Rural Hill

PRESENTS...

Bring your class out to Rural Hill for a day of fun and excitement they'll be sure to remember! Explore and learn about our 265 acre property on a guided tour, stopping along the way to see gardens, historic structures, and our ever popular herd of Highland Cattle, Bubba, Queenie, Dolly, and new arrival Fiona!

Your class will then be delighted to see how the Davidson family lived in the eighteenth century, when there were no stores or electricity for miles around. The class will witness candlemaking, fire by flint and steel, and, weather permitting, fire by glass. Wrap up your tour with a hayride or picnic lunch under the pecans!

LIGHT AND HEAT

In The Eighteenth Century

CONTACT INFORMATION

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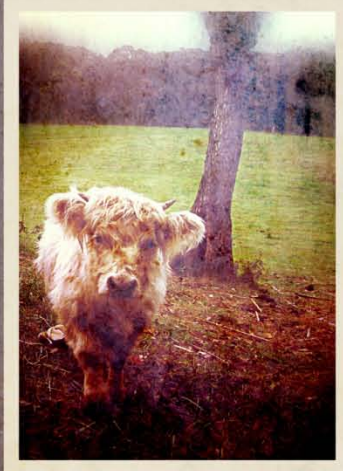

Teachers:

It means so much to us here at Rural Hill that you have chosen us to be the destination of choice for your students. We know that your time and theirs is precious. If there is anything that we can do to make your trip more enjoyable please do not hesitate to let us know. Our programs are designed to fall within grade specific NC Curriculum guidelines but are generally suitable for all ages and can be modified within reason to suit your needs. Please take the time to review the following materials, which serve as an introduction to your trip and program. Again, do not hesitate to contact us with any questions or concerns that you may have.

Thank you so much,

The Rural Hill Staff

Rural Hill is an historic site and working farm owned by Mecklenburg County and operated by Historic Rural Hill, Inc., a non-profit 501c-3. With two hundred and fifty years of history behind it, Rural Hill is a restoration in progress. Enjoy two hundred sixty five acres of magnificent rural vistas, a variety of farm animals and wildlife, a 5k wooded trail that encircles the property, and our historic buildings and reconstructions. With eleven structures in all, we have the perfect setting to provide cultural heritage events, educational programs, self or guided tours, and so much more! We welcome all visitors and students to Rural Hill, where history springs alive!

DIRECTIONS:

From I-77 North:

From I-77 North take Exit 16B, Sunset Road West, traveling 0.2 miles. Merge onto Sunset Road and travel 0.6 miles. Turn Right onto Beatties Ford Road. After traveling 6.5 miles turn Left onto Neck Road. Rural Hill is located 2.1 miles on the right. Pull into the SECOND driveway for parking.

From I-77 South:

From I-77 South take the Exit 23, Gilead Road toward Huntersville, traveling 0.3 miles. Turn Right onto Gilead Road and travel 0.6 miles. Turn Left onto McCoy Road and continue onward for 1.7 miles. Take a Right turn onto Hambright Road, traveling 1.6 miles, then turn Right onto Beatties Ford Road. After 0.7 miles, turn left onto Neck Road. Rural Hill is located 2.1 miles on the right. Pull into the SECOND driveway for parking.

From NC-73 West:

From NC-73 West turn Left onto Beatties Ford Road, continuing 3.6 miles. Turn Right onto Neck Road. Rural Hill is located 2.1 miles on the right. Pull into the SECOND driveway for parking.

From NC-73 East:

From NC-73 East turn Right onto Beatties Ford Road, continuing 3.6 miles. Turn Right onto Neck Road. Rural Hill is located 2.1 miles on the right. Pull into the SECOND driveway for parking.

BEFORE YOU COME:

Please review the following reminders and recommendations prior to your departure:

- Return the enclosed Group Reservation Form with your deposit payment. Please make checks payable to: *The Catawba Valley Scottish Society Inc. (CVSS).* This will confirm your reservation on our calendar, as well as let us know exactly when you will arrive and how many students to expect.
- Teachers, Parents, and other Adults are free with student groups.
- Please review the page entitled "*Site Etiquette*" with your students prior to arriving to Rural Hill and ensure that they understand what is expected of them.
- We would like you to arrive about 10 minutes early to allow the students plenty of time to check in and group themselves away from the bus(es).
- *Rural Hill is open all year in all weather.* If there are concerns regarding inclement weather and your group, please call ahead to let us know whether you are coming or rescheduling.
- There is no such thing as poor weather, just poor preparation! Please ensure that students are dressed appropriately for the outdoors and the weather at hand. Being one of Mecklenburg County's highest elevations, Rural Hill is naturally windy. Because of this, it can feel 10-15 degrees cooler here than

where you are. Our historic buildings have no climate control measures, if it is cold outside, it will be cold inside. *Please dress appropriately.*

- The maximum number of students per program is 30. If there is more than this, your group will be divided into two or more groups.

