

Questions for *America's First Forest*

1. Where is the Biltmore House located?

2. Name the landscape architect hired to design the grounds at the Biltmore Estate.

3. Name one of the three parks he designed or the cities they are in.

4. What “revolution” was going on that made people fear a timber famine?

5. Who was the first forester hired by George Vanderbilt for the Biltmore Estate?

6. What was the condition of the land surrounding the Biltmore Estate when it was built?

7. What did Frederick Olmsted urge George Vanderbilt to do at the Biltmore Estate?

8. Who was the second forester hired on the Biltmore Estate?

9. What country was he from?

10. Carl Schenck and Gifford Pinchot disagreed about logging operations where?

11. What experiment did Carl Schenck try that he considered a failure?

12. By growing seedlings in the nursery, what science was Carl Schenck practicing?

13. In what year was the Biltmore Forest School established?

14. Was the Biltmore Forest School the first forestry school in the United States?

15. How much did it cost to attend the Biltmore Forest School?

16. How many men graduated from the Biltmore Forest School?

17. What act or law allowed the government to purchase lands and establish national forests?

18. Name the national forest made up of lands bought from the Biltmore Estate.

19. What experimental forest now operates on lands once owned by George Vanderbilt?

20. What year did the Biltmore Forest School close?

21. Name the war Carl Schenck fought in.

22. In what decade did Carl Schenck return to the U.S. and tour his old worksites?

23. What is the name of the national historic site that preserves the Biltmore Forest School?

24. Is the forest on the Pisgah National Forest a virgin forest (old growth) today?

Questions for *America's First Forest*:
Answer Key

1. Where is the Biltmore House located?
Asheville, NC
2. Name the landscape architect hired to design the grounds at the Biltmore Estate.
Frederick Law Olmsted
3. Name one of the three parks he designed or the cities they are in.
New York's Central Park, Golden Gate Park in San Francisco, the Columbian Exposition in Chicago.
4. What "revolution" was going on that made people fear a timber famine?
Industrial Revolution
5. Who was the first forester hired by George Vanderbilt for the Biltmore Estate?
Gifford Pinchot
6. What was the condition of the land surrounding the Biltmore Estate when it was built?
It was abandoned farmland and cutover forests
7. What did Frederick Olmsted urge George Vanderbilt to do at the Biltmore Estate?
Introduce scientific forest management
8. Who was the second forester hired on the Biltmore Estate?
Carl Schenck
9. What country was he from?
Germany
10. Carl Schenck and Gifford Pinchot disagreed about logging operations where?
Big Creek
11. What experiment did Carl Schenck try that he considered a failure?
He planted acorns and nuts
12. By growing seedlings in the nursery, what science was Carl Schenck practicing?
Silviculture (defined as the growing and cultivation of trees)
13. In what year was the Biltmore Forest School established?
1898
14. Was the Biltmore Forest School the first forestry school in the United States?
Yes

15. How much did it cost to attend the Biltmore Forest School?
\$200 per year and you had to provide your own horse
16. How many men graduated from the Biltmore Forest School?
About 400
17. What act or law allowed the government to purchase land and establish national forests?
Weeks Act of 1911
18. Name the national forest made up of lands bought from the Biltmore Estate.
Pisgah National Forest
19. What experimental forest now operates on lands once owned by George Vanderbilt?
Bent Creek Forest Experiment Station
20. What year did the Biltmore Forest School close?
1913
21. Name the war Carl Schenck fought in.
World War I
22. In what decade did Carl Schenck return to the U.S. and tour his old worksites?
The 1950s
23. What is the name of the national historic site that preserves the Biltmore Forest School?
Cradle of Forestry in America
24. Is the forest on the Pisgah National Forest a virgin forest (old growth) today?
No

Discussion questions for 8th grade instructors for *America's First Forest*

- 1. What was happening in America in the late 1800s that led to the introduction of forestry in the United States?**
- 2. Do you think that George Vanderbilt's efforts to establish a huge estate in western North Carolina was a positive development?**
- 3. Why did Frederick Law Olmsted encourage George Vanderbilt to hire a forester?**
- 4. How do you think the local landowners Vanderbilt bought land from felt about it? How do you feel about it today?**
- 5. Carl Schenck emigrated from Germany to the United States in 1895. What advantages did he have over many of the immigrants of that time?**
- 6. Carl Schenck was a forester trained in Germany. What challenges did he face as he tried to introduce scientific forestry on the Biltmore Estate?**
- 7. Have these challenges changed during the last 100 years? If so, how?**
- 8. Gifford Pinchot and Carl Schenck had different reactions to the logging operation on Big Creek. Discuss those differences.**
- 9. Did Schenck's interaction with the local population change his ideas about forestry? Explain why or why not.**
- 10. Pioneer foresters in America like Schenck and Pinchot wanted to show how trees could be cut and preserved at the same time, what today we might call "sustainable forest management." Why did they want to do this? What is your definition of forest conservation?**
- 11. How did Schenck view the role of private forest land ownership and management?**
- 12. What responsibilities do you think private landowners should have toward the land?**
- 13. Do you think that the government should help private landowners who provide public goods and services (like allowing camping or hunting) from their forest land?**
- 14. What is meant when we call the Biltmore Estate and the Biltmore Forestry School the "Cradle of Forestry?" Is this an accurate nickname?**
- 15. Schenck claimed that he did nothing to find a buyer for the Pisgah Forest after Vanderbilt, his employer, asked him to. Do you agree with his decision and motivation? Why or why not?**
- 16. Do you think Vanderbilt treated Schenck fairly when he let him go from his job?**

