

How to Sew a Dugout Canoe

AFTER TWO EXHAUSTING YEARS trekking through unknown country out West, the Lewis and Clark expedition in the spring of 1806 was ready to hightail it down the Missouri River and head for home.

But the explorers still faced one overwhelming logistical headache. How were they ever going to haul a small mountain of equipment all the way back to St. Louis? Along with scientific gear, they had the plant, animal and mineral specimens they'd discovered in the new lands. There were stacks of detailed maps and journals that would speed future expeditions on their way. They still had piles of camp and cooking equipment, guns, powder, lead and other provisions.

So the Corps of Discovery turned to what was then a workhorse of the Western rivers — dugout canoes hewed from giant cottonwood trees. It took exper-

dition members about a week to hack out a flotilla of dugouts. Then they loaded the lumbering craft and paddled their way down the river and into history books.

As America rediscovers those exploits during the upcoming Lewis and Clark bicentennial, an unlikely crew of boat builders here in Missouri is rediscovering just what it takes to turn a seven-ton chunk of cottonwood into a serviceable cargo craft.

Unlike the soldiers and the French boatmen who went along with Lewis and Clark, this hardy band have all kept their day jobs. They're scientists and managers at the Missouri Department of Conservation, and nearly half are MU alumni.

"You know, when I was studying forestry at the University, I never thought in my wildest dreams that I would ever be building a canoe out of a big cottonwood log," says Tom Ronk, BSF '70, a forester

and a Missouri River unit chief for the conservation department.

But he and a half-dozen or so co-workers have built two dugout canoes — one is 27 feet long and one is 35 feet long — using traditional tools to hollow out the boles of large cottonwood trees that just last year stood on the banks of the Mississippi River near Louisiana, Mo.

Over the next several years, people all around the state will get to see their handiwork. In September, the group paddled more than 50 miles down the river, from Franklin Island near Boonville to Jefferson City.

Lewis and Clark's men took just a few days for that leg of their journey. In fact, on their return voyage through Missouri they made 80 miles and more on some days. The modern-day expedition took a little longer because Ronk and his friends stopped at boat accesses and river communities along the way to give educational presentations.

A band of adventurers has rediscovered the craft of fashioning dugout canoes that are similar to the boats used for Lewis and Clark's return journey down the Missouri River.



STORY BY JOHN BEAHLER

PHOTOS BY STEVE MORSE

They always drew crowds when they demonstrated the old-time boat-building techniques at outdoor festivals around Missouri. Dressed in floppy-brimmed hats, period pantaloons and billowy gingham shirts, they hacked away at the cottonwood log with adzes while fielding dozens of questions from fascinated onlookers.

But then, that's the whole idea behind this king-sized woodworking project, says Steve Young, BS FW '74. Young is a biologist who's worked for years on wetlands and flood plain issues along the Missouri River.

"As we go to these re-enactments, we can sit by the canoe and talk about the Lewis and Clark expedition and how they used natural resources along the river," Young says. "It's really a great opportunity for us to talk to the public about what the river was like then and what the river looks like now. We can talk about hydrology changes and flood-

way issues, the forest, birds and animals along the river."

Some of the other team members include Shannon Cave, AB, MA '71, Lee West, BS Ag '73, Tim French, Tim Frevert, Jim Low, Jim Wilson and Martha Daniels.

There was a little complication with one dugout, though. The log they used had a slight tilt to it, and no one was sure whether that would put a hitch in the canoe's navigational get-along. "You never know until you put them on the water how they're going to float," Ronk says.

The group knew that if the tilt caused a problem, they could always trim the log. They hoped to keep it at least 30 feet long. "Research tells us that 30- to 40-foot dugout canoes were common on the lower Missouri and Mississippi rivers," Ronk says. "The history books say that they could bring literally tons of gear down the river in these boats."

History books are where this boat-

building crew turned first for information about traditional dugout canoes. They also used a modern-day resource that Lewis and Clark couldn't have imagined — the Internet.

"What we found out is that there's just not a lot of information out there," Ronk says. "We think we're real close, but it's like when a family keeps a diary on their vacation. You very seldom explain what your Ford Taurus looks like. Well, Lewis and Clark didn't explain what their dugout canoes looked like.

"We do know what the boats were made of; they mention ponderosa pine and cottonwood. We do know they were 25 to 30 feet in length. But as far as how the bow and stern were shaped, we don't have a clue. A lot of it we just did by the seat of our pants."

