

Historic Sites Extend Holiday Invitations

"Deck the halls with boughs of holly..."

Holiday visitors to North Carolina's state historic sites will be greeted with boughs of holly as well as many other natural decorations during December.

All across the state, the sites will recreate North Carolina Christmas past from the colonial era through the turn-of-the-century, ranging from military encampments and Victorian Christmas to open house hours and candlelight tours.

Period decorations, natural greenery, music and refreshments from period recipes will also be featured at the various sites. Site decorations will be in place throughout the holiday season during regular visitation hours.

Admission is free to the public at all the sites for the holiday festivities.

Dates and activities for specific sites follow. (For more details, call each site.)

Historic Bath:
On Dec. 6, 1 p.m. to 5 p.m., Historic Bath will offer visitors a Christmas Open House with emphasis on traditional 18th and 19th century food demonstrations. The 19th century Bonner House will feature Christmas baking + cakes, gingerbread and pie. In the dining room, refreshments of mulled cider and cookies will be offered to visitors.

In the yard of the Bonner House, visitors will see cider press demonstrations.

In the 18th century Palmer-Marsh House, volunteers and members of Peggy Elliott's home economics class at Bath High School will prepare 18th century dessert and tea tables. Additional cooking will be in progress in the fireplace.

Staff and volunteers will be dressed in period costumes. In the Palmer-Marsh House special music will feature Marie Rees, vocalist, and 18th century chamber music with harpsichord and recorder.

Decorations throughout the houses all will be handmade of natural native greenery and fruit. In the Palmer-Marsh House and St.

Thomas Church visitors will hear traditional organ and recorder music.

Historic Bath is located on NC 92, 14 miles east of Washington. For details telephone 919-923-3971.

Brunswick Town-Wilmington:
On Dec. 13, 1 p.m. to 5 p.m., Brunswick Town will offer a Christmas Open House with live entertainment, 18th century natural decorations and traditional refreshments, served by staff and volunteers.

The traditional cookies and cakes will be provided by staff members. Decorations will be made by the staff and the Brunswick County Home Economics Extension Agency. A program of varied music will be offered throughout the afternoon.

A 5 p.m. vesper service conducted by the Rev. Frank Ross will follow at the ruins of St. Phillips Church, sponsored by the St. Phillips Episcopal Church of Southport.

Brunswick Town State Historic Site is located midway between Wilmington and Southport off NC 183 (adjacent to Orton Plantation). Telephone 919-371-6613.

Caswell-Neuse-Kinston:
On Dec. 13, 1 p.m. to 4 p.m., Caswell-Neuse State Historic Site will hold an open house for visitors. Among features of the day will be a period blacksmith demonstrating 18th century techniques and uniforms of Civil War soldiers to answer visitors' questions.

Visitors will be offered light refreshments.

Caswell-Neuse State Historic Site is located in Kinston, west of the city limits on US 70 Business. Telephone: 919-527-4786.

Fort Fisher - Kure Beach:
On Dec. 5, 1 p.m. to 5 p.m., Fort Fisher State Historic Site will host an open house and special guided tour with costumed guides explaining activities to visitors. Focus will be how the Christmas season might have been for Confederates stationed during the Civil War. Tour guides will also give glimpses of the history of Fort Fisher and the

Dubois. Additional cooking will be in progress in the fireplace.

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Wilmington area.

Visitors may join in singing period hymns from period hymnals.

Local 4th grade elementary students will make traditional 18th century decorations for the tree, and visitors will be offered samples of period refreshments from authentic recipes. Local musicians and choral groups will offer special music during the afternoon.

First Fisher State Historic Site is located near Kure Beach, three miles south on US 421, 20 miles south of Wilmington. Telephone 919-458-5558.

Edenton:
On Dec. 6, 2 p.m. to 5 p.m., the 1774 James Iredell House and the 1725 Cupola House will hold open house hours. Visitors will see mid-18th century period decorations of natural greenery and fruit, prepared by the James Iredell Association for the Iredell House and the Edenton Garden Club for the Cupola House.

Visitors will be offered the traditional "growing board" display food featuring 18th century recipes. Some of the recipes will be printed for guests to take home.

Various local groups will provide Christmas music. Admission is free of charge. The Iredell House is located at 105 E. Church St. Telephone: 919-482-2637.

The Cupola House is located at the corner of Water and Broad Streets.

In the 18th century Palmer-Marsh House, volunteers and members of Peggy Elliott's home economics class at Bath High School will prepare 18th century dessert and tea tables. Additional cooking will be in progress in the fireplace.

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traditional trimmings.

Decorating the house and kitchen will be members of the Friendly Extension Homemakers Club.

During the afternoon, members of the 1st N.C. Volunteers Ladies Auxiliary in period dress will serve homemade cookies and a warm beverage from old-time recipes.

State and federal troops including Confederate reenactment troops in period dress, will be stationed at various places at the site to answer visitors' questions.

Bennett Place State Historic Site is located in Durham, west of US 70 Business; marked turnoffs onto Neal Road (eastbound on I-85, take Duke University exit; westbound, US 501 exit). Telephone: 919-363-3545.