- 17. The Biltmore Forestry School trained foresters to work in the woods by taking students into the forest every day after lunch. Schenck accused other programs of teaching only from books and not in the woods. How do you think a forester should be trained?**
- 18. In 1916, much of the Biltmore Estate's forest became the Pisgah National Forest. Was this transition a good thing?**
- 19. What responsibilities do you think citizens have towards the forested landscapes we enjoy?**
- 20. Think of a forest or wooded area you are familiar with. How has it changed? What caused those changes?**

Discussion Questions for America's First Forest Answer Key

1. What was happening in America in the late 1800s that led to the introduction of forestry in the United States?

Several things were happening in this era:

- The area west of the Mississippi River was being rapidly settled, and people needed wood to build homes and towns.
- The Industrial Revolution was underway. This included the construction of railroads, which consumed large quantities of lumber. Wood was also the main source of fuel for heating and cooking in homes.
- In the film, historian Char Miller says all this wood consumption created a fear of a “timber famine,” meaning that some Americans believed we would run out of wood and trees.
- Author Ron Rash observes that Americans held the attitude of we will cut all the trees, leave, and go on to another area.
- Consulting Forester Carlyle Franklin notes, “People’s concept of the utilization of the forests was strictly exploitation,” meaning they didn’t care about leaving natural resources for future generations or the future health of the forests.
- Tree farmer and musician Chuck Leavell says, “It was done in the name of the all-mighty dollar,” or putting short-term profits ahead of long-term forest health.

2. Do you think that George Vanderbilt’s efforts to establish a huge estate in western North Carolina was a positive development?

Gifford Pinchot and Carl Schenck demonstrated that landowners could cut trees *and* preserve the forest at the same time. According to Bill Alexander, they “felt that forestry properly done could perpetuate the forests forever while extracting timber products.” And so they were anxious to show that it could be profitable. The work there helped inspire the call to preserve the region’s forests, and led to passage of the Weeks Act in 1911.

Also, the news of the house’s construction brought attention to Asheville, which was growing in popularity as a resort town and a place for tuberculosis patients to come to recuperate. Many men were hired to build the house and landscape the grounds, and then both men and women were hired to work in the house, on the farms, and in the woods. Just like today, tourists came to Asheville to see the house before and after it was built. Edith Vanderbilt, George’s wife, also established Biltmore Industries, which employed people to make handcrafted textiles and furniture.

3. Why did Frederick Law Olmsted encourage George Vanderbilt to hire a forester?

In the film Biltmore historian Ellen Rickman states that “Olmsted saw a great opportunity at Biltmore and that is to scientifically manage the forests in a way that they became sustainable. And nobody else in this country was doing that.”

Biltmore Estate forest and landscape historian Bill Alexander said, “He advised Vanderbilt that such land in Europe would be made a forest, but with a long term view to

crops of timber. Knowing that Vanderbilt didn't have a profession, he said, 'That would be a suitable and dignified business for you to engage in and in the long run, it would be a fair investment of your capital.' But Olmsted's real interest here was, he said, 'This is your chance, this would be a great contribution and service to the country, to show how a systematic managed forest could not only benefit the land, but the landowner at the same time.'"

4. How do you think the local landowners Vanderbilt bought land from felt about it? How do you feel about it today?

Some locals were glad to sell their land to him because the soil was poor and unproductive, and the money allowed them to move. Others resisted for several years for various reasons, such as wanting more money or because the land had been in their family for generations. Some resented Vanderbilt buying the land because they viewed it as what historians call the tradition of "the commons"—the belief that natural resources should be accessible to all members of society and are not privately owned. It is probably why Schenck had the disagreement with the man fishing in the Davidson River. The man believed that just because Vanderbilt owned the land, he did not own the fish or the river. Schenck also came to realize that the local people who used the land were the "real owners" of Pisgah Forest.

