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Probing the Astronomical Significance of Stonehenge

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In 20 years of study, Professor Jack Robinson has come to believe that the prehistoric stone structure that has "rocked" the world with wonder was built thousands and thousands of years ago as an ancient observatory to determine lunar eclipses and other astronomical events.

Armed with an astronomer's globe, a calculator and past research reports, USF professor Jack Robinson has probed the astronomical mysteries of prehistoric civilizations.

By David Liller

Robinson, an education professor at USF's St. Petersburg campus, also teaches an archeo-astronomy course. In that course, students learn, among other things, about two archeology sites that have interested Robinson for more than 20 years: Stonehenge in England and Indian medicine wheels in the American West.

Archeo-astronomy, Robinson says, "uses archeological evidence to infer astronomical techniques and concepts." And the design of Stonehenge has held a particular fascination for the USF researcher since the day he saw a certain television special in the early 1960s. "CBS had a show around 1964 called The Mystery of Stonehenge. They had one astronomer, Gerald Hawkins, who was one of the first persons to discover the astronomical significance of Stonehenge, and R.J.C. Atkinson, an archeologist who doubted Hawkins' theories. After the show, I decided to do some research and see who was right. Actually, my early research showed that while Hawkins was right about Stonehenge having astronomical significance, he was wrong about the uses of several of the stone markers. And the television show was wrong in several areas, too."

Robinson said Stonehenge, the eerie stone remnants near Salisbury of Neolithic and Bronze-Age tribes, was started as early as 2800 B.C. and was completed in several phases over many centuries. Although often associated with an ancient people called Druids, Robinson said the site definitely predates the Druids, who were not found in England before 500 B.C.

The professor's working hypothesis is...
that the earliest stone markers were erected to track the passage of seasons. They did this by putting up one “foresight” stone to mark the direction of summer solstice sunrise and erecting another for winter solstice sunset. Later they went on to more elaborate observations, Robinson said.

The site is also a monument to the determination and zeal of the ancient society. It took approximately 1,500 men 10 years to construct the innermost part of Stonehenge. The entire site was developed over more than 1,000 years, beginning with just a few stones and evolving into an elaborate closed-circle configuration, according to Atkinson. Atkinson also explained, in an illustrated guide to Stonehenge, how the stones were raised and joined together.

The English archeology professor said the vertical stones were raised using primitive levers and ropes to pull them upright. The horizontal stones resting on top of the vertical ones, forming lintels, were raised on platforms of stacked wood, which the prehistoric workers kept adding to until the platforms were level with the top of the vertical stones. The vertical stones had been carved until a finger of stone remained at the top of each, making a tenon. The horizontal stones had holes drilled out on each end of the stone’s bottom side, making the mortise, so that the mortise fitted snugly on the tenons. The prehistoric craftsmen also used tongue-and-groove joints to fasten the lintels to each other.

“It’s fascinating to see how clever our ancestors were,” Robinson said.

Atkinson said not only did the Stonehenge dwellers go to elaborate lengths to construct the monument, they first had to quarry the stone at places as far off as Wales, hundreds of miles from the site. Transporting the stone meant either a long voyage around the south of England or dragging the stone for miles over the countryside, all for a single purpose: worship.

Robinson said Stonehenge was clearly a worship center for the prehistoric Britons, whose religion was closely aligned with nature. For that reason, they built Stonehenge and other monolithic structures in the English countryside to keep track of natural cycles.

“Stonehenge is like a great cathedral and the others are like small village churches,” Robinson said.

The USF professor’s research, like other arche-astronomers interested in Stonehenge, centers on deciding what functions particular stones played in these prehistoric worship services.

Robinson’s latest work, done while on sabbatical from the University this past year, indicates that several of the stones were placed in order to mark the different locations on the horizon of the moon’s rising and setting.

