

From Bedposts to Baseball Bats

By Alan Lacer

In 2006, Louisville hosted the AAW symposium, which was believed to be the largest contemporary gathering of woodturners. It was fitting for Louisville to play this role, as it is home to one of the most successful and longest-running turning companies in America: Louisville Slugger.

Make no mistake about it, this company started as a woodturning shop and still makes a significant portion of its income from woodturning. Although the days

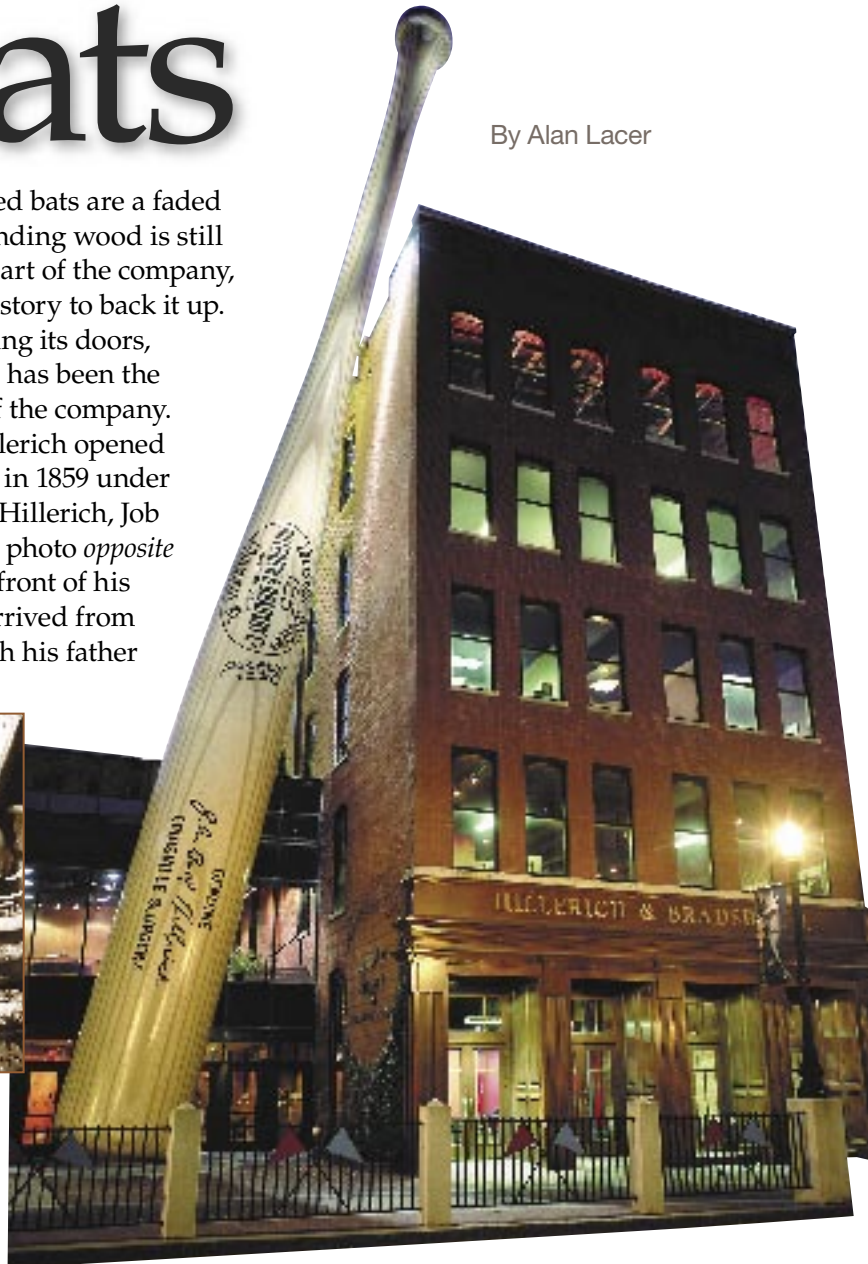
of hand-turned bats are a faded memory, rounding wood is still a dominant part of the company, with a rich history to back it up.

