

What Are You Figuring Now? A Story about Benjamin Banneker by Jeri Ferris (Carolrhode Books, Inc., Minneapolis, 1988, ISBN 0-590-45963-5)

Literature Annotation: This book begins with Benjamin Banneker's childhood and relates the story of his life. It includes information on his years as a farmer in Maryland and how he made his first clock. His interest in astronomy led to his becoming a surveyor with the Ellicott brothers who built a mill on the Patapsco River and to his job as a surveyor for the city of Washington, DC.

Grade Level: 4

Duration: 3 days

Economics Concepts: Opportunity Cost, Production, Interdependence

Geographic Concepts: Characteristics of Places, Modification to the Environment, Settlement Patterns, Transportation

Maryland State Curriculum

Economics Standard: Students will develop economic reasoning to understand the historical development and current status of economic principles, institutions, and processes needed to be effective citizens, consumers, and workers participating in local communities, the nation, and the world.

- 4.A.1.a Identify the costs, including opportunity cost, and the benefits of economic decisions made by individuals, businesses and governments
- 4.A.2 Explain how limited economic resources are used to produce goods and services to satisfy economic wants in Maryland
- 4.A.3 Explain how technological changes have affected production and consumption in Maryland

Geography Standard: Students will be use geographic concepts and processes to examine the role of culture, technology, and the environment in the location and distribution of human activities and spatial connections throughout time.

- 3.B.1.c Describe how geographic characteristics of a place or region change over time and affect the way people live and work

College and Career Ready Standards for Reading Informational Text

- RI1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- RI3 Explain events, procedures, ideas, or concepts in a historical text, including what happened and why, based on specific information in the text.
- RI4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.
- RI5 Describe the overall structure (e.g., chronology) of events, ideas, concepts, or information in a text or part of a text.

Objectives: Students will be able to...

- identify ways members the Banneker family used and modified the land to meet their wants.
- explain why the Ellicott brothers built a mill in the Hollow, and how the mill changed the landscape of this region of Maryland.
- explain how the Banneker family members were interdependent with each other and with neighbors.
- identify natural and capital resources Benjamin Banneker used to make his clock.
- explain how Benjamin Banneker's lifestyle changed as a result of economic opportunities.
- construct a timeline that will tell the story of Benjamin Banneker's life.
- design a museum showcase that will identify items and the importance of them in Benjamin Banneker's life.

Vocabulary

opportunity cost: the foregone benefit of the next best alternative when an economic decision is made; your next best choice when making a decision

production: the act of creating goods and services by combining economic resources

interdependence: people depending on one another for resources, goods, and services; the condition in which events in one part of the community, state, nation, or world or one sector of the economy affects events in another part or sector

Additional Vocabulary: surveyor, drafting tools, almanac

Materials

- Book: *What Are You Figuring Now? A Story about Benjamin Banneker*
- "Benjamin Banneker Timeline," 1 for each student
- "Benjamin Banneker Book," 1 for each group of 4
- 12'x18' sheet of construction paper, 1 for each student and 1 for each group of 4
- "Benjamin Banneker Museum Case, 1 for each group of 4
- "Description Scrolls," 1 for each group of 4
- "Almanac Page"

Teacher Background: Knowledge of Benjamin Banneker's life and the fact that he was born to free African Americans in Maryland

Motivation

Setting for the story:

1. Divide the class into groups of four and tell each group to define the word "almanac." Have the groups share their responses. Define almanac as a calendar of the days of the year, in weeks and months, indicating the time of various events or phenomena during the period. It includes anniversaries, sunrise and sunset, changes of the moon and tides, etc. It also provides other information that the author chooses to include.
2. Give each group the "Almanac Pages" and ask them to predict who would buy an almanac today and why. Tell them to list at least five facts on the back of the sheet that they found by reading the pages. Have students share their responses with the class.