SITE ETIQUETTE:

Rural Hill has over two hundred and fifty years of history on site and the staff here have the obligation to protect it for the future. Please abide by the following written rules as well as any verbal instructions our staff may provide to you during your stay. Students who fail to follow these rules may be separated from the group, asked to hold a teacher / parent's hand, and / or made to leave the site. We request that you obey these rules and honor us as much as we honor your group for spending time with us.

I. Rural Hill is a working farm. This means live animals and working machines and tools. Please do not chase, yell at, hit, or throw anything at the animals. Do not offer the animals any food unless instructed to do so. Please do not climb on or touch any piece of farm equipment. If a staff member or your teacher tells you to stop, STOP.

II. Do not climb on, touch, step, or jump over fences: They are electric and WILL SHOCK YOU.

III. Be aware that many of the things in and around our buildings are very old and fragile. Do not touch or pick up anything unless you are told its okay.

IV. For the safety of our guests, do not climb on, in, or jump off any part of our buildings.

V. Please keep any and all trash on your person until you can locate a proper receptacle. DO NOT LITTER.

VI. No food, drink, or gum is allowed inside any of the buildings. Please finish all snacks prior to entering or leave them outside.

VII. The entirety of Rural Hill is a Non-Smoking site due to the dry and combustible nature of our land, crop, and buildings.

Light and Heat in the Eighteenth Century:

(Grades K-2, 6)

NC Curriculum Standards:

Social Studies Skill Competency Goals K-12: 1.01, 1.02, 1.07, 2.02, 2.04, 3.05

Kindergarten goals:	*Science* 2.04, 3.01, 3.02, 3.03 *Language Arts* 1.01, 1.02, 1.03, 3.01, 3.03, 4.01, 4.04
First grade goals:	*Science* 3.03, 3.04, 3.05 *Language Arts* 1.01, 1.02, 2.02, 2.09, 3.01, 3.03, 4.01
Second grade goals:	*Science* 3.01, 3.02, 3.03, 4.02, 4.05 *Language Arts* 1.01, 1.02, 1.03, 1.04, 2.02, 2.06, 3.01, 3.02, 3.03, 3.05, 4.05
Sixth grade goals:	*Science* 6.01, 6.07, 7.01, 7.03 *Language Arts* 1.02, 1.03, 2.01, 2.02, 5.01

Primary Sources

The following passages are excerpted from the book Colonial Living, by Edwin Tunis, pp. 41-43, 133-134

...There were no matches to strike and it was hard to get a fire started, so an effort was made to keep one going all the time, winter and summer. At night the embers were banked with ashes to slow down burning and keep at least a few sparks until morning. Sometimes this failed and no amount of puffing and fanning would start the blaze again. ...it was necessary to start a new fire by striking sparks from flint and steel into tinder. Tinder was anything that would ignite easily; the commonest was

charred shreds of linen. It was kept, with the flint and steel, in a metal tinderbox... to light the tinder, the chunk of flint was held in the left hand, over the open tinderbox, and was struck a glancing blow with the steel, so that sparks were thrown downward. The appearance of the slightest glow on the rags was a signal to commence a blowing operation that might succeed in nursing the spark into a small flame.... Once flame had been kindled, it was quickly transferred to the tinderbox candle, or to a sliver of pitch pine, and applied to a handful of shavings or splinters to start the fire. Starting a fire with paper would have been unthinkable; paper was far too valuable....

American pitch pine would burn brightly, if somewhat smokily, from its own resin.... [the heartwood of any pine or cedar will burn in much the same manner]

Most candles, especially at first, were made by dipping. Depending on the size of the wax pot, six or eight wick strings were hung a couple of inches apart on sticks called candle rods. The wicks were laid across the stick at their middles and the two parts were twisted together below it; this gave a desirably thicker wick and produced the bottom loop that was characteristic of all Colonial candles. The wax was melted and the wicks were repeatedly dipped in the pot a rodful at a time. After each dipping they were set aside to cool, the ends of the rods resting on parallel poles set up for the purpose. Experience was needed to keep the pot at the right temperature; if it was too cool the candle came out lumpy; if it was too hot it would melt off the wax already deposited.

... it was possible to buy metal candle molds that made candle-making much simpler; but they didn't eliminate the dipping process.... These molds were tapered tubes made of sheet iron (called tin).... The bottoms of the tubes were closed except for a hole in each just big enough for a wick. Wicks were threaded through the holes and were looped over small sticks laid across the pan at the top of the mold. The whole mold was filled with hot wax and set aside to cool. In cooling the wax shrank enough for the finished candles to be pulled out.