Since opening its doors, woodturning has been the foundation of the company. J.F. (Fred) Hillerich opened the first shop in 1859 under the name J.F. Hillerich, Job Turning. (See photo *opposite* of turners in front of his shop.) Fred arrived from Germany with his father

Henry "Papa" Bickel hand-turns a bat in this photo shot in the 1930s. This heavy, pattern-style lathe has a wooden bed and legs.



Resting alongside the Louisville Slugger Museum & Factory, this Babe Ruth model stands 120 feet tall and weighs 34 tons, certainly the world's largest bat. Constructed of metal and painted to look like wood, this has become a landmark for the city of Louisville.



in the 1840s and apprenticed with his father, who was trained as a cooper. From Fred's shop came porch columns, balusters, bedposts, wooden bowling balls, and turned items to meet the demands of the day.

During the same period, something remarkable was happening in America: Baseball was getting off the ground in a big way. With the first professional game played around 1865 and most cities fielding teams by the 1880s, the time was ripe to evolve the game's equipment.

Early on in baseball, the rules, bats, balls, and gloves were anything but standardized. Patents were popping up for bats, and different shapes and materials were being explored. Some early bats resembled huge clubs. Other innovations included bats with one flat hitting surface and even a curved "banana bat."

Bats were not defined by rules until 1890, when it was stated that: *"The bat shall be a smooth, round stick not more than 2¾ inches in diameter*

at the thickest part and not more than 42 inches in length. The bat shall be one piece of solid wood."

The stage was set for the coming together of a turning shop and this ever-growing game. Fred had a son, Bud, who was learning the turning business. It happened that Bud loved America's new pastime as both a player and spectator.

As one story goes, it was 17-year-old Bud Hillerich who was watching a Louisville Eclipse game in 1884 when he watched its star, Pete Browning, break a bat. Bud invited Browning to stop by his dad's shop the next day for a new custom-turned bat. And the rest, as they say, is history.

By the way, with that replacement bat, Pete Browning swatted three hits the next day. Browning's bat spoke, and orders started arriving.

However, it took a few years before the famed Louisville Slugger bat company came into existence. Although Bud had a passion for baseball and bats, his dad cared little for baseball or baseball players, believing the company's future rested with a new swinging butter churn, a coopered item that included little turning. Not until Bud was brought in as a partner with his father and then became the sole owner did the business of baseball bats dominate production.



Using a steady rest was an impediment to turning, which can be seen as Danny Lockett demonstrates. Note how Danny's hand cradles the wood to prevent ribbing in the slender areas of the bat. Danny, who has worked at Slugger for 38 years, is one of the few Slugger employees who can turn a bat by hand.

Only the best ash

You don't just slap any timber between centers and stamp it a Louisville Slugger. As it happens, ash was an early favorite that still accounts for about half of all the Louisville company's bats.

Slow, even-growing northern ash from a region along the Pennsylvania-New York border has been a longtime favorite. Players demand wood that is straight-grained, has even spacing of the annual rings, and has no major knots (although some hitters believe that small pin knots on the barrel region make a better bat). There is a difference of opinion between players on whether more or less annual rings per inch make a difference: Ted Williams looked



Photos: Louisville Slugger Museum & Factory

This 1889 picture tells quite a story. On the left is Henry "Papa" Bickel, who worked for Slugger for 60 years. Next to him is Fred Hillerich, and in the doorway with a bat is Bud Hillerich. Turned items like the column and bats to the coopered items such as the swinging butter churn in the doorway and small barrel with lid all point to the past and future of this company.

Big League Tour

If you are ever near Louisville and love turning or baseball—and especially both—make a stop at the museum and factory. It is an easy place to find—just look for the 120-foot-tall Louisville Slugger bat leaning against the building. For more details, see sluggermuseum.org.

for eight rings per inch as being ideal, while Stan Musial liked fewer rings per inch.