Robinson theorizes that since the summer and winter solstices (known as midsummer and midwinter in England) (Continued on page 6)
held such significance for the Stonehenge dwellers, they would also be interested in marking the changes of the moon's rising point during those periods. As seen from the center of Stonehenge, the midwinter full moon's change of location at its rising is about 20 degrees; this shifting of the rising point is called the "moonswing". He said one stone, known as Stone D, is situated just inside the "theoretical northern limit of the Midwinter Full Moonrise." Similarly, Stone F lies just inside the southern limit of the midwinter full moonrise. Stone B resides between Stones D and F and marks the midsummer sunrise, according to Robinson's theory. The large stone known as the Heel Stone, Robinson said, marks the center of the moonswing range — "the stone where the midwinter full moon would be seen to rise if it were in eclipse as it came up," Robinson said.

"My theory is to show that numerals and written records were not necessary; by using visual thinking and by being in the right place at the right time, the Stonehenge observers easily could have discovered certain eclipse cycles..."

Furthermore, the USF professor states, prehistoric Britons could track and predict midwinter lunar eclipses by using Stone D and F and the Heel Stone. "If the Midwinter Full Moon rose near the Heel Stone, it was in danger of being eclipsed that night," Robinson wrote in a paper presented at the 173rd meeting of the American Astronomical Society in Boston last January. "If it rose much to the left or much to the right of the Heel Stone, a lunar eclipse that month was impossible."

Other Stonehenge research conducted by Robinson also centers on lunar eclipses. Robinson said lunar eclipses, especially those at midwinter, would be of great interest to those gathered at Stonehenge. "At midwinter they would have a special ceremony. Since midwinter marked the time when darkness was dominating day, they would hold the ceremony to push the darkness back and keep the world from becoming completely dark. Now if there was a lunar eclipse during this ceremony, that would be a bad omen. They would want to predict when one was going to occur so an additional, special ceremony could be ready for the eclipse," Robinson said.

The USF professor said although some Stonehenge researchers doubt the site was used for eclipse predictions or that the prehistoric Britons were capable of such astronomical feats,
American and Canadian west, there are curious rock formations apparently built mainly mysterious for a century. It was done with diagrams that accurately predict the natural stars of the sky rather than written accounts. Using the position of certain constellations as guides, Robinson said the priests would have been able to make schematic diagrams that accurately predict the lunar event.

"My goal in the Stonehenge research is to show how certain stone alignments and counting circles were uniquely suited to predicting lunar eclipses by keeping track of 'eclipse seasons' in the early phase of Stonehenge's development and by using true 'eclipse cycles' in the later phases. If I am right, those clever astronomer-priests discovered these simple, but effective, techniques long before the Babylonians or ancient Greeks," he said.

Robinson plans to continue researching the monument and other primitive observatories. Meanwhile, he uses his work in his class on archeo-astronomy, providing his students with real-life examples of what can be accomplished with an astronomical globe and a calculator.

Under the wide prairie skies in the American and Canadian west, there are curious rock formations apparently built by Indians but whose purposes have remained mysterious for a century. It was discovered true eclipse cycles because the ancient astronomers had discovered certain eclipse cycles and used them successfully for eclipse predictions. The USF professor later used Eddy's data as a starting point for his own theory. Robinson disagreed.

Robinson explained how the prehistoric Stonehenge residents could have kept track of eclipses without formal written records.

"Some scholars doubt that the priest-astronomers of Stonehenge could have discovered true eclipse cycles because they had no known system of numerical notation and no way to keep the necessary written records," Robinson wrote in 1981. "My goal is to show that numericals and written records were not necessary; by using visual thinking and by being in the right place at the right time, the Stonehenge observers could have discovered certain eclipse cycles and used them successfully for eclipse predictions."

Robinson said in the paper that in 2261 B.C., at midwinter time, a spectacular lunar eclipse could be seen from Stonehenge just after sunset. The USF professor said the eclipse occurred next to the Heel Stone. After that, the priests of the tribe could have recorded the lunar eclipses that occurred with 98 percent accuracy in groups of 19 years — 19 years — 27 years.

"Then they could generalize and predict eclipses of the moon at other times of the year also."

Robinson theorized their recording could have been done with diagrams of the sky rather than numerical or written accounts. Using the position of certain constellations as guides, Robinson said, the priests would have been able to make schematic diagrams that accurately predict the lunar event.

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