Name:_____ Date:_____ Block:_____

***A Plant That Produces Heat* by Heather Stephenson (AMC Outdoors, March/April 2015)**

I. Define

Step 1: Find each word in the article and circle or highlight it.

Step 2: Read the sentence in which the word is used.

Step 3: Look up the word's definition and choose the one that best matches the way the word is used in its sentence. Write that one down.

sheathed	disperse
pungent	harbinger
fluctuating	mottled
crucial	

II. Comprehend

1. What is the main idea of the article?

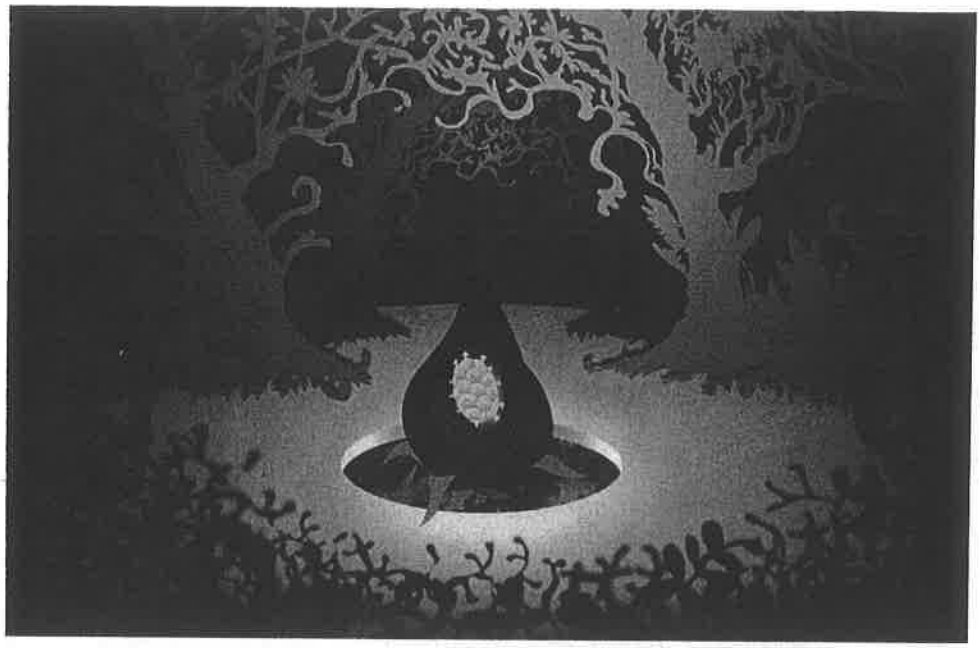
2. When does the skunk cabbage generate heat?

3. How does the skunk cabbage generate heat? What is that process called?

4. Why do scientists think the skunk cabbage generates heat (there are 3 reasons you should mention)?

III. Extend

The Eastern skunk cabbage that you read about is known by the Latin name *Symplocarpus foetidus*. *Symplocarpus* is the genus, and *foetidus* is the species (just like we are genus *Homo* and species *sapiens*). Find one of the skunk cabbage's relatives (same genus), as well as a species with the same "scent" as the skunk cabbage (same species) –name and describe them.



A PLANT THAT PRODUCES HEAT

BY || HEATHER STEPHENSON

One of the earliest signs of spring is the Eastern skunk cabbage pushing up through thin ice and snow-covered ground. This remarkable plant actually produces heat as it grows. Look for it in early March while walking near swampy areas in woodlands or near creeks and ponds.

SNIFF AROUND

Skunk cabbage gets its name from the smell caused by crushing its leaves. These green leaves, which grow as large as 15 by 21 inches, appear later in the spring. In March, only the flowering part of the plant, called the spadex, emerges. The spadex is a tight cluster of small flowers on a fleshy stem. It is sheathed within a leaf-like, mottled reddish-purple hood called a spathe, which reaches up to 6 inches tall.

When the spathe is pushing out of the ground and generating heat, it also emits its distinctive odor. "There's this very subtle, soft, pungent, skunk-like smell in the air," says Craig Holdrege, director of The Nature Institute in Ghent, New York, who has observed skunk cabbage in his region for two decades. "Then I know I'm there at the right time (to spot the spathes coming up). I sometimes smell them before I see them."

DIG GENTLY

If light snow dusts the ground, "there will be a little ring around the plant where the snow has melted—maybe an inch of snow-free area encircling the spathe," Holdrege says. If the snow is up to about 6 inches deep and the tip of a plant is sticking through, he sometimes digs down carefully and finds a cave where the skunk cabbage has melted the snow around it.

Eastern skunk cabbage
Symplocarpus foetidus
Eastern North America

ONLINE

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"It radiates out heat," he says. If you gently put your finger inside at the base, "your finger will actually warm up."

LIKE A MOUSE

Skunk cabbage generates warmth by breaking down starch that it has stored over the winter in its roots and rhizome, or underground stem. In a process called thermogenesis, it uses oxygen to break down sugar, releasing heat.

"It's basically doing what we do" but on a smaller scale, Holdrege says. It's behaving physiologically like a mammal.

The skunk cabbage can keep its temperature fairly constant at about 60 to 70 degrees Fahrenheit for a week or two in early spring, even if the outside temperature is fluctuating. Once this crucial period is over, it stops generating heat. It is the only plant in our region that has this capacity.

POSSIBLE ADVANTAGES

Some scientists think that the Eastern skunk cabbage generates heat to disperse its scent and attract pollinators. Skunk cabbages do attract the first insects of spring, which enter the spathe to warm up and feed on pollen, helping the plant procreate. Another theory suggests that the heat is beneficial because it helps protect against frost damage, allowing the skunk cabbage to germinate and sprout earlier than other plants.

Whatever the evolutionary advantages, the skunk cabbage is "making spring happen earlier than it would otherwise," Holdrege says. "It is the first harbinger of spring, before you have any feeling that spring is near." •