When a candle flame blows in the wind, it drips messily and wastefully. Windows weren't weather stripped in the eighteenth century, and there were always draughts [drafts]. ...the hurricane globe [was] a tall and shapely glass 'chimney' large enough to sit on a table and enclose an entire candlestick. Cool air came downward over its edge and warm air was discharged up the middle. Even a stiff breeze wouldn't disturb the flame of a candle in a hurricane globe.

Whale oil became reasonably cheap, so that most people could afford to burn it in lamps. The lamp itself was nothing more than a covered cup with a wick that passed through a hole in the lid. There was no chimney of any kind, though the lamps may have been set in hurricane globes on windy nights.... [Regarding 'Betty Lamps'] basically this type of lamp was a shallow grease-filled metal dish, with a lip in which lay a linen wick burning just beyond the lip.... Any kind of grease was burned; much use was made of bear fat, deer fat, fish oil, and even passenger pigeon fat; and our forebears complained of the smell of all of them. When domestic animals became plentiful, their fat was used; but it didn't smell any better.

It was found that really good candles could be made from the wax of bayberries. The sage-green candles were of such quality that in time they were exported and welcomed in Europe, not only because they gave a good clean light, but also because they smelled good when they were extinguished.... People liked to scent a room by extinguishing the candles for a few minutes before company was expected.

Time Required:

Allow 60-90 minutes for activity.

Location:

Rural Retreat

Materials

(for demonstration purposes only)

Flint

Steel

Tinder

Heart Pine or Cedar

Betty or Grease Lamp

Candle Molds

Bee's Wax

Wax Pot

Candle Rods

Activity

After going over the above material, it becomes clear that life for Eighteenth Century Americans wasn't easy. Responsibility of one's own actions had perhaps a much greater meaning than it does today. If one let the fire go out at night, one's family would have no warmth in the morning, worse yet, they would have no food. Light and heat were very important to the early Americans, but even fine houses had few windows to avoid the cold drafts that were associated with them. Without the light from lamps and candles, the early Americans homes were very dark. Today you will see not only how they made fire and used oil lamps, but also how they made one of their most prized commodities: candles. Along the way we will also witness several very important scientific principles at work.

Rural Hill staff will demonstrate fire building, striking flint and steel to create a fire, the use of eighteenth century technology to contain fire for light and heat, and two methods of candle making, dipping and pouring.

Kindergarten Specific Questions:

- How does cold weather make us feel?
- What are some things that we can do now to keep warm?
- What could people have done three hundred years ago?
  Kindergarten science 2.04
- What different things did we use to make fire? What are your favorites? Why?
  Kindergarten science 3.01
- Describe the color, size, shape, and texture of these things? What are your favorites? Why?
  Kindergarten science 3.02
- What sounds do you remember hearing these things make? What smells did you smell? Did you like them? Why or why not?
  Kindergarten science 3.03
- What did you hear about in the reading that you saw in the activity? What did you hear about that you didn't see?
  Kindergarten language arts 3.01

First Grade Specific Questions:

- Group the things that we used according to these properties: Color, Texture, Shape (Ability to roll or stack), Ability to float in water.
  First grade science 3.03
- Determine the properties of a liquid like wax: Color- how does it change with its temperature? Does it float or sink in water? What happens when we pour liquid wax into water?
  First grade science 3.04, 3.05

- What are some words that you heard in the reading that you didn't know? What do you think that they mean? Can you use them in a different sentence? What are some other words that mean the same thing?
  First grade language arts 3.03, 4.01

Second Grade Specific Questions:

- Identify three states of matter that you saw today.
  Second grade science 3.01
- What change in state did you witness when we heated and cooled the wax?
  Second grade science 3.02
- How is heat produced? How does it move from one object to another?
  Second grade science 3.03
- What sounds did you hear? How were they made? How were you able to hear them?
  Second grade science 4.02, 4.05

Sixth Grade Specific Questions:

- The up and down passage of air is an illustration of what scientific occurrence?
- The fire emitting heat is an example of what scientific occurrence?
  Sixth grade science 6.01

  The Law of Conservation of Energy states the following:
  - energy cannot be created or destroyed, but only changed from one form to another
  - the amount of energy stays the same, but through the process some energy is converted to heat
  - some systems transform energy with less heat loss than others

- How can you describe the Conservation of Energy Law using what you saw today?

  Sixth grade science 6.07
- How did eighteenth century people interact with each other to survive the winter? Explain using such terms as Coexistence, Cooperation, Competition, and Mutual dependence.

  Sixth grade science 7.01
- What changes in their environment would positively or negatively impact the eighteenth century American's existence?

  Sixth grade science 7.03