

# Man on an accidental mission: the quest for a perfect sundial

BY ANDREW MARSHALL

Roger Gilbertson was sitting in his easy chair, watching shadows move across his house when he suddenly became curious about sundials. He went to Lowes to purchase one, but they were out of stock. So he decided to make one himself.

Gilbertson, a Minnesota-by-way-of-Texas transplant to Haywood County, isn't your average Joe. A retired aerospace engineer who specialized in orbital mechanics, the 86-year-old helped NASA land men on the moon and once stood on stage with famed rocket pioneer Wernher von Braun. So, as you'd expect with that resume, Gilbertson's

early backyard experiments with sticks, rocks, and cardboard quickly gave way to increasingly more sophisticated sundials.

The end result is an eye-catching sundial the Folkmoot Friendship Center, the Waynesville institution dedicated to the culture, arts, education, and traditions of Western North Carolina. According to Gilbertson, it's the most accurate horizontal sundial in the world.

"It's another example of the collaborations we have with the community of artists and community in general within Haywood County and Western North Carolina," said Jeff Haynes, in-

terim board chairman of Folkmoot. "At the end of the day, it's about the legacy we leave for the ones who are here after we're gone."

With a 5-foot radius, sturdy aluminum construction, and concrete base, the Folkmoot sundial will certainly be around for a while. But what makes it so accurate?

## A crash course on sundials

It's easy to get lost in the mechanics of how sundials work. But to put it simply as possible, a horizontal sundial has two parts. The first part is the

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**SUNDIAL CONNOISSEUR** — Retired aerospace engineer Roger Gilbertson decided to make his own sundials after watching shadows move across his living room.

## Sundial

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gnomon—the angled rod that sticks up out of the sundial. The second part is the dial plate—the surface where that shadow falls. Dial plates are usually inscribed with hour (and sometimes minute) lines.

As the sun moves across the sky, the gnomon casts a shadow across the time indication lines on the dial plate, and anyone walking by can tell what time it is. In theory. Where it gets complicated is

that the gnomon's angle must be equal to the local latitude, and it must point toward true, not magnetic, north.

All of that is easy enough for a retired aerospace engineer to manage. Gilbertson crunched some numbers and chose a day for installation when solar noon—the moment when shadows point toward true north—occurred exactly at 12:30. That allowed him to ensure his sundial was placed correctly. But you don't send people to the moon without developing an exacting mind.

"I'm a perfectionist," Gilbertson admitted. There was

still a major problem to solve. For complicated reasons involving the Earth's tilt and elliptical orbit, horizontal sundials only show "true time" four times a year. Anyone attempting to read one has to perform some math to compensate for these factors before setting their watch—a problem known as the "equation of time."

Gilbertson hit upon a novel solution to solve this problem. His final sundial design has an adjustable dial plate. Rather than being attached to the dial plate, the gnomon on Gilbertson's sundial sticks up through it, allowing the plate to move independently. Once

every few days, Gilbertson visits the sundial with a hammer and a chunk of two-by-four and whacks the dial plate until it inches into the correct position.

And how does he know the correct position? Lots and lots of calculations, painstakingly harvested from the internet and transcribed by hand onto graph paper. Gilbertson included indicators on his dial plate that show him exactly where the dial needs to sit to read accurately on a given date. He checks the calendar, consults his graph paper, and adjusts accordingly.

"I don't think of myself as

an inventor. All this information was on the internet. I just collated it all," he said. "It's not cheating. It's just working with the sun."

## A lasting — and accurate — legacy

Provided someone acts as a "timekeeper" for the Folkmoot sundial, one can count on it to be accurate between a few seconds and two minutes, no matter the time of year. Sure enough, when the clock struck noon during the Mountaineer's interview with Gilbertson, the gnomon's shadow was sitting squarely at 12.

And the sundial's striking appearance is already generating some fans.

"I think it's so cool that we can tell time by the sun. I know that sounds so basic, but I love that this doesn't rely on any technology whatsoever," said Kirstin Batchelor, a yoga instructor who teaches nearby. "And it's just beautiful."