Duke Homestead - Durham:
Dec. 13, 2 p.m. to 4 p.m. and 7 p.m. to 9 p.m. and Dec. 13, 7 p.m. to 9 p.m. and Dec. 13, 7 p.m. to 9 p.m.

Duke Homestead will offer a Christmas Open House. On Dec. 13, visitors are invited to an open house featuring simple, authentic period decorations made from native greenery and fruit. The decorations have been painted by Sam Upton, former Spencer Shop employee and Victorian decorations by Spencer Woman's Club.

Spencer's "Christmas of Yesterday" observance also will offer an exhibit of late 19th and early 20th century toys borrowed for the occasion, with some reproductions for sale in the Spencer gift shop.

Some decorations will also be for sale in the shop. Transportation related toys include model cars, trucks and trains.

Spencer Shops State Historic Site is located at 101 S. Main St., Spencer. Telephone: 704-653-2889.

Reed Gold Mine - Concord:
Dec. 6, 1 p.m. to 5 p.m. Reed Gold Mine State Historic Site will offer its fourth annual "Colonial German Christmas." The visitor center will be decorated by Flove Store Road Extension Homemakers with handmade decorations of the mid-19th century era.

Visitors may sample apple cider and Christmas goodies made from old German recipes by the Cabarrus County High School Home Economics class. Several groups will offer music, including the United Love Baptist Handbell Choir of Midland; and the Cabarrus County Extension Homemakers.

A recorder group composed of students of early music from Charlotte will offer traditional Christmas music throughout the day.

Volunteers in period dress will provide demonstrations of early crafts such as spinning, basket weaving, candle dipping, needlework and quilting.

Reed Gold Mine State Historic Site is located near Concord, 10 miles east on NC 200 to Georgetown and SR 1100, south two miles on SR 1100. Telephone: 704-786-8327.

Thomas Wolfe Memorial - Asheville:
Dec. 13, 1 p.m. to 4 p.m. Thomas Wolfe Memorial will host an open house in the famous writer's boyhood home. Downstairs areas of the house will be decorated in the Victorian style (ca. 1890) featuring handblown glass ornaments and garlands on the tree.

Refreshments will be offered to visitors while they listen to traditional Christmas carols.

Admission is free during open house hours.

Decorations will be in place from Dec. 1 through the season until Dec. 31. Thomas Wolfe Memorial is located at 48 Spruce Street, Asheville. Telephone: 704-253-8304.

Vance Birthplace - Weaverville:
Dec. 13, 1 p.m. to 7 p.m. Vance Birthplace State Historic Site will

present an "1830s Mountain Christmas." Decorations of native greenery in the traditional style of the 18th century will be placed throughout the reconstructed birthplace of North Carolina's Civil War and Reconstruction governor.

The Dec. 13 open house (1 p.m. to 7 p.m.) and candlelight tours (4 p.m. to 7 p.m.) will be led by tour guides in period dress. Visitors will be offered cookies and hot cider in the visitor center.

During the afternoon, visitors will hear a special treat: Christmas carols sung in the traditional Shaped-Notes style (mountain tradition) by the Reems Creek Shaped Notes Singers.

Decorations will be in place Dec. 1-23.

Vance Birthplace State Historic Site is located on Reems Creek Road, six miles east of 19-23 near Weaverville. Telephone: 704-645-6706.

Terrell's observation, made with Dr. Bradford Smith of the University of Arizona in Tucson, was only

the first of several recent milestones in the search for other planets, and possible other life, in the galaxy.

What they found, a thin disk of dust surrounding that distant star, supports the more intriguing suggestion that solar systems may come as part and parcel with the birth of all stars.

"People have seen more and more evidence for these disks around all types of young stars," says Dr. Lee Hartmann of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass.

"Indeed, the presence of an extended halo of dust and gas may be the norm rather than the exception."

Future research, using advanced detection techniques both on the ground and in space, may also provide important clues about how our own solar system formed - and perhaps seriously challenge the notion of its uniqueness.

To find the tell-tale signs of planet formation, astronomers begin by studying the miracle of a star's birth out of a vast cloud of gas and dust in space. This cloud slowly contracts into a fiery ball. The tremendous energies generated by the contraction are transformed into motion, and, as the embryonic star begins to spin, some gas and dust are left behind in a rotating disk.

As the star's spin slows, the gas and dust around it is drawn out into a flat disk. In this orbiting disk, the captured dust particles engage in a sort of cosmic demolition derby, banging into one another over and over again for millions of years.

Eventually, a few careening particles stick together to form irregular clumps that, once large enough, develop weak gravitational fields that attract more gas and dust. In a process that may take longer than a half-billion years, these gaseous clumps turn into more solid bodies and finally, into planets.

Our sun and its solar system are thought to have formed out of a similar process some 4½ billion years ago. The Beta Pictoris system, by contrast, is less than a billion years old and about twice as massive as the sun. It is 53 light-years away (a light-year is the distance that light travels in one year - about 6 trillion miles). New photographs show that the dust in the disk around this "sun" has already progressed from a sandlike stage to more pebbles and stars.

