



## Nature Study

Each Friday morning, you will go through two of our nature cards. They are labeled in the upper right corner with the corresponding week. These are short, factual cards with images to help your child become familiar with objects in the natural world.

As you progress through our sessions, you may find it handy to keep your past nature cards in a binder for easy reference when your children come across a familiar object. These seeds you are planting will grow into a wonderful garden of knowledge for your children in years to come.

As you explore nature outside your home, watch and listen for newly discovered delights. Most of all, remember...

*"Point to some lovely flower or gracious tree, not only as a beautiful work, but as a beautiful thought of God."*

~ Charlotte Mason

Nature Study



## Lapis Lazuli 1

- Lapis lazuli is a rock made up of mostly four minerals: lazurite, pyrite, calcite, and diopside.
- During the tail end of the Middle Ages, Europe began importing lapis lazuli after discovering its use as a pigment to make paint.

- Lapis lazuli rocks would be ground down into a fine powder and mixed with other materials, creating a deep blue paint known as “ultramarine.”
- This paint became incredibly popular during the Renaissance and was used by many artists from this era.
- Ultramarine was an incredibly valuable paint and was primarily used to paint important subjects, like the Virgin Mary.



## Cinnabar 1

- Cinnabar is a red mineral that contains mercury sulfide. It has been mined by humans for centuries and is still mined in modern times to extract and refine its mercury, a toxic substance.
- In ancient times, cinnabar was hazardous and often deadly to those mining it because of the mercury found within, and as

a result, it was expensive to buy and highly sought after.

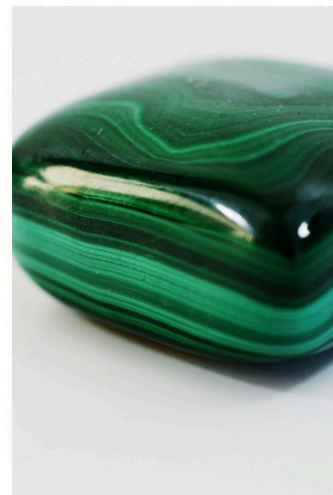
- Cinnabar is known for its distinctive red-orange tint and was used in some Mesoamerican cultures as rouge. In Ancient Rome, it was used to paint walls, and in Ancient China, it was used to tint pottery. This red pigment is known as vermilion.
- Vermillion extracted from cinnabar was the most commonly used red paint in early European painting. It quickly gained popularity in the Renaissance, where it was used by famous painters like Titian, and its use continued well into the 20th century.



## Ochre 2

- Ochre (or ocher, as it is also known) is a pigment made up of clay, sand, and ferric oxide (a compound found in rust and in the mineral hematite).
- Ochre has been used to tint or paint objects for centuries. It comes in many different shades, such as red, yellow, purple, brown, sienna, and umber.

- Ochre paint has a storied history. Many prehistoric cave paintings have been discovered that used red, yellow, and umber ochre. Later, Ancient Egyptians used yellow ochre in their tomb paintings, and in Ancient Rome, yellow ochre was a popular choice to paint murals and walls.
- During the Renaissance, red and yellow ochre were widely used in painting, especially in decorating frescoes and panels. Umber was also commonly used and was a favorite of Leonardo Da Vinci, who included it in both *The Mona Lisa* and *The Last Supper*.



## Malachite 2

- Malachite is a copper mineral that is known for its bright green color.
- Malachite was used to tint paints green for centuries, and is thought to be the oldest green paint pigment in the world.

- Malachite paint was used in Ancient Egypt: Cleopatra is said to have used it to tint her eyelids (reminiscent of how people use eyeshadow today).
- In Ancient China, malachite paint was also widely popular, and it was used to paint landscapes as well as to make green inks.
- Malachite was also used during the Renaissance, often to paint landscapes as well as green fabrics. It was used by prominent artists such as Raphael in the *Sistine Madonna*, and by Giovanni Bellini in *Agony in the Garden*.



## Lead White 3

- Lead white is a white pigment that is made up of basic lead carbonate, a toxic substance. It was the most common white pigment in the world for hundreds of years, until it began to be replaced by less toxic materials in the 1800s.
- Lead white was commonly used in the Renaissance

paintings, and figures like Leonardo Da Vinci, Raphael, and Vermeer all used it in various works.

- Lead white paint was useful for underpaintings (the bottom layers of a painting), creating highlights, blending with other colors, and painting over canvases to create a blank slate. This led it to be considered one of the most important paints.
- Unfortunately, the common usage of this lead-based paint led to many cases of “painter’s colic,” which would later be discovered to be lead poisoning, a type of sickness that came from ingesting or inhaling lead.



## Carbon Black 3

- Carbon black is a pigment produced using partially burned material like coal, soot, and plant matter.
- Carbon black is still used today to color many different items, such as tires, plastics, and inks.

