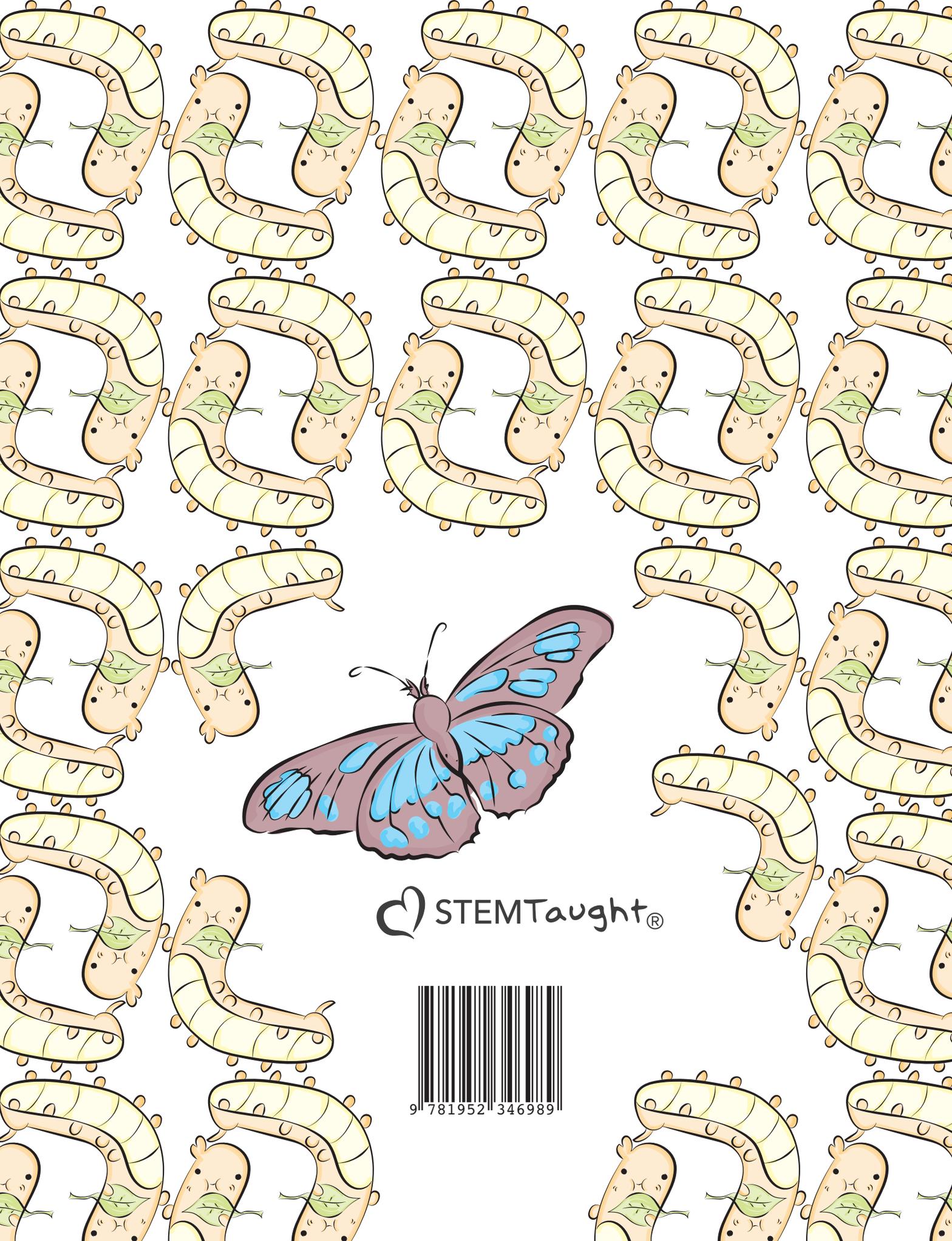
In this painting, Maria shows each stage of the life cycle of the gypsy moth next to apple leaves, which it eats.

Can you also find the life cycle stages of a beetle? Circle them.



M. S. Merian. fecit





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