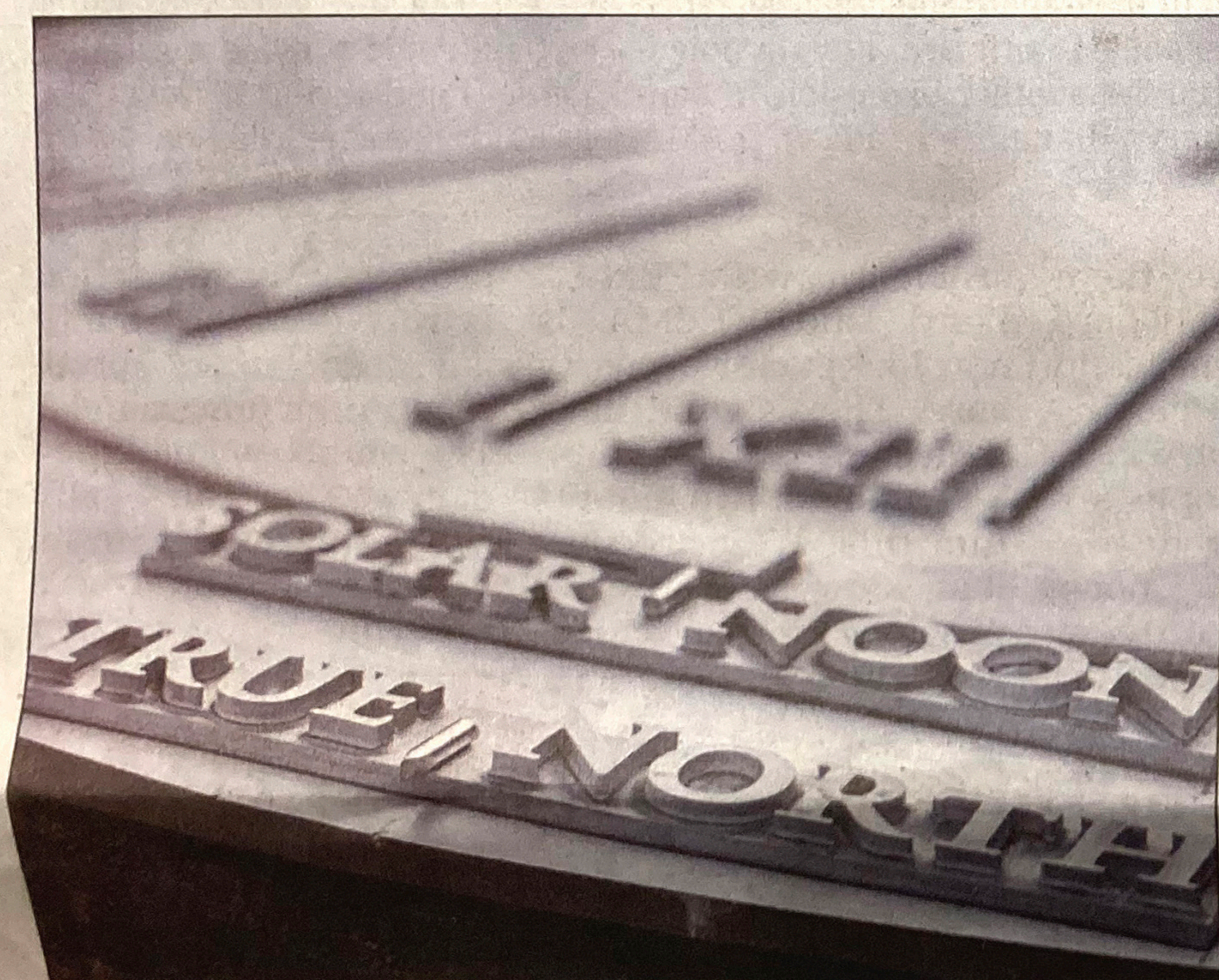
Gilbertson has a host of accomplishments he can point to in his life, but he's particularly proud of his sundial. He's in communication with the North American Sundial Society (NASS) for formal recognition of his sundial's timekeeping prowess.

"It's just satisfying knowing that I took something I didn't know anything about and made something so accurate," he said.



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**ACCURATE** — Gilbertson claims the Folkmoot sundial is the most accurate horizontal sundial in the world thanks to its adjustable dial, a mechanism that considers factors like the equation of time and solar noon.



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**SUNDIAL** — The Folkmoot sundial boasts an all-aluminum construction and a five-foot diameter base.