3. Explain to the students that you are going to read a book about Benjamin Banneker who wrote an almanac in 1792. One of Banneker's problems was to find someone who would print an almanac written by a Black man who had been a farmer all his life. Also explain that his family name had several different spellings because people did not spell it correctly at the time, and it was also printed on papers and in articles differently. Explain that this still happens today when names are misspelled and are not corrected immediately.

Development

1. Tell the students that you are going to read the story of Benjamin Banneker's life, and as you read, they are to think about information they will need to help plan a museum display case that will help tell about Benjamin Banneker's life.
2. Read the book, *What Are You Figuring Now? A Story about Benjamin Banneker*
3. Story Discussion Activity:
 - a. Why was Molly Welsh shipped to Maryland in 1683 with a shipload of 150 other convicts? *(Molly was accused of committing a crime. In England, during the 17th century, people -- both innocent and guilty -- who were convicted of crimes were sometimes shipped to the American colonies to work on plantations.)*
 - b. How did Benjamin and his father use the physical features and natural resources of the land to meet the family's wants? *(They cleared trees and plants from the land to plant crops such as corn and tobacco. They cut trees into logs to build a cabin, cut wood into boards for roof shingles and shutters for the windows and used stones for the fireplace. They also fished and hunted for food.)*
 - c. How did the family's interdependence help Benjamin prepare for school? *(Benjamin couldn't go to school until he had proper clothing; so, Benjamin helped with the farm chores so his mother and grandma could sew his clothes.)*
 - d. What goods from the farm might Benjamin have traded at Elkridge Landing and what goods did he get for these items? *(He may have brought tobacco, corn, milk or other farm products to the market to get a bolt of cloth, books, salt, candles, tools, etc.)*
 - e. Identify the natural and capital resources Benjamin needed to make a clock. Explain how he used them. *(He used the natural resource of wood and capital resources of brass, iron and tools. He cut the wood to make gears, wheels and pins and the other pieces for the clock, and he put them together in a wooden case. He made a bell of iron and used brass for other parts.)*
 - f. Where is the fall line located and why did the Ellicott brothers build their mill on the fall line? *(The fall line is located between the Appalachian and Piedmont Plateau and the coastal plain. At the fall line, the elevation of the land drops suddenly. Rivers with their sources in the mountains have waterfalls here. The Ellicott brothers built their flour mill on the Patapsco River near the waterfalls because the water rushing over the waterwheels turned other wheels and machines in the mill that ground wheat into flour.)*

- g. How did the Ellicott Mills have an impact upon the people living in the Hollow? How did the people help with the Revolutionary War that was being fought in New England? *(Instead of growing tobacco, the farmers in the Hollow could now grow wheat that was needed for food to feed the American soldiers who were fighting the British. Now the American farmers had a way of grinding the wheat into flour. The flour was placed on ships and sent to the New England colonies.)*
 - h. How were the people living in the Hollow linked to Baltimore, Philadelphia, New England and England? *(Using the rivers, bays and ocean, people in the Hollow received newspapers and supplies from Baltimore. Ink, sugar, cloth, molasses, etc. were shipped from England to Baltimore and other towns along the coast. The rivers and bays were used to ship supplies to other towns in the colonies.)*
 - i. Explain why George Washington chose the spot for Washington, DC which today is our nation's capital city. *(George Washington wanted the city placed in the middle of the 13 states in woods overlooking the Potomac River.)*
 - j. Identify ways Benjamin Banneker, the chainmen, axmen and laborers modified the natural environment with technology to build our nation's capital. *(The men rode on horses through the land and chopped down trees and plants to lay out straight lines.)*
 - k. How do we know the exact location of Washington, DC and who decided it? *(Benjamin Banneker used his telescope to record observations of the stars as they crossed certain points to figure out the exact latitude and longitude for Washington.)*
 - l. Explain why people living in the colonial time period needed an almanac. *(The almanac was a clock and calendar that would help people identify good times to plant crops. It also provided information to help keep people healthy and had important letters and other information in it. These people did not have radio, TV or other electronic ways of getting information.)*
 - m. What was Benjamin Banneker's opportunity cost for deciding to spend so much time writing his almanac? *(He wanted to spend his time writing so his opportunity cost to do that was "farming.")*
4. Timeline Activity:
- a. Give each student one sheet of 12" x 18" construction paper and instruct them to fold it in half lengthwise and cut on the folded line to make two 6" x 18" pieces. Tell them to paste the two strips together, end to end, to make a 6" x 36" strip.
 - b. Give each student a copy of the "Benjamin Banneker Timeline" worksheet. Instruct the students to cut out all the boxes that give dates and facts about his life and to paste them on the strips of construction paper in sequential order from the time he was born until his death.
 - c. When students have completed their timelines check them by having students read the chronological order of events.