5. Carl Schenck emigrated from Germany to the United States in 1895. What advantages did he have over many of the immigrants of that time?

Schenck was born, raised, and educated in what became Germany. He had a PhD in forestry and a law degree, and could read and write English. He had a job waiting for him that paid him \$2,500 in 1895—the equivalent of about \$70,000 in today's dollars—and a furnished house to live in. In contrast, the majority of immigrants at the end of the 19th and beginning of the 20th centuries came from eastern and southern Europe, moved to big cities to work as laborers in factories, and lived in overcrowded tenements.

6. Carl Schenck was a forester trained in Germany. What challenges did he face as he tried to introduce scientific forestry on the Biltmore Estate?

He had never been to America and was not familiar with the trees and forest conditions. In addition to cultural and class differences between Schenck and the local people, English was not his first language, which sometimes made communication difficult.

In the film, historian James Lewis states: "He's dealing with a landscape he's never seen, there are literally hundreds of tree species he's unfamiliar with. The Pisgah Forest is just one of the most biologically diverse areas in the world. Carl Schenck is unfamiliar with the landscape, the trees, the people, and democracy. He is in way over his head." He had to adapt or be fired.

When Schenck arrived, the first thing he had to do was carry out Gifford Pinchot's logging plan on Big Creek, which involved cutting more trees than Schenck was comfortable with and using splash dams to move the timber. Schenck disagreed with these plans. They had a difference of opinion about the results.

Other challenges included: Schenck had trouble finding buyers for the lumber; he needed workers who understood why he didn't want to cut all the trees down and would carry out those orders; and Vanderbilt grew impatient waiting for the forestry work to turn a profit.

7. Have these challenges changed during the last 100 years? If so, how?

Scientists continue to study trees, forests, and wildlife in order to better understand forest conditions and how humans can improve them. Attitudes about forests continue to evolve. Some people believe we should not cut any trees and that forests should be left alone. Others support actively managing forests because insects, disease, and fire can alter the composition and health of forests. We still rely on trees and forests for hundreds of products. They come from live trees, solid wood, wood pulp, wood chips and sawdust, and from the cork and bark of trees. See <http://www.wisconsincountyforests.com/education/products-from-trees> for a partial list. A colorful brochure with an activity that teaches about these products is at <http://ecosystems.psu.edu/youth/sftrc/lesson-plan-pdfs/from-the-forest>.

Some things have not changed in the last one hundred years. To be healthy, trees still need moisture, sunlight, and nutrients. Diseases and fire are still a threat, as are human activity.

8. Gifford Pinchot and Carl Schenck had different reactions to the logging operation on Big Creek. Discuss those differences.

Pinchot believed that the logging operations were a success because new trees grew back. Schenck thought they did not succeed because he feared they had cut too many logs, and when they tried to move the logs to Vanderbilt's mill, they damaged some adjacent farmland. Here are some quotes from the film:

Carl Schenck: "Pinchot was elated while I was utterly depressed and torn by a doubting conscience. At a small expense, and without sacrificing the finest trees, we might have obtained the same end."

James Lewis: "Gifford Pinchot views it as a success from a silvicultural standpoint. The trees that they had logged dropped their seeds and those seeds took and natural regeneration began."

Bill Alexander: "But Schenck was concerned about that not being the primary method of forestry that he wanted to apply. And I think that both he and Pinchot learned over time that forest types were different in different regions and different species mix of trees and so you had to do different treatments. And that's really how American silviculture was born, through these experiments."

James Lewis: "What Schenck learned at Big Creek is that it would've been cheaper in the long run to have built roads and to do what he called 'permanent forestry' than to construct these splash dams and then try and run the logs down to the mill that Vanderbilt owned."

9. Did Schenck's interaction with the local population change his ideas about forestry? Explain why or why not.

He learned that he needed to cooperate with the local residents to succeed. Schenck said: "It dawned upon me that the real owner of Pisgah Forest was not George W. Vanderbilt, but these mountaineers who were using his property for farming, pasturing, and hunting at their own pleasure."

Historian James Lewis said: "Carl Schenck recalls what his mentor, Dietrich Brandis, had advised him on, which is essentially work with, if not win over, the local people to make forestry succeed."

10. Pioneer foresters in America like Schenck and Pinchot wanted to show how trees could be cut and preserved at the same time, what today we might call “sustainable forest management.” Why did they want to do this? What is your definition of forest conservation?

Pinchot and Schenck believed that forest conservation meant having foresters actively managing the land to maintain and improve tree production, soil, water, and air quality, and fish and animal habitat. This included not cutting, or harvesting, more wood than grows annually and replanting trees. It also includes meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. Like Schenck tried to do for Vanderbilt, foresters manage the land not only for trees and nontimber products like nuts and medicinal herbs, but for animal and fish habitat, and soil, water, and air quality.

