

A Tryal of Glasse

BY GREGORY LEFEVER

HARDSHIP, MASSACRE, AND MUTINY DOOMED THE NEW WORLD'S FIRST MANUFACTORY, A GLASS HOUSE AT JAMESTOWN, VIRGINIA.

A handful of eager glassblowers stepped onto the sandy shores of the James River in October 1608, determined to establish the first factory in the New World. But their entrepreneurial venture would suffer nearly every hardship known to the Jamestown settlers, from under-financing and poor resources to illness, starvation, mutiny, and massacre. Then, after 16 years and two false starts, glassmaking at Jamestown would simply disappear.

Despite the setbacks, the Jamestown glasshouse is commonly regarded as the first true manufacturing plant in America, although no one is certain what it produced, or where exactly. All that survives are drippings of greenish glass unearthed among the ruins of the river-rock furnaces. While the operation ultimately failed, it remains a tantalizing saga of colonial settlement in the New World and an inspiration to today's producers of American glassware.

SUPPLY AND DEMAND

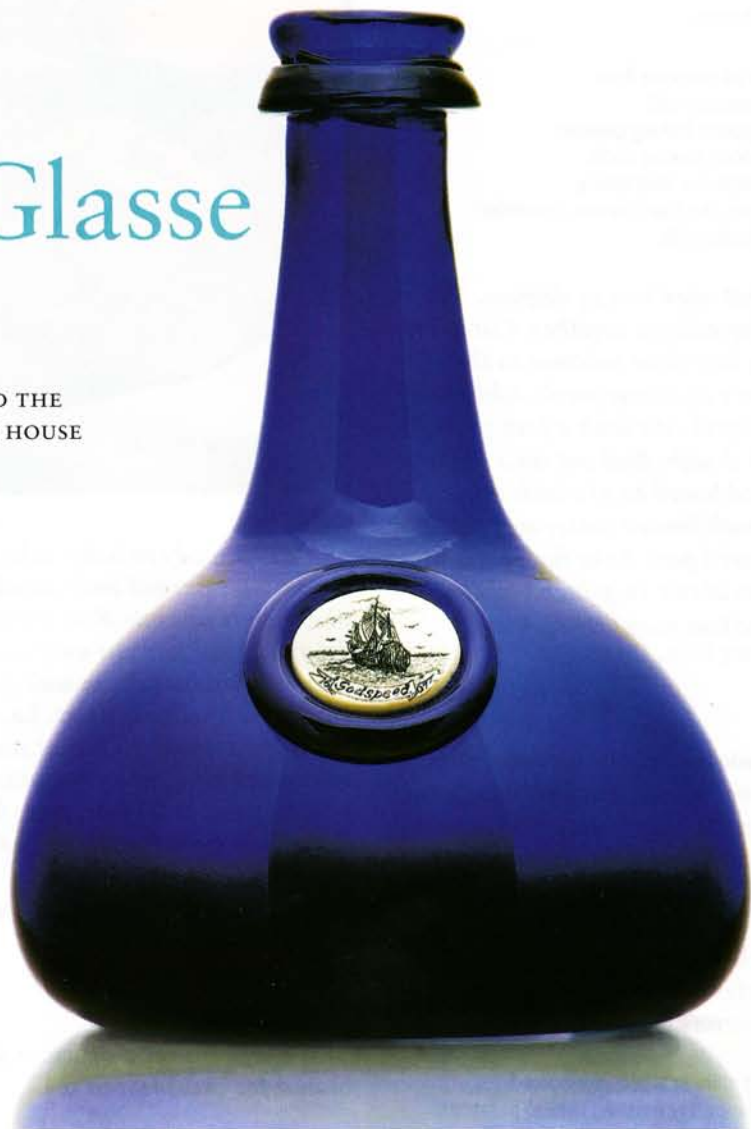
England's desire for glassware in the early 17th Century far exceeded the country's ability to produce it, especially because England was the backwater of European glassmaking. For four hundred years, Venice

led the world in glassmaking, and Venetian glassware was so desirable its government prohibited glassmakers from leaving the republic.

Still, the lure of wealth enticed several Venetian glassmakers to flee northward. By the late 1400s, they were thriving in the German-speaking states and the Low Countries. The English coaxed them farther north, and by 1575 glassmakers there were supplying limited quantities of glassware. But England's forests had been denuded, and the scarcity of fuel

for glassmakers' furnaces hampered expansion of the industry.