Other woods besides ash have been and are currently being used by Louisville Slugger to make wooden bats. In the last 10 years, northern hard maple has soared in popularity (it's the timber Barry Bonds favors) and now accounts for almost half of bat sales. About 2 percent of the bats are turned from European beech.

Of interest to turners

From a turner's perspective, there are a number of interesting techniques in bat production. First, the best blanks are riven or split from the log rather than sawn to truly "follow the grain."

The company developed a special saw to cut bat stock for the non-professional market. Called a tube saw, it cuts a 40"-long, 3"-diameter round blank from a log.

One of the bat turner's biggest challenges is generating a bat of a particular size and shape that also has a specific weight. (Imagine turning a bowl that had to be a specific size, shape, and weight!)

To facilitate the duplication of a pattern or model bat, a holder cradled the model close behind the blank.



Major League Baseball (MLB) rules do not limit the bat's weight. That's a variable the player selects. But early ballplayers believed the weight of a bat to be one of the most important factors for hitting the ball hard or long. Some of Babe Ruth's bats weighed as much as 47 ounces (he even once ordered a 52-ounce monster). The Babe's best year for four-baggers occurred while swinging bats from 39 to 42 ounces. Soon players started learning, and physics proved, that the speed of the bat swing was more critical. Most modern players favor a bat of 35 or fewer ounces.

To improve the bat speed, the process of "cupping" was introduced to the USA by players returning from the Japanese League. In 1975, MLB allowed this process of reducing bat weight by creating a recess in the end of the barrel by a maximum of 2" in diameter and 1" deep but not less than 1" in diameter. Today about 40 percent of all pro bats from the company have cupped ends.

The history of Louisville Slugger bat-making parallels this development in bat shapes and weights. There was the period of the bottle-shape bat preferred by Heinie Groh (career from 1912 to 1927) to the sleeker bat of Rogers Hornsby (career from 1915 to 1937) to Babe Ruth (career from 1914 to 1935). That trend continues today with smaller handles and lighter weights, resulting in faster bat swing but more broken bats.

Some of today's big leaguers believe in a proportion of weight to length that is a unit of "2" or "3"—the weight is 2 or 3 ounces less than the length. So when an employee selects bat blanks for a particular model, the dry weight of the blank is a factor, too.



This bat from the mid-1930s shows two Louisville Slugger processes: "Powerized" and bone-rubbed. Rubbing a bone on the bat while it was still on the lathe for even a minute or two would take the place of a player doing this by hand for many hours.

The colorful maple bat, left, and the composite bat (wood wrapped in a fiberglass mesh, then soaked in resin), right, are departures from baseball's traditions. Note the cupping at the end of the composite bat.



More productive at the plate

One of the more interesting aspects of past bat-making was altering the wood to get more hits. Early on, players added nails, burned the wood lightly, buried bats in dung heaps, treated the wood with tobacco juice, or rubbed the barrel with a bone, bottle, or stone.

The Louisville Slugger tried several strategies of its own including offering a bone-rubbed finish, flame-tempering, "Powerizing" the wood by injecting it with glue, and even bombarding the wood with atomic particles.

The roots of “Powerized”

Probably around 1940, MLB interpreted the rule stating that a bat be a solid piece of wood to mean that no foreign substance could be added, other than the surface finish and gripping material in the lower 18". So nails and glue went by the wayside, but bone-rubbing, flame-tempering, and coloring were allowed within the approved limits.



Applying the Louisville Slugger brand is an important step—players require a reference for what part of the bat to make contact with the ball. Except for Yogi Berra’s bats, the brand is placed on the tangential or face grain so the ball will hit the radial or edge grain. Yogi had his own style—he routinely turned the brand toward the pitcher, reasoning: “I came up there to hit, not read.” Thus, Slugger employees branded Yogi’s bats on the edge grain rather than the face grain.