Keeping those pants dry was another real concern. Six members of this 21st century corps of discovery set out on a maiden voyage down the Missouri River





earlier this year, all of them prudently wearing life jackets. They wanted to resolve a question that never crossed the minds of the original explorers: What would happen if they met up with a towboat and barges pounding down the middle of the river?

To answer that, they had their chase boat zip by at full throttle, trying to elude the wake that a towboat kicks up. "What we found out is that a 3,000-pound log does not bob in the water," Ronk says. "The boat didn't move; that wave came right over the side. So, if we do see a tow and barge when we're out there, we'll probably head to the riverbank immediately." They also made a more pleasant discovery. Their boat — for all its weight — was surprisingly maneuverable.

But it took months of work and planning to get that far. For instance, just moving this wooden behemoth from point A to point B is a major chore. When they travel the state, they have to winch the heavy dugout aboard a flatbed trailer.

Earlier explorers wouldn't have bothered, Ronk says. "Back in 1806 they would select these trees as close to the bank of the river as they could, fall the tree and then roll it or slide it into the water. Once a dugout went in the water, it probably never came out. When they were through with them, they just built another dugout."

Another challenge was to puzzle out the lost boat-building skills that once had



The shade-tree boatwrights started their project with the idea of using chain saws, but discovered that old-time tools such as adzes, drawknives and mallets, far left, worked much better.

After a weary session of hacking away with a sharp adz, left, the craftsmen would joke about counting all their toes.

On a September float trip down the Missouri River, paddlers, from left, Jim Henry Wilson, Grady Manus and Tim Frevert found that the 3,000-pound cottonwood canoes were surprisingly maneuverable.

As the dugouts travel around Missouri, crew members will educate the public about natural resources. Steve Young, above right, might throw in a little entertainment, too.



been passed from generation to generation. "Most of us preferred to use old-time tools, but for the sake of time we tried to use chain saws," Young says. "We rationalized that Lewis and Clark would have used the latest technology they had available; why can't we? What we found out was that chain saws were

of very little use."

The problem is that chain saws are designed to cut things in two, not to hollow out the inside of a huge cottonwood log. "We ended up going back to the old, traditional tools, and it was faster and worked better than any power tool we came up with," Young says.



They used adzes to hew out the canoe cockpits, drawknives to smooth the gunnels and hull. "The foot adz was probably the tool of choice," he says. "We know Lewis and Clark took adzes with them on the expedition."

To hollow out the rounded insides of the boats, they reached into their antique tool kit for an old, hand-held barrel-maker's tool called a cooper's adz. "That was probably the hardest part of it, excavating that concave interior," Young says. "I'm not sure we actually broke the code on the best way to do that."

Along the way, these shade-tree boatwrights overcame a few obstacles with old-fashioned frontier ingenuity. For example, they wanted to leave 5 inches of wood in the canoe bottom to give their craft a lower center of gravity and better stability. But how would they know when they hacked their way down to the 5-inch mark?

"The joke was that you stop right before you see daylight," Young says. "We

would have killed the person who chopped a hole in the bottom." Then Young had an idea. An accomplished woodworker, he uses a small caliper to measure the fiddles and mandolins that he builds and restores. So Young devised a giant, wooden caliper to gauge the dugout's thickness. Problem solved.

"I know we took a lot more time and were more precise than any mountain man or fur trapper," Ronk says, "because we didn't know what we were doing, and we didn't want to have to go get two more logs and start again."

They discovered another challenge that was even harder to control, and that was the wood itself, Ronk says. "Cottonwood, when it dries out, just busts all apart. The faster it dries out the more unstable it becomes, and it splits terribly." That means the boat-building crew has to fill their dugouts with water to keep them wet as much of the time as possible.

"In fact, we know that the common

practice was to sink them during the winter or if they weren't going to use them for a while," Young says. "They've found a few old historical dugout canoes, and they're almost always full of rocks where they've been sunk."

Another problem they ran into seemed to take care of itself. It turned out they had a leak in the stern of their first boat, but once on the water for a while the leak swelled shut.

"When we took it on the first float trip, it was leaking pretty good in the very beginning," Young says. "We had one person bailing almost all the time when we first started, but at the end of trip it wasn't hardly leaking at all."

One thing's for sure, though. This crew will have all the bugs worked out by the time the Lewis and Clark bicentennial commemoration rolls through the state beginning in 2004. And their years of work will give Missourians a better idea of what life was like here 200 years ago. ☼