Meanwhile, the potential for riches in America beckoned. In 1606, Englishmen formed the Virginia Company of London—also known as The London Company—a joint-stock venture chartered by King James to establish colonies in North America's Chesapeake region. Under the plan, a small workforce of volunteers would get passage, food, protection, and land ownership in America in exchange for seven years of labor. These



In commemoration of the 400th anniversary of the landing at Jamestown, Williamsburg glassmaker John Shelton has created a limited-edition series of bottles bearing the names of each ship on the maiden voyage. The 8-inch bottle is a period replica.

DANIEL HAUER AND JOHN SHELTON GLASSWORKS



This conjectural interior drawing of the 1608 Jamestown glasshouse shows the probable placement and appearance of the three wood-fueled furnaces. One was for mixing and heating ingredients, one for maintaining steady heat while glassmakers created glassware, and the third for the slow cooling process. Archaeologists also discovered a pot kiln on the site.

settlers also were expected to turn a profit for The London Company by finding gold and by manufacturing tar and pitch, clapboard and wainscot, beer and wine—and glassware.

The first group of settlers laid anchor in the James River some 60 miles inland from the Chesapeake Bay in May 1607, and a year later The London Company shipped 70 more people to James Fort to launch profit-making businesses. But the enticements of food, shelter, and land ownership failed to persuade any English glassmakers to venture to the New World. According to the writings of Captain John Smith, by the time the so-called “Second Supply” of settlers sailed from England in 1608, the company had resorted to recruiting eight “glasse-men” from the German states (referred to as “Dutchmen”) and Poland.

‘A GOODLIE HOWSE’

Officials of The London Company believed glassmaking would prosper in Virginia. Earlier explorers had told of abundant trees for fuel, expanses of beach sand for producing silica, and even plentiful oysters whose shells could be ground for the lime essential to glassmaking.

The “glasse-men” landed in October 1608 and by December had

produced selected items of glassware they sent back to England for inspection. Captain Christopher Newport’s cargo was described as “tryals of Pitch, Tarre, Glasse, Frankincense, Sope Ashes; with that Clapboard and Waynscot that could be provided.” No description has been found enumerating the glass items or what the London businessmen thought of them.

Where the glassware originated is also questionable. Sometime between autumn 1608 and the end of 1609, settlers built a glass factory on a jut of land that became known as Glasshouse Point, northwest of the James Fort site. The colony’s secretary, William Strachey, recorded in 1610 the most extensive surviving description of the glasshouse as standing “where the Country wants not for Salsodiack [sodium carbonate] enough to make glasse of, and of which we have made some store in a goodlie howse, sett up for the same purpose, with all the offices and furnaces thereto belonging.” Smith described the glasshouse as “a place in the woods neere a myle from James Towne.”

Historical researcher Jesse Dimmick discovered the Glasshouse Point site in 1931. Seventeen years passed before archaeologist and historian J. C. Harrington conducted the first

extensive excavation. He uncovered a well, clay pit, four furnaces, and a cullet (debris pile) of broken glass objects and drippings. For nearly 50 years historians have concurred with Harrington’s conclusion that Glasshouse Point was the site of the settlement’s earliest glassmaking activities.

In 1994, the Association for the Preservation of Virginia Antiquities (now APVA Preservation Virginia) launched its extensive Jamestown Rediscovery archaeological project, recovering thousands of artifacts and unearthing sections of James Fort previously thought to have been washed away. The association’s 1995 interim field report noting that “large quantities of cullet, cobble fragments with glass drippings, and at least two large beaker-shaped crucibles with glass residue” indicated glassmaking also occurred in the vicinity of the Jamestown Church within the safety of the fort.

This alternate glassmaking site had been suspected as early as 1938 when workers digging a utility trench between the church site and the James River unearthed two crucibles—vessels strong enough to withstand kiln temperatures without exploding—and fieldstones suitable for a glass fur-



Glassmakers at the Jamestown Glasshouse use tools and methods similar to their 1608 counterparts to create a line of early-style glassware marketed by Eastern National at various national historic sites.



The Jamestown Glasshouse created this 9-inch case bottle, a replica of many such bottles found at the original settlement. The name derives from the bottle's square sides, which fit easily into shipping cases. Used to store wine, these bottles were the most common glass vessel in the early 1600s.

nace. A half-century later, archaeologists with Jamestown Rediscovery digging in the same area recovered more artifacts, including three beaker-shaped and nine triangular crucibles.