It is doubtful that cork was ever allowed, but rumors persist about players’ attempts to improve success at the plate.

The “Powerized” stamp is familiar to almost anyone who has ever swung a Louisville Slugger bat. In the search for a way to improve the bat’s hitting qualities, or at least to reduce bat breakage and ring separation, Bud Hillerich pursued a method that became known as “Powerized.” The company trademarked the word and image in 1935 and Bud obtained a patent in 1936.

Powerized was an early form of resin-injected wood. Each bat

was placed in an individual tank, and then injected from the bottom with casein glue under pressure. Sufficient time was allowed for the glue to work up through the wood to saturate the barrel end of the bat.

Bud, in his patent claim, argued that the “bat is better and more satisfactory in respect of strength and that elasticity which enables hard and long hits to be made.” He also argued that it “imparts to the finished bat increased properties of hardness, durability, strength, resilience and driving power ... also prevents checking, splintering or separation of the wood layers or fibers.”

There is some question as to whether the resin-injected wood was ever used to any extent at Louisville Slugger. First, it was a slow process, requiring each bat be dipped one at a time in its own individual vat. Also, it would have added extra weight and the trend by the 1930s was towards lighter bats.

In addition, with the ruling about adding foreign substances, it was not really an option. Powerizing was an excellent idea for all the reasons stated by Bud in his patent claims, but it never became a reality for the sport. However, to this day, the bats bear the “Powerized” name and symbol as an important marketing and identifying image of Slugger bats.

Automation

The process of bat-making still follows the same steps it did a hundred years ago but with far more automation. Baseball players either state their preferences in a bat or specify one of the many hundreds of existing bat models. The

company has held contracts with more than 7,000 baseball players, the first being Honus Wagner. Today, there are more than 4,000 variations in bat design (R43 was The Babe’s favorite).

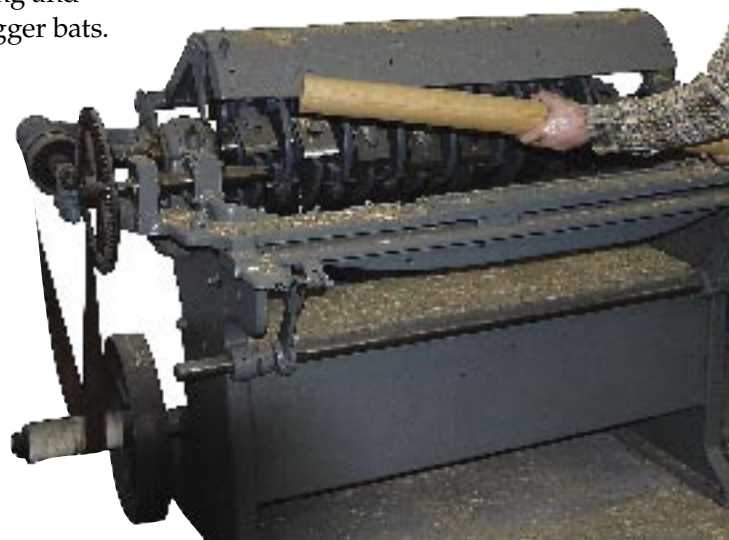
Bat records showing the dimensions and specifications for each player were kept on individual bat cards as well as hundreds of master bat models. Today, all of this is stored on computers. Even the changes to an existing bat model are performed first in a computer program.