- Carbon black was historically used to make inks and deep black paint. It has been in use since prehistoric times and was often used during the Renaissance because of how simple it was to access.
- There were three types of carbon black: vine black (made from burnt plant vines), lamp black (made from soot found in lamps), and ivory black (made from burnt bones or ivory).
- Famous artists like Rembrandt, Van Dyck, Vermeer, Manet, Picasso, and Cezanne have all used it in their works.



## Kermes 4

- Kermes are small insects native to the Mediterranean that live in trees and eat their sap.
- Kermes insects have been used to make dye throughout human history in many different cultures. They were especially prized for kermes scarlet: a bright red dye.

- Kermes dyestuffs were known as “grain” or “grana” because of the way the crushed shells of the insect resembled grains of wheat.
- Grana was very popular in Europe during medieval times and in the early Renaissance, and was often used to make expensive dye for the clothing of the wealthy. During the 14th and 15th centuries, kermes scarlet was considered the finest luxury color for fabrics in Italy, England, France, and Spain.
- Kermes was eventually replaced by carmine dye after carmine was imported from the Americas.

\*Image Source: [Bernard DUPONT](#), [WikiMedia Commons](#), cropped



## Cochineal 4

- Cochineals are small red insects native to the North and South Americas. They feed primarily on cacti, using their beak-shaped mouths to extract the juices from the plants.
- Cochineals are collected by being brushed off of cacti, then are dried and used to

make carmine, a red dye that has been around for centuries.

- Once carmine was imported to Europe, it quickly grew to be one of their most valuable goods. It was used primarily as a clothing dye worn by officials, kings, and nobility. During the Renaissance, the cardinals of the Catholic church even began to wear red robes dyed using carmine.
- Carmine was also sometimes used to make paints, though the red coloring would turn brown when exposed to sunlight. It can be found in many Middle Age manuscripts, and even in three of Vermeer’s paintings, including *The Girl with the Pearl Earring*.



## Chalk 5

- Chalk is a soft, white rock that crumbles easily and is classified as a type of limestone.
- Chalk has various uses and can be mined to create bricks, quicklime, and writing chalk, which is often used to decorate sidewalks and blackboards.
- Chalk was also historically used to make gesso, a white paint mixture often used as a base coat to prepare canvases, sculptures, and wood panels to be painted over. Gesso was made with a binder (a glue-like substance), chalk or gypsum, and a white pigment.
- Gesso was used to prime a surface for painting, helping the other paints to adhere to it and making paint colors more vivid against the white surface. It also served as a protective barrier, helping to prevent damage to the paint caused by light or moisture, which made many historical paintings last longer.



## Egg Yolk 5

- An egg yolk is the portion of an egg that has the most nutrients. Typically yellow in color, it is used to supply nutrients to the baby in the egg.
- The egg yolk of a chicken has about half of the protein contained in the entire egg, as well as all of the egg's fat and cholesterol.
- Egg tempera is a substance typically made from egg yolks. The egg yolks are used as a binder (a glue-like substance that holds everything together), and then pigment is added to it to create paint.
- During the early Renaissance, tempera painting was very popular, particularly when painting over wood panels. The egg yolk would be combined with pigments such as ochre, lead white, vermillion, or ultramarine, and then used to create masterpieces, such as Michelangelo's panel paintings, most of which were done in egg tempera.



## Linseed Oil 6

- Linseed oil, also known as flaxseed oil, is an oil that comes from the pressed seeds of the flaxseed plant.
- Linseed oil has been used throughout history as a way to bind pigments together in oil paints, as a glaze for paints, and also as a varnish for wood.
- During the early Renaissance, tempera paints using egg yolks were the common medium for painting. A Renaissance painter, Jan van Eyck, changed everything when he popularized linseed oil-based oil paints. It is considered one of the biggest artistic breakthroughs of the Renaissance.
- Cloth soaked in linseed oil can spontaneously catch fire if the proper safety precautions are not taken. When rags used to varnish wood are left crumpled up and exposed to air, heat builds and can quickly start a fire. This means that painters and woodworkers using the material must store it carefully in airtight containers.

\*Image Source: [Handwerker](#), [WikiMedia Commons](#), cropped



## Linen 6

- Linen is a cloth made by weaving together the fibers of the flax plant. It is a light and breathable, yet durable material.
- Linen has been used in clothing for thousands of years, including in Ancient Egypt and Mesopotamia, and it is even mentioned in the Bible.
- Because of linen's durability, it was a popular choice for artists' canvases. The fabric would be stretched out over a wooden frame known as a stretcher, then coated with gesso to prevent the fabric from decaying when it came in contact with the paint.
- Linen canvas was a particularly good support for oil paints, and became popularized when oil paints came into fashion during the Renaissance, though the more traditional wood paintings still lived on.