“The archaeological evidence indicates that there was undocumented glassmaking taking place inside or near the fort,” concluded the APVA report. “This, in turn, raises two possible interpretations: either the glassmaking operations withdrew into the fort during or after the starving time of the winter of 1609-1610, or that trials of glass were made in-

side the fort prior to the construction of the furnaces at Glasshouse Point to determine whether glass could successfully be made at James Towne before investing in the building of a permanent glasshouse.”

Historians with the National Park Service stick by the preponderance of fragment evidence and the existence of furnace ruins at Glasshouse Point and none inside the fort—plus Smith’s references to the glasshouse—in maintaining that the Glasshouse Point ruins are the earliest glassmaking site.

“Fragments of glass have been uncovered at several places in Jamestown and Glasshouse Point, but the historical references and the artifacts mostly point to the glasshouse as being the earliest glassmaking location,” said Curt Gaul, supervisory park ranger for the Jamestown portion of Colonial National Historical Park.

One thing is certain. Glasshouse Point could be a dangerous place. Smith wrote that Powhatan warriors killed at least some of the German glassblowers in the spring of 1609, and Smith himself was ambushed—though he single-handedly managed to capture a Paspahigh chief in the fight—while walking alone on the path from the



The John Smith jug is part of glassmaker John Shelton's Jamestown Commemorative Collection. Shelton is creating a limited edition of the 8-inch period-style jugs in cobalt, green, and amethyst. The brass medallion depicts Smith.

glasshouse back to the fort.

Even if glassmaking were able to survive the 1609 Powhatan attacks, the coming winter brought the “starving time,” a period of horrific hunger and disease that ravaged Jamestown and led to its near abandonment.

Whatever the case, nothing more was heard about glassmaking at Jamestown after the “tryal of glasse” for another 13 years.

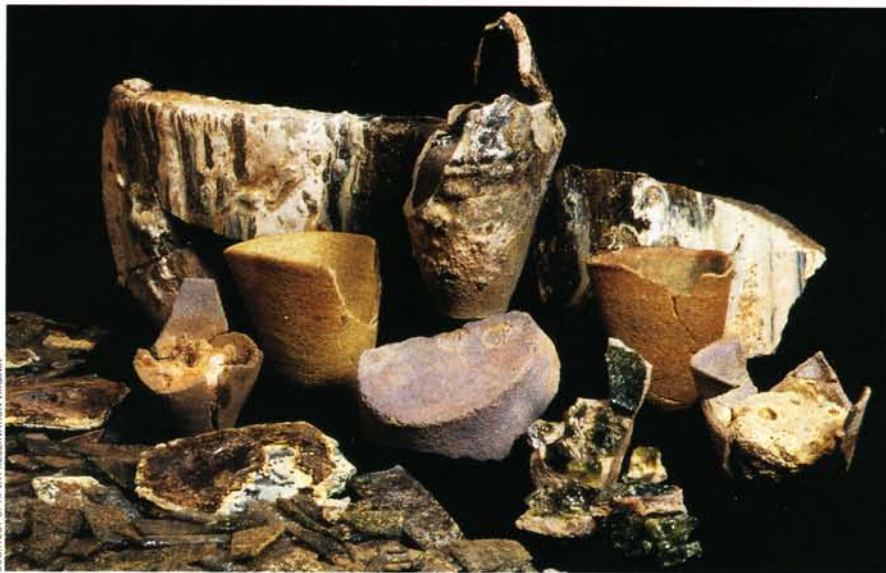
MASSACRE AND MUTINY

Back in England, a certain Captain William Norton and his family decided in 1621 to move to Virginia, and in June he approached The London Company with a proposal to “sett upp a Glasse furnace and make all manner of Beads & Glasse.” He had lined up four experienced Venetianguassmakers and two servants and promised to have his glassmaking plant in operation within three months of his arrival in Jamestown.

Officials of The London Company agreed to partner with Norton, granting him exclusive rights to manufacture Jamestown glass for seven years. In exchange for personally supervising the effort, Norton would receive 20 percent of the value of the glass products produced and a grant of 400 acres. The agreement expressly forbade Norton from keeping any beads because only the company itself retained the right to use them as currency with the Indians.

Regarding beads, some historians have contended the immediate purpose of Jamestown’s glassworks was to make quantities of beads for trading with neighboring Indian tribes and that supplying glassware to England was secondary. But no bead fragments or bead-making artifacts have been found in the cullet at either site.