Conclusion

1. Divide students into groups of four and give each group “Benjamin Banneker Book” worksheets. Tell them that they are to work as a team and use the pictures, map and their knowledge to write a story which will show the importance of geography and economics to the Banneker family.
2. Explain to the students the directions that are written on each page.
3. Have them share their book with other groups when they are completed.

Thoughtful Application of Knowledge

Tell the students that a Benjamin Banneker Museum has been built in Oella, in Baltimore County. Archaeological digs there unearthed several artifacts from the homestead of America’s first African American scientist who lived in Oella from 1731 to 1806.

1. Divide students into groups of four. Give each group a copy of “Directions for Making the Benjamin Banneker Museum Case,” “Benjamin Banneker Museum Case,” “Description Labels” worksheet, and one sheet of 12”x18” construction paper. Explain that each group is going to design a display case for the Benjamin Banneker Historical Park and Museum in Oella. Tell them that they are to work as a team and decide on four items which they think should be included in their showcase. Tell them that the items must show the following:
 - how the Banneker family combined resources to provide goods and services to satisfy economic wants.
 - how changes in technology influenced Maryland’s economy during this time period.
 - the relationship between physical characteristics of the Hallow and the location of human activities there.
 - ways Banneker and others modified the natural environment to begin building Washington, DC.
2. Next, students are to write the name of the items selected on the scrolls and explain the importance of the item by answering the questions on each of the scrolls.
3. Tell students to draw, label and color one item in each box on the “Description Labels” worksheet and cut out boxes and scrolls.
4. Students are to cut out the museum case and paste it on a sheet of construction paper.
5. Finally, students are to arrange the scroll descriptions and boxes with drawings of the items neatly on the sheet of construction paper.
4. Have the groups share their showcases and explain the reason for selecting their items and their importance to Benjamin Banneker.

1737

Benjamin Banneker and his father went to the government office in Joppa, Maryland, and bought the 100 acres of land next to Grandma Molly's farm.

1797

By this year, 28 different versions of Benjamin Banneker's almanac were published.

1753

As a result of his interest in math, Benjamin completed a successful striking clock. The clock was running at the time of his death.

1783

Benjamin was age 52 when the colonies signed the peace treaty ending the Revolutionary War.

1771

Benjamin was living with his mother on their farm. Ellicott Brother's began to build their flour mill on the Patapsco River.

1794

Benjamin Banneker's almanac included information about London, England; Quebec, Canada; and the Chesapeake Bay.

1775

Benjamin was 44 when the first shots of the Revolutionary War were fired at Lexington & Concord.

1731

Benjamin Banneker was born free in Maryland

1736

At the age of five, Benjamin helped his Grandma Molly by working in the tobacco field.

1759

Benjamin's father died and he inherited the family farm.

1792

Benjamin finished his first almanac. He was the first African American to have written and published an almanac.

1791

George Washington chose Pierre L'Enfant to develop a plan for the city of Washington, DC.

1795

The cover of the almanac had a woodcut portrait of Benjamin wearing Quaker clothes.

