EDITOR’S NOTE: Last year, Alan Lacer met Frank White, an historian and curator at the living museum, Old Sturbridge Village, in Sturbridge, MA. Like Lacer, White also happens to be a turner and an active member of the AAW. Old Sturbridge Village possesses quite a number of lathes from the 18th and 19th centuries. Unfortunately, the majority are in storage and not available for public viewing. But White treated Lacer to an illuminating peek at these treasures, and they agreed that they deserved to be shared, hence this article. Thanks to the receptiveness, cooperation, and historical perspective of the museum, and to the authorial partnership struck by Lacer and White, we finally have a glimpse at these fine tools.

THIS ARTICLE IS ABOUT OUR ROOTS. When looking at an exhibition of contemporary turning it is hard to remember that we are all late-comers to this process of shaping wood by spinning it about an axis. When working at the lathe the convenience of the electric motor conceals the fact that until quite recently the turner, an assistant, or water provided the power to turn. On the other hand, looking at the lathes in the Old Sturbridge Village collection, one is struck by how little has changed in the last few centuries. In fact, comparing these lathes with those made by such turners as Ed Moulthrop or Ken Sager, it is apparent how similarly turners have gone about satisfying their equipment needs. Foregoing the purchase of a ready-made machine but rather utilizing ingenuity and local materials to construct your own is nothing new. After all, neither the customer nor the wood cares much about the process of making. Plenty of fine work, including museum-quality, has been turned on such lathes as those pictured on these pages.

For centuries reciprocating lathes, driven by a spring pole, a bow, or even a cord powered directly by an assistant, were the basic machines for woodturning. Even in technologically advanced England well into the twentieth century, spring-pole lathes continued to be preferred by chair bodgers and bowl turners. Bodgers liked these lathes because of their portability and the ease with which they could be set up at the job site, the forest where chair stock was cut from standing trees into turning billets. Bowl turners preferred them because the reciprocating action was ideally suited to their practice of turning nests of bowls with hook tools. The reversing action of the lathe cleared the chips and shavings from the tools, alleviating the loading and binding that characterized continuous-motion

A treadle-powered bench lathe from mid-19th-century central Massachusetts features a stepped pulley, capable of producing high speeds, and a bank of tool and accessory drawers.
lathe work. (For more about pole lathes, see American Woodturner, March 1992 and March 1994).

Continuous-motion lathes, driven by a hand-cranked great wheel and later treadle-operated with flywheels, gradually gained popularity over spring-pole lathes in the 18th century, although the technology for continuous-motion treadle lathes was available centuries earlier. Their increased use is attributable in part to improvements in design but probably more to the growing demand for mass-produced turned parts for chairs, furniture, treen, textile-mill bobbins, tool and implement handles, and other items. Because continuous-motion treadle lathes were quickly and easily adapted to water-power, their use dramatically increased the rate of production in turning shops. (For further reading about early lathes, see John Jacob Holtzapffel, Hand or Simple Turnings: Principles and Practice, London: Holtzapffel & Co., 1881. Reprinted by Dover Publications, NY, 1976. And for an overview of the history of turning see Christopher Wilk’s “An Historical Perspective,” in American Woodturner, June 1996.)

Central Massachusetts, mid 19th century
The lathe pictured on the facing page is a lightweight, treadle-driven bench lathe from central Massachusetts with a 15-inch swing and 33-inch capacity between centers. With a pulley ratio of about 12 to 1, relatively high speeds were possible in the turning of small objects. Ash is used for most of the construction, with the exception of the poppets which appear to be birch or maple. The bench of this lathe has been customized with drawers for small parts and stock, and a later addition of the tool rack at the back.

Although this example is probably mid 19th century, based on the commercially made round shafts and cast iron pulley and flywheel, John Jacob Holtzapffel noted in 1881 that this type of lathe with stepped wheel and drive pulley was in general use in England around 1800. The earlier examples had a wooden rim on the flywheel.

Sometimes cord or round leather belts were used as a drive band on these lathes, but catgut was preferred because of its strength and stability; it did not stretch the way other materials did. Catgut had one disadvantage: the risk of being eaten by rodents if left on the machine overnight; therefore, it was often stored in a secure place at the end of the day.

Easton, Connecticut, early 19th century
The lathe pictured above is a heavily built treadle-driven lathe with a 17-inch swing and 57-inch capacity between centers. With a pulley ratio of about 12 to 1, relatively high speeds were possible in the turning of small objects. Ash is used for most of the construction, with the exception of the poppets which appear to be birch or maple. The bench of this lathe has been customized with drawers for small parts and stock, and a later addition of the tool rack at the back.

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Fostering, Rhode Island, 1850–1860

A cast iron headstock, tailstock, and tool rest are mounted on a massive chestnut stand, photos below. Each wooden bed rail is approximately 8 by 12 inches and 8 1/2 feet in length. Driven by waterpower, this lathe was used about 1850–1860 in a carriage/vehicle manufactory in Foster, RI. The very plain, undecorated castings indicate a mid-to-late-19th-century manufacture. The three-step wooden pulley was originally paired with a stepped pulley on a countershaft for speed control, and the countershaft was linked by a second belt to a waterpower source. Currently equipped with a cast iron faceplate, the lathe was primarily intended for heavy spindle turning with a nominal swing of 12 inches and capacity between centers of 6 feet. The bed

tice, giving the lathe two tailstocks, one fixed and one moveable.