“Archaeologists have found a variety of glass beads at Jamestown. Most were probably procured in Venice for the purpose of trade,” according to the APVA report. Association historians also noted that members of the Powhatan Confederacy placed little value on glass beads. To them, copper was like gold, and diggings have shown that Jamestown jewelers



Archaeologists have unearthed a variety of artifacts associated with glassmaking at Jamestown. This grouping shows several crucibles (vessels strong enough to withstand high kiln temperatures) and cullet, including rim fragments and flat body pieces of crown glass.

must have been busy creating items for barter, based on the number of copper scraps left behind.

By the time Norton came along, 15 years of financing the Jamestown venture—while reaping none of the hoped-for profits—had strapped The London Company. It could not afford to subsidize the food, clothing, tools, and cost of transporting the 11 persons in Norton's party and was forced to solicit the money from Norton himself and outside investors. Worse, the company's treasurer, George Sandys, sent a discouraging message to Jamestown warning settlers that the company "cannot wish you to rely on anything but yourselves."

Nevertheless, Norton's party set sail in August 1621. Records indicate that they arrived in Jamestown and set up the glass factory, ostensibly at the Glasshouse Point site. Almost immediately, high winds demolished the structure, which had to be rebuilt. At best, the factory operated for six months before the Powhatan uprising in March 1622 massacred a quarter of the Jamestown population and brought glassmaking and every other enterprise to a halt. That summer, Norton died and The London Company dispatched its treasurer, Sandys, to Jamestown to supervise the glassmaking.

As with Norton, the record of Sandys's involvement with the glassmaking venture is not a happy one. He assumed control of the operation early in 1623 and immediately confronted the displeasure of the Venetian glassmakers. According to Philip A. Bruce in his detailed 1896 account, *The Economic History of Virginia in the Seventeenth Century*, the Venetians refused to work with local sand. Sandys dispatched a boat to sail the coast in search of a finer-grained sand. The best they found came from the shores of Cape Henry, but still the glassmakers scorned it. Finally, a desperate Sandys wrote to The London Company requesting that "two or three hogsheads" of quality sand be shipped across the Atlantic to Jamestown.

"The difficulty did not lie only in securing the sand," Bruce wrote. "The Italian workmen employed in the glass-house were wholly intractable." They wanted to return to Europe. They worked so slowly that they accomplished nothing of consequence, according to Sandys, and they went so far as to crack one of the furnaces by bashing it with a crowbar. Furious, Sandys wrote of his glassmakers: "A more damned crew Hell never vomited."

"From this it would seem that the glasshouse was abandoned at some time in 1624," wrote Charles E.

Hatch Jr., in the *William and Mary Quarterly*. "In any case, by April 23, 1625, the decision had been reached to abandon all ideas of reviving the project."

COMMON GREEN

Based on recovered glass drippings and fragments of pieces known to have originated in Jamestown, the glass is called "common green," a pale shade attributed to the iron oxide naturally occurring in the region's sand.

Archaeological excavations have not revealed what glass items were made at Jamestown, although experts who have studied the fragments believe drinking glasses may have been manufactured. Most of the thousands of glass fragments have been traced back to England, Germany, Venice, and the Low Countries.

The settlement's glassmakers had ready access to sand along the beaches of Glasshouse Point and they obtained lime from crushing oyster shells and some limestone. They derive potash, another essential ingredient, from the ashes of hardwoods and soda ash from seaweed ash.

Modern glassmaker John Shelton noted, "The sand here is adequate for making glass, but it's very coarse



The brandy shot glass created at today's Jamestown Glasshouse is a reproduction of a small beaker unearthed at Jamestown. The four raspberry prints on its sides help the drinker grip the glass, which stands just over two inches.



Using traditional methods, glassmaker John Shelton creates several thousand pieces a year.

compared to what the Italians would have been used to. The glass comes out a pale green and would have to be darkened if you're making wine bottles so it could filter the ultraviolet light. And even getting the oyster shells ground fine enough could have been a problem unless they had some very good grinding equipment."

Chopping the necessary amounts of wood and stoking the furnace fires would have been a huge challenge, according to Eric Schneider, supervisor of glassblowing at the reconstructed glasshouse in Jamestown. "We estimate it would take about two weeks of 24-hour fire to get the furnaces to the temperature to melt even a small quantity of glass," he said. "Basically, that's a whole lot of chopping wood."



