



# TIME WARP 1951

## Introduction

The game of baseball has been played in America since at least 1791. Because of America's long history with baseball, many people consider the game an important part of American culture. Baseball is played by children in neighborhoods, by students at schools, and by professionals in Major League Baseball (MLB).

In 1949, G.E. Heck and R.P.A. Johnson were approached by the baseball coach from the University of Wisconsin (figure 15). This coach was concerned with the number of baseball bats that his players broke during games and practices. In particular, the coach was concerned with the cost of replacing the broken bats. Heck and Johnson, Forest Service engineers at the Forest Products Laboratory, knew that the baseball players used

baseball bats made from white ash trees. Baseball bats made from the wood of white ash trees are considered the best because white ash wood is both strong and light.



**Figure 15.** Forest Service scientists and engineers often help the public answer questions or find solutions to problems. This University of Wisconsin coach needed a solution to the problem of broken baseball bats.

USDA Forest Service photo.



## Methods

The engineers first examined and tested the broken baseball bats that the coach provided. The engineers noticed that many of the broken bats showed evidence of breaking at the handle.

The engineers then began designing a potential new bat using hickory in the center and white ash on the outside. First, they shaped the bat using a machine called a lathe (figure 16). They used two different designs that required that the wood be shaped and glued in different ways. The engineers also tested these new bats.



**Figure 16.**

Engineers used a lathe to make parts of the baseball bat. A lathe rotates a piece of wood at a high speed and wood can be carved off, usually into a shape that is similar to a cylinder.

USDA Forest Service photo.

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## Reflect and Connect



Think about the “Batter Up!” Methods section. What research methods would you recommend the “Time Warp” scientists consider to test their ash-hickory bat?



## Findings

The tests used on the broken bats indicated that some baseball bats are not made of the highest quality white ash wood. White ash wood is strong but also very popular and expensive. Because of its popularity and cost, many baseball bats were made from low-quality white ash.

After making and testing two ash-hickory baseball bats, the scientists determined that they were strong enough and light enough for baseball players. Of the two designs made by the engineers, the baseball coach and players decided to use the lightest design (figure 17). The chosen bat design only needed two areas with glue, while the other design needed four areas glued.



**Figure 17.** Engineers designed a bat with hickory wood in the center and on the handle. Two pieces of white ash wood were glued on the wide barrel of the bat. A baseball coach and players decided this design was best because it was both strong and light.

USDA Forest Service photo.

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## Reflect and Connect



Name two or more reasons why the research questions from “Batter Up!” and “Time Warp” are similar or different. Use complete sentences and correct punctuation.



## Discussion

The new ash-hickory baseball bat design was sent to the National Collegiate Athletic Association (NCAA). The NCAA approved the baseball bat for students to use in college baseball games. The new design, however, was not accepted by the MLB. The MLB requires a solid bat, made of only one piece of wood. Solid bats are similar to those tested by “Batter Up!” engineers.

### What Has Changed Since This Research Was Done?

Despite the success of the “Time Warp” engineers, ash-hickory bats did not become popular. The design is not used commonly today. Other types of wood, such as maple, have become popular to replace white ash wood. Materials other than wood, including metal, are also now used by baseball players at many schools (figure 18).



**Figure 18.** Baseball players in many schools can now use metal baseball bats. Photo by RBFried, via <https://www.istockphoto.com>.

Forest Service engineers continue to help the MLB with baseball bat issues. The “Batter Up!” engineers, for example, are focused on identifying wood types that are acceptable for baseball bats. With this research, the MLB hopes to reduce the number of broken baseball bats.

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### **Reflect and Connect**

The “Batter Up!” and “Time Warp” scientists and engineers were focused on helping society answer questions and solve problems.

What is a question or problem in your community that a scientist or engineer could help you solve?

Adapted from McDonald, John K. 1951. Hickory-ash bats get baseball trial. Southern Lumberman. 138 (1958).



Photo by ToddMaertz, via <https://www.istockphoto.com>.