Originally well made, reputedly by a carpenter in Easton, CT, it has been extensively reworked over its lifetime. In the mid 20th century it was used again by a custom cabinet/furniture maker.

Southbridge, Massachusetts, 1835–1850

The cast iron headstock, tailstock, and tool rest pictured above have been fitted to a new stand of traditional design for exhibition use. The lathe has been equipped with fast and loose pulleys, suggesting it was connected to a waterpower source. The iron components were made by Henry Coburn, a blacksmith/machinist in Southbridge, MA, between 1835 and 1850. Nicely detailed castings on headstock and tailstock are indicative of early machine work. The headstock shaft rides in a split brass bearing on the inboard end and is supported on the outboard end by an adjustable iron thrust bearing. A typical two-spur drive center fits into a tapered square socket in the end of the shaft, which is also threaded to accept a faceplate. The tailstock center is adjusted by a crank and screw and locked in position with the handled nut on top, allowing for rapid loading and unloading of stock.

Cast iron components, which mechanics or turners could fit to a wooden stand for treadle or waterpower operation, were becoming readily available around 1810-1820. In New England they were increasingly used by production turners making furniture parts, bobbins for textile mills, handles, and the like.

Cast iron components are mounted on a massive chestnut stand in this lathe from Foster, RI, 1850–1860.
which the turner could support himself while treadling. Wood used in construction appears to be a mix of chestnut and red oak. The lathe has a lot of character. The iron headstock spindle is forged into a crude four-prong “chicken claw” drive center. The pitman arm between the treadle and drive wheel, and the bracket that supports the outboard post are fashioned from naturally bent riven stock and a crotch, respectively. And the wooden tool-rest bar is mounted on angled brackets that slide in and out of the poppets, locked in position with wooden screws threaded into the sides of the poppets.

below the faceplate has been relieved in a 3-inch-wide shallow arc to increase the swing to about 16 inches—making it what a turner today would know as a gap-bed lathe.

Cape Cod, Massachusetts, Mid 18th Century
All of us involved in this project found the lathe pictured above to be our favorite, being quite unusual and uncommon. We are aware of only one other gear-driven lathe, and it is to be found in the Deutsches Museum of Munich, Germany—there identified as an early, primitive type of lathe. We speculated that the turner had befriended the local wheelwright, as the headstock-gear hub and flywheel have many of the traits of a wagon wheel. We guess that the lathe had a sweet clickity-clack sound in operation. It is treadle-driven, probably from the mid 18th century or earlier, and was found on Cape Cod, MA, where it reportedly was used by successive generations of carpenters and cabinetmakers. The late has a 22-inch swing and a 55-inch capacity between centers.

Wooden parts are crudely sawn or hewn, iron parts are forged. Various open mortises and cut-off elements suggest that originally the lathe was fitted with a back or “butt” bar by which the turner could support himself while treadling. Wood used in construction appears to be a mix of chestnut and red oak.

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Central Massachusetts, Early 19th Century
The lathe pictured above, with an oak or chestnut frame and the flywheel mounted overhead, is from central Massachusetts, early 19th century. Placement of the flywheel above the bed may have been dictated by space limitations in the shop; it also got the wheel out of the way of the operator. More importantly, in many applications it allowed the use of a larger diameter flywheel without raising the bed to an uncomfortable height or cutting a hole in the floor. This was not the case here, as the flywheel, which is a heavy grindstone encased in wood, is only about 26½ inches in diameter, small enough to readily fit beneath the bed. We estimated the wheel to weigh approximately 200 pounds, giving the turning considerable inertia once set in motion.

New Hampshire, Mid 19th Century
The large wooden, treadle-operated lathe pictured on the facing page is from central New Hampshire, probably mid 19th century. The nearly(303,538),(696,804)-foot-diameter flywheel was suspended in bearing supports attached to the ceiling joists or other frame members of the shop. In all probabil-
The drive wheel on this lathe from mid-19th-century New Hampshire would have been mounted independently of the lathe stand, isolating the lathe from the wheel’s vibration. The parallel saw marks on the end post, above right, are evidence that it was sawn by a reciprocal rather than a circular saw, most certainly driven by waterpower. At right, threaded tailstock components.

The tool rest is simply a wooden plank dovetailed to a slotted wooden shoe. The spur center has the usual two prongs but no center point. The headstock spindle rides between a split bearing, probably babbitt.

The poppets and the tool rest are secured to the bed by large wooden screws and nuts that tighten against the bottom of the bed. The obvious disadvantage with this simple system is that ease of adjustment is severely affected by changes in humidity.

**General observations**

All these lathes are either treadle-driven with flywheels, or water-powered. There are no spring-pole or great-wheel lathes.

The spindle height averages between 42 and 43 inches off the floor with a high of 46 inches on the gear-driven lathe and a low of 38 1/2 inches on the heavy Rhode Island carriage manufactory lathe.

Is there value in learning the history of our craft? Yes, if we are to understand our place in history—gain perspective. Yes, especially in the field of woodturning if we are to avoid such naive views that newer means better, that technology and expense can usually substitute for skill, or that improved technology always leads to better results. Plus, the more you care for a pursuit—whether it be baseball, music, politics, or turning—the more you appreciate and understand its current status as a result of learning where it has come from.

Alan Lacer is a part-time professional turner. Frank White is Curator of Mechanical Arts at Old Sturbridge Village. The authors thank Andy Barnum and Rick Mastelli for their efforts in handling, photographing, and commenting upon the material of this project.