Beta Pictoris is only one candidate for planetary evolution among the Milky Way's billions of stars. Recent studies have revealed more than a half-dozen others, including:

HL Tauri, Dr. Steven Beckwith of Cornell University in Ithaca, N.Y., and Dr. Annela Sargent of the California Institute of Technology in Pasadena have found a disk of gas in "Keplerian orbit" around this star, 500 light-years away, in the constellation Taurus. The disk material appears to follow the third law of planetary motion described by Johannes Kepler in the 17th century, with the gas and dust closest to the star revolving faster than material farther out - just as the Earth revolves around the sun.

The material forms a very elongated, teardrop shape, like a disk centered on the star and lying on its edge on as seen from the Earth, Sargent says. "As far as we can tell, the dust grains have not yet started to coalesce."

PU Orion. Located some 1,600 light-years away in the constellation Orion, this star belongs to a class that periodically flares to brightness hundreds of times that of the sun. Hartmann, who has studied the object with Dr. Scott Kenyon, also with the Harvard-Smithsonian Center for Astrophysics, believes the star flares because of gas and dust falling on its surface from a surrounding disk. "This star - and others of its class - may be at an early stage before the actual beginning of planetary evolution," Hartmann says. According to the theory, the dust eventually begins clumping together and starts clearing out the disk, leaving less of it to fall on the central star. Then, becomes more stable and the flares cease.

Tauri. This complex star system that lies near HL Tauri offers evidence for being accompanied by a massive gas cloud. Indeed, Dr. Benjamin Zuckerman of the University of California in Los Angeles and his colleagues have observed a cloud in Keplerian orbit around one or both stars in this suspected double, or binary, star system. These systems traditionally have been considered unfavorable environments for planetary formation because of the intricate and

interlocking motions of the two stars.

Six nearby stars. A survey by astronomers at the National Optical Astronomy Observatories and the University of Arizona, Tucson, of stars within 12 light-years of Earth showed six with signs of surrounding dust clouds that could be linked to the presence of planets. One of these stars, Epsilon Eridani, made headlines recently when a team of Canadian astronomers reported compelling evidence of a body two to five times the size of Jupiter in its vicinity. Using a new technique for analyzing starlight, the astronomers detected slight wobbles in the star's motion, possibly caused by the gravitational tug of a planet.

The Canadian scientists reported similar observations for Gamma Cephei, a star about 40 light-years away from Earth.

Although an increasing number of suspected solar systems keep turning up, finding them isn't easy. First, the stars are extremely far from Earth, requiring ever-larger, more sensitive telescopes. Even with giant optical telescopes, possible planets around "suns" are difficult to detect because their faint light is overwhelmed by the brightness of the nearby star. It's like trying to see a candle on top of the Empire State Building from 100 miles away - with the sun in the background.

Prior to modern detection techniques, astronomers primarily relied on indirect methods to infer the existence of a planet in orbit around a star. For example, they looked for "transits" - but much less - accurate technique to those used by the Canadian astronomers to calculate any deviation in a star's motion along what should otherwise be a straight path.

Today's techniques are more direct. "The main difference is that we don't detect planets themselves, but the material out of which they are made," Beckwith says. "It's much easier to detect planetary material before planets actually form."

Increasingly, astronomers look for evidence of this material at infrared wavelengths, which can help detect "cooler" material, such as orbiting dust. Typically, a star's surface is at some 7,000 degrees Fahrenheit, Hartmann notes, while the surrounding dust is only at about -300 degrees Fahrenheit. The Infrared Astronomical Satellite (IRAS) of 1983 identified some two dozen stars with "hidden" dust, an additional emission indicating the presence of some "cool" material extending beyond those stars.

In a ground-based effort, Dr. Stephen Strom of the University of Massachusetts at Amherst and his colleagues search for possible planetary environments by looking at the "stellar wind" ejected from a star. Imagine a star-disk system as an LP record with an orange at its center. If this "record" is tilted toward the Earth, a high-velocity stream of particles would be seen squirting from only the top of the "orange." The opaque, extended disk of gas and dust, or "record," would mask any wind emerging from the outer side of the star. "By observing the winds, we can learn something about the disks," says Strom, who so far has found 16 objects that follow this pattern.

The Hubble Space Telescope, which will improve detection techniques by at least tenfold when it is full on the central star, will resolve these disks and to track their histories," Strom says. While astronomers have found the dust thought to be the building blocks of planets, they now want to watch the construction process. "The next step will be to look for evolutionary characteristics," Beckwith says. "The interesting question is how does dust and gas condense into planets?"

"We've understood stars and their evolution," Terrell says. "Now we are on the threshold of understanding the evolution of solar systems."

Search Accelerates For Other Planets

BY KAREN HARTLEY
Smithsonian News Service

For Dr. Richard Terrell, it was literally like discovering new worlds when, in 1984, he found a possible breeding ground for planets around the star Beta Pictoris.

"It was really unbelievable," recalls Terrell, a planetary astronomer at the Jet Propulsion Laboratory in Pasadena, Calif. "We put together the images and all of the sudden there was something we couldn't explain."

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the first of several recent milestones in the search for other planets, and possible other life, in the galaxy.

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