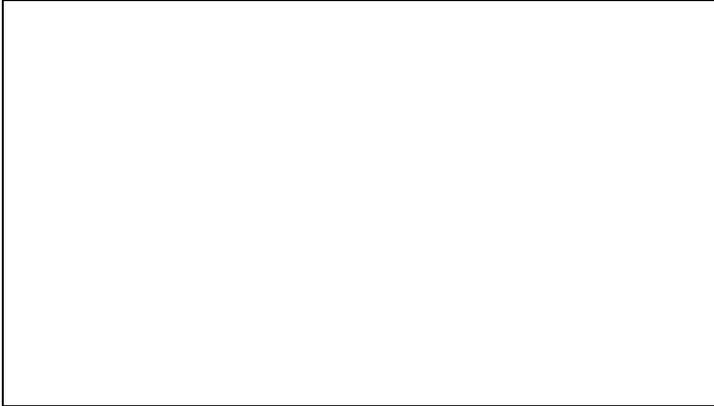
1806

October 9th, Benjamin Banneker died. On the day of his funeral, his cabin burned to the ground. His wooden clock, newspaper with his name in it, the letter from Thomas Jefferson and copies of the almanacs were destroyed.

1791

Andrew Ellicott was chosen as chief surveyor for the city of Washington, and he asked Benjamin Banneker to assist him.

Benjamin Banneker Timeline



Directions for completing the map:

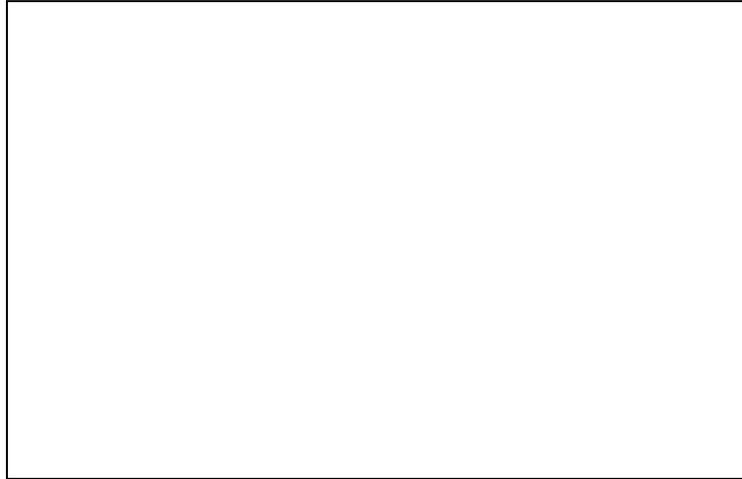
1. Draw and label the three regions of Maryland.
2. On the lines, describe the physical features of the three regions.
3. Draw and label the Patuxent River.
4. Label Baltimore City; Washington, D.C.; Chesapeake Bay
5. Add two other elements to the map.



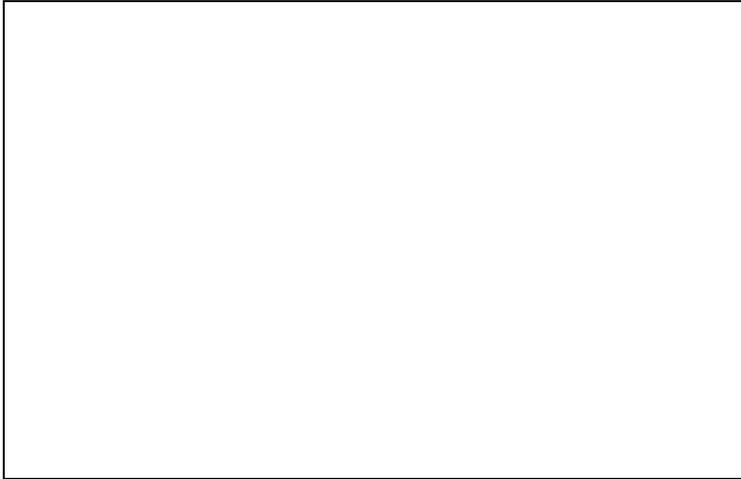
How did this job contribute to the development of Washington, DC and to the economy of Maryland?

Benjamin Banneker