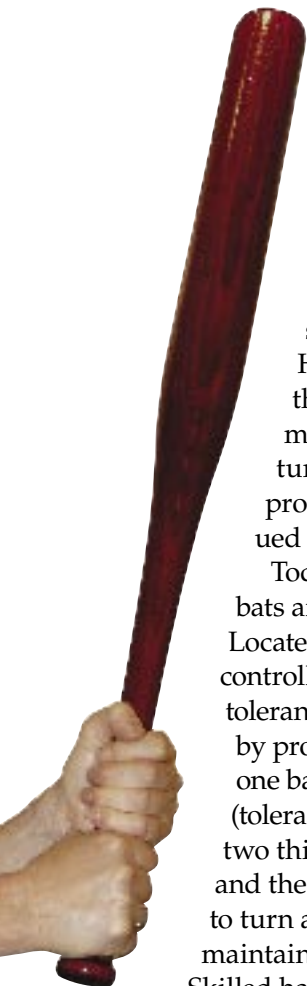
A player often begins the season with a favorite bat. But if the season stretches out and he falls into a slump (or another player has a hitting streak), changes may be made to the hitter’s preferred bat.

Lathe progress

A variety of lathes have been used at Louisville Slugger in bat production. Initially, lathes driven by overhead line shafts produced the bats. It was obvious that hand-turners would have difficulty meeting the demands for bats at all levels. Defiance back-knife lathes

The Defiance back-knife lathe was slow to set up but could quickly turn out a large quantity of bats. Such lathes were used at the Louisville Slugger from the early 1900s until 2002.





were used in early years for all bats except those for professional players. In time, tracer lathes with hydraulics, such as the Hempel, replaced the back-knife machines. The hand-turning of bats for professionals continued until 1993.

Today, big-leaguer bats are made on a Locatelli computer-controlled lathe. The close tolerances demanded by professionals from one bat to another (tolerances are equal to two thicknesses of paper) and the speed required to turn a bat were hard to maintain for a hand-turner. Skilled hand-turners could maintain close tolerances but not the speed, taking about 15 to 20 minutes per bat.

In contrast, the Locatelli can kick out a professional bat in as little as 40 seconds, and each bat is a perfect duplicate of the last.

The bats have been colored and finished in a variety of ways—natural color, flame-colored, bleached, blacks, reds, and browns, and multi-tone versions. All colors must be approved by MLB to avoid colors that could distract the pitcher.

In a break with tradition, some MLB batters stepped up to the plate on Mother's Day 2006 and swung pink bats to signify support and to raise money for breast cancer research.

Over the years a number of finishes have been used, ranging from shellac, varnish, oil, lacquer,



Above: Belt-driven lathes with wooden ways were used for many years to turn the hand-crafted bats. Newer lathes with individual motors (but still with wooden beds) were used to hand-turn bats until around 1993.

Left: In the early 1900s, the bottle bat was the preferred profile for big-league hitter Heinie Groh.

and now water-based finishes. A few players still specify no finish for the gripping area of the bat. (Bud Hillerich patented a cork handle applied over the wood in the lower 18" of the handle.)

Production levels

From that first bat in 1884 to the early 1970s, production rose to about 7 million wooden bats annually. Today, Louisville Slugger makes about 1 million wooden bats per year. The huge drop is due to the increased use of the aluminum bat, which crept in the door in the 1970s for Little League, high school, college, amateur, and softball. For professional baseball (both major and minor leagues), wood is still the only material allowed for ball bats.

With the advent of aluminum bats, the company entered the field and now produces about 1.3 million aluminum bats per year. The company also produces

a composite bat that is allowed where aluminum bats are used but also serves as a transition bat for those heading to professional baseball. This bat is a wooden bat wrapped in a fiberglass mesh, then soaked in resin. The result is a cross between a pure wood and an aluminum bat.

The company of Hillerich & Bradsby Co., the parent company of Louisville Slugger, has ventured into the production of other items. Golf clubs (Powerbilt label) were an early area of manufacturing that has had great success over the years. And during World War II, the bat factory made M1 carbine stocks and nightsticks.

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Special thanks to Danny Luckett, lathe operator, and Anne Jewell, Louisville Slugger Museum & Factory executive director, for information, demonstrations, and photos. For additional information on the Louisville Slugger and baseball, read Crack of the Bat by Bob Hill.