Schenck stated:

“I am a forester, and as a forester I am meant to raise trees, partly by planting, partly by lending nature a helping hand. I am a lumberman. I cannot help being a lumberman. Without lumbering no cash dividend is obtainable from forest investments. Therefore, I cut the trees, though I do not cut all the trees—for the reason that it pays better not to cut all of them.”

The Food and Agriculture Organization, a part of the United Nations, defines sustainable forest management as:

“The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.”

In simpler terms, the concept can be described as the attainment of balance— balance between our increasing demands for forest products and benefits, and the preservation of forest health and diversity. This balance is for sustainability, and to the prosperity of forest-dependent communities.

11. How did Schenck view the role of private forest land ownership and management?

He thought that private landowners had an important role to play in forest conservation. His work on the Biltmore Estate showed that you could cut trees and conserve the forest at the same time, a policy adopted by the federal government’s Forest Service. He also argued that if the government lowered taxes on land enough, landowners would instead have incentive to hold on to the land and invest in it by replanting trees, fighting forest fires, and other practices.

12. What responsibilities do you think private landowners should have toward the land?

A responsible forest landowner should consult with a forester to create a plan that sets management goals that helps guide the owner. One basic legal responsibility is not polluting the land or waterways. One ethical, but not necessarily legal, responsibility is managing for both current and future generations.

13. Do you think that the government should help private landowners who provide public goods and services (like allowing camping or hunting) from their forest land?

The U.S. Forest Service and the North Carolina Forest Service both help private landowners by providing forestry advice to landowners, helping to develop management plans, and conducting research on things like invasive plants, insects, and animals that can harm privately owned forests. The government fights wildfires that threaten private property and does not charge money for this.

14. What is meant when we call the Biltmore Estate and the Biltmore Forestry School the “Cradle of Forestry?” Is this an accurate nickname?

It’s called the “cradle of forestry” because this is where science-based forest management started in America, and because it is the home to the first forestry school in the United States.

15. Schenck claimed that he did nothing to find a buyer for the Pisgah Forest after Vanderbilt, his employer, asked him to. Do you agree with his decision and motivation? Why or why not?

Schenck feared that selling the land would undo all of his hard work, declaring, “All my forestry. All my teaching. All my ambitions were shipwrecked if Pisgah Forest were sold. I did not make the slightest attempt to find a purchaser for Pisgah Forest.” It is the ethical responsibility of a professional forester to advise an owner of their options but then carry out the orders of the owner, as long as they are not illegal.

16. Do you think Vanderbilt treated Schenck fairly when he let him go from his job?

Schenck failed to generate a profit from the forest and logging operations, as Vanderbilt expected. He disobeyed Vanderbilt’s request to find a buyer for the land. He also got in a fight with the estate manager Chauncey Beadle, who accused him of lying to Vanderbilt, and punched him. On the other hand, Vanderbilt had failed to pay Schenck his salary for several years and cut his budget, making carrying out the forest management plan and generating profits difficult.

17. The Biltmore Forestry School trained foresters to work in the woods by taking students into the forest every day after lunch. Schenck accused other programs of teaching only from books and not in the woods. How do you think a forester should be trained?

To be a forester today, one must have a bachelor’s degree. A student will take classes in math and science (trigonometry, biology, chemistry, and economics), natural resources (in which students study botany, dendrology [tree structure], soils, and geographic information systems [mapping]), and forestry topics (including forest economics, forest ecology, silviculture, forest products manufacturing, harvesting and roads, watershed hydrology, natural resource policy). Field training is also required. Bachelor’s degree programs may even offer specialization areas, like forest management or forest restoration. Programs often offer internship opportunities as well. (You can learn more about professional foresters on our website at: <http://bit.ly/2FJLFBS>.)

18. In 1916, much of the Biltmore Estate’s forest became the Pisgah National Forest. Was this transition a good thing?

By selling the Pisgah Forest to the federal government and it becoming the Pisgah National Forest, it opened up the land to everyone to use it legally. It also ensured that it would not be sold to owners who might not sustainably manage the land.

19. What responsibilities do you think citizens have towards the forested landscapes we enjoy?

Our responsibilities include participating in the discussion of how we manage public lands, whether city, county, state, or federal lands when appropriate. When visiting a forest, we should “leave no trace.” We can do this by doing things like not littering, or picking or destroying plants. We should respect wildlife and be considerate of other visitors.

20. Think of a forest or wooded area you are familiar with. How has it changed? What caused those changes?

Things that can cause changes in a forest include development (such as converting forests to new communities or buildings, or even constructing new trails), the introduction of invasive insects or plants, the occurrence of fires or other natural disasters like a hurricane or tornado, and a change in the use of the land, such as converting it to or from a park.