

## Science and Technology for Children Program Information for Parents

**K**ids have a natural interest in science. We intend to keep it alive! Here is a description of the unit your child will be learning the next few weeks.



Your child will be working with a living, breathing little caterpillar. It will live in a plastic cup while your child studies it. In a matter of days, it will blossom into a beautiful *Vanessa cardui*, Painted Lady butterfly.

It's a remarkable change. And we call it to your attention because there's an equally impressive change taking place in American classrooms.

As you read this, 2nd graders from around the country are gazing into cups just like your child's. They're learning about life, growth, change and even death.

It's just one part of *Science and Technology for Children*, a hands-on learning program created by the **National Science Resources Center**.

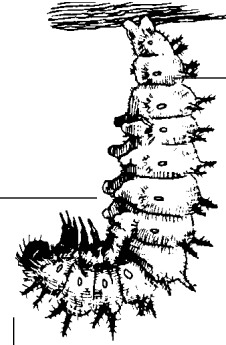
Our schools are working to improve science literacy by nurturing the natural wonder and curiosity our children are born with. We hope you'll enjoy hearing from your child about observing the fascinating transformation that will be taking place right before her/his eyes.

### Phase One.

The caterpillar stage usually lasts 12 to 18 days, depending on the weather and other conditions. The caterpillar your child receives will probably be 3 to 6 days old. All your child has to do at first is watch her/his new friend eat and grow.

- Food for the caterpillar comes prepared. All the food it needs will be placed at the bottom of the cup.
- Your child will place a piece of tissue across the top of the cup. The caterpillar will eventually attach itself to this.
- Your child will not handle the caterpillar. The acid of finger perspiration may hamper the growth process.

### Caterpillar.



The caterpillar will shed its outer skin five times as it grows. This called *molting*. The caterpillar will have probably undergone at least two molts by the time your child starts to observe it.

When the caterpillar sways its head back and forth rhythmically, it is spinning silk. The silk is used to build a "bridge" across the top of the cup from which it will hang upside-down as it eats, rests or molts.

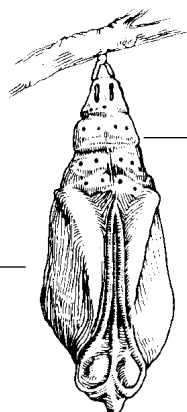
At the end of the caterpillar phase, the caterpillar will stop eating and crawl to the lid of the cup. It will spin a sturdy silk button on the lid, then hang head-down in a J-shape.

### Phase Two

Once it hangs in the upside-down J-shape, the caterpillar remains nearly motionless and becomes encased in a shiny hard covering. This is the *chrysalis*, the transition between caterpillar and butterfly, and lasts 7 to 10 days. Care is very simple:

- Two or three days after the chrysalis forms, it will be transferred it to a butterfly "flight cage." (This is a roomy box which allows the butterfly to emerge without damaging its wings.)
- The flight cage will be lined on the bottom with paper towels. Twigs are added if possible.
- During transfer, the lid is carefully removed along with the tissue paper, silk button and chrysalis. The lid is attached to the inner side of the flight cage using double-sided tape. (The closer to the bottom, the better. This will help prevent damage to the chrysalis in case it falls.)
- If the chrysalis becomes detached from its silk button, it will be gently placed on the paper towel near the side of the box.

## Chrysalis.

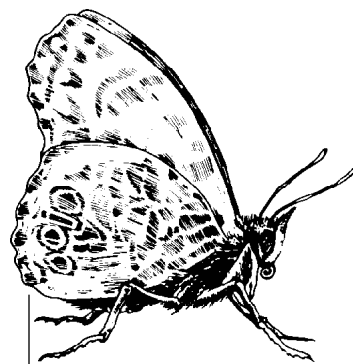


The only motion in the chrysalis, will be some twitching from time to time.

Some butterfly structures can be seen forming under the shell. For example, the long straw-like mouth, or proboscis, is visible between the eyes.

A day or two before the butterfly emerges, the chrysalis looks darker. The orange, black and white wing pattern is now visible inside the chrysalis.

## Butterfly



When the butterfly emerges, its wings will be small, soft and slightly crumpled. It will hang with the wings downward, forcing fluid into them to *pump* them up.

Your child may be surprised to see the butterfly walking on its food. Butterflies taste with their feet!

Red liquid may come from the tail end when the butterfly emerges. The child need not worry. It's only waste, not blood.

## Phase Three.

If your child is fortunate, she/he will be there to watch the butterfly emerging from the chrysalis. The process takes only about 30 seconds, but it is a wondrous thing to see.

To feed the new butterfly:

- 1 teaspoon of sugar and 1/2 cup of water are mixed. A small sponge is saturated with the solution. It is placed in a flat dish or shallow jar lid, and set on the floor of the butterfly cage.
- The feeding solution is replaced each day.
- Other butterfly treats include a solution of 1 part water to 1 part honey; small chunks of fresh melon or apple; and fresh flowers, placed in a narrow-necked bottle so the butterfly won't drown.

## Releasing the Butterfly.

The adult Painted Lady butterfly lives for about two or three weeks. It will mate on the second or third day after emerging. So the butterfly should be released before then—hopefully when the temperature is at least 60° F and in a place that has leaves for resting and flowers for food. (Don't worry. The Painted Lady is native across North America, so there will be plenty of new butterfly friends for yours to mingle with.)

For children who have nurtured their butterflies from caterpillars, this can be a very emotional time. The teachers often plan special celebrations. Some children even write poems for their butterflies before setting them free.

Obviously, these students aren't just learning about science; they're living it. And through the *Science and Technology for Children Program*, they'll go on to explore plants, magnets, electricity and more with the same enthusiasm.