Natural gas has replaced wood as the fuel for glassmaking furnaces, even for a purist like Shelton.

Even the modern gas furnaces in the reconstructed glasshouse take nearly nine hours to reach the 2,250-degree temperature needed to melt glass.

A number of today's glassblowers produce early-American-styled glassware. We profile two who have a definite Jamestown focus: John Shelton of Williamsburg, Virginia, and the reconstructed Jamestown Glasshouse.

SHELTON GLASS WORKS

"I grew up in the shadow of Jamestown," said Shelton, one of the country's most prolific traditional glassblowers. "This is part of my personal heritage." In fact, his ancestors owned land on Glasshouse Point and his mother collected glassware. "She was drawn to carnival glass in



Time is a critical factor at every stage of glassmaking. Here Shelton has only a few seconds to shape a handle onto a pitcher.

particular and I guess she instilled the love for glass in me at an early age."

Shelton has stuck by that love for 35 years despite ups and downs. The owner of Shelton Glass Works in Williamsburg, he is a recognized expert on early American glassblowing and a purist—as far as common sense will allow—who still manages by himself to produce between 12,000 and 15,000 unique pieces a year.

As a teenager, Shelton wanted to build furniture and learn taxidermy. Then came Vietnam, where he flew air-ambulance helicopters and airlifted nearly 2,000 fellow soldiers to medical aid, "something I'm very proud of." Discharged and back home in 1972, a jobless Shelton answered an ad to learn glassblowing, no experience necessary. He and two other men were hired as apprentices by a West Virginia company to learn the craft of glassblowing and to give public demonstrations in Williamsburg.

Three years later and still working for minimum wage, they approached management about a raise. No, they were told, they weren't making enough glassware. So they worked nights and weekends and went back to management. No, they were told, now they were producing too much and being wasteful. So they peddled the surplus glassware on their own time on behalf of the company. Accused of violating a non-compete agreement, they saw no way out but to quit.

That led to the birth in 1975 of Shelton Glass Works. For the next 15 years, Shelton concentrated on reproducing 17th- and 18th-Century glass-



Shelton is known for his extensive line of handcrafted glassware in 17th- and 18th-Century styles. These decanters and pitcher in cobalt bear customized medallions for corporate gifts.

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DANIEL HAERER/AND/SHELTON GLASS WORKS

ware. Given access to Williamsburg's archives, he studied period glassware patterns so he could develop exact copies. His business grew and at one point employed nine people, including a team of glassblowers.

Then came Operation Desert Storm. Shelton was re-activated, and while he fought in the Persian Gulf his business fell apart, with no governmental recompense. "By the time I was able to come home, we'd lost everything we spent all those years building," he said. "Ours was just one of many businesses where that happened, and we were featured in a report by Dan Rather on CBS News."

But Shelton is a glass-half-full sort of guy. "You know, I'd been giving some thought to cutting back the size of the operation, and that just made it happen quicker," he said. Plus, it's easier for Shelton to go it alone because of his tenacity for sticking to the old ways of making glassware.

"When I say we make glass," he said, "I mean we really make glass." His only concession is a 250-pound furnace fueled by natural gas instead of wood. "We try to preserve the original techniques." He gets his sand from a West Virginia supplier, but mixes the ingredients himself with his rendition of old recipes to get the right density and colors. "I do both exact reproductions and some adaptations, but everything I make looks colonial."



DANIEL HALERLAND/SHELTON GLASS WORKS

Shelton's limited-edition commemorative bottles are named for each of the three ships that carried the first settlers to Jamestown (this one shows the *Godspeed*). Each period-accurate, 8-inch bottle has a scrimshaw medallion by Peter Driscoll and a certificate of authenticity.



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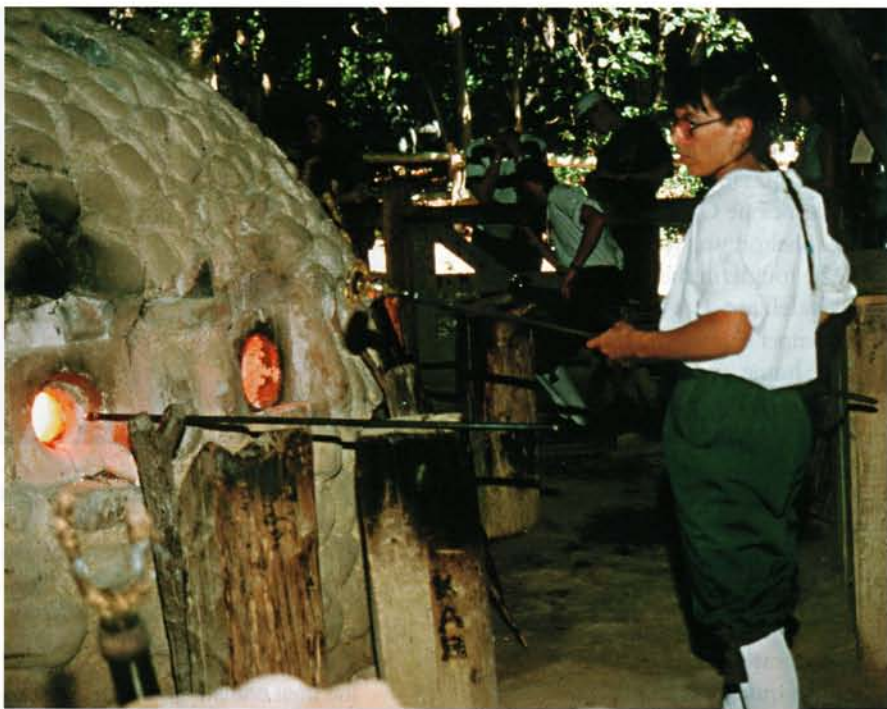
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Today's Jamestown Glasshouse operates next to the ruins of the original glassmaking operation. Interpreters dressed in colonial attire create glassware and explain the history of Jamestown glassmaking to visitors. They work at furnaces covered with fieldstone shells and fueled by natural gas. The replicas are much larger than the original four furnaces unearthed on Glasshouse Point.

Shelton sells from his studio, his web site, at various shows, and in several museum gift stores. Almost everything is made to order with turnaround usually of two to four weeks, except on some highly intricate pieces that could take two months.

He feels a personal pride in the Jamestown 400th Anniversary and has introduced a commemorative line of glassware patterned after period designs. A series of bottles bears the names of the three ships that brought the first settlers—*Godspeed*, *Discovery*, and *Susan Constant*—available in limited editions in green, cobalt, and amethyst. He also makes a Captain John Smith jug.

"It's my personal contribution to the anniversary," Shelton said. "I believe we're a major part of maintaining the true legacy of the original Jamestown glassblowers."

THE JAMESTOWN GLASSHOUSE

Near the preserved ruins on Glasshouse Point stands the reconstructed Jamestown Glasshouse, where costumed interpreters teach visitors about the site's glassmaking history and demonstrate its techniques.

"Our job is to produce as many glass pieces as possible," said Schneider, who has worked at the Glasshouse as a glassblower for twelve years, five as supervisor. "Sometimes it's a little tricky because most people like to talk to the glassblowers, to ask us questions while we're making the pieces—it must be something about the knickers."

Fire destroyed the first reconstructed glasshouse, built near the ruins in the 1950s, in 1974. The current structure went up two years later. It has replica furnaces that are considerably larger than their 17th-Century predecessors, essentially rock shells that house the functional natural-gas furnaces. "Gas gives us the super-hot flame and the logistical benefit of not having to chop large amounts of wood," said Schneider, chuckling.

Glass made in the glasshouse begins with fine sand and other ingredients pre-mixed by a North Carolina company. "Our emphasis is more on glassblowing and glass shaping and not so much on melting the sand," said Schneider. The operation produces a wide array of glassware, including some contemporary designs and

crystal never created at Jamestown. Schneider said this range of designs goes back to the initial reconstructed glasshouse in the 1950s.

"When they began glassblowing here, some of the designs were authentic to Jamestown, and there also was a group of generic designs from West Virginia glass factories that they began making," he explained. "A lot of our pieces are reproductions of artifacts from this area, and some are actual reproductions of pieces found at Jamestown." Examples include a medicine bottle, brandy shot glass, and a wine bottle.

Eastern National, a non-profit organization headquartered in Fort Washington, Pennsylvania, operates the glasshouse among the educational services it provides at nearly 150 national parks and public trusts. About 40 percent of the Jamestown products are sold at other Eastern National operations and at Colonial Williamsburg. For pricing, call the glasshouse directly. ✧

Oregon writer Gregory LeFever is a contributing editor of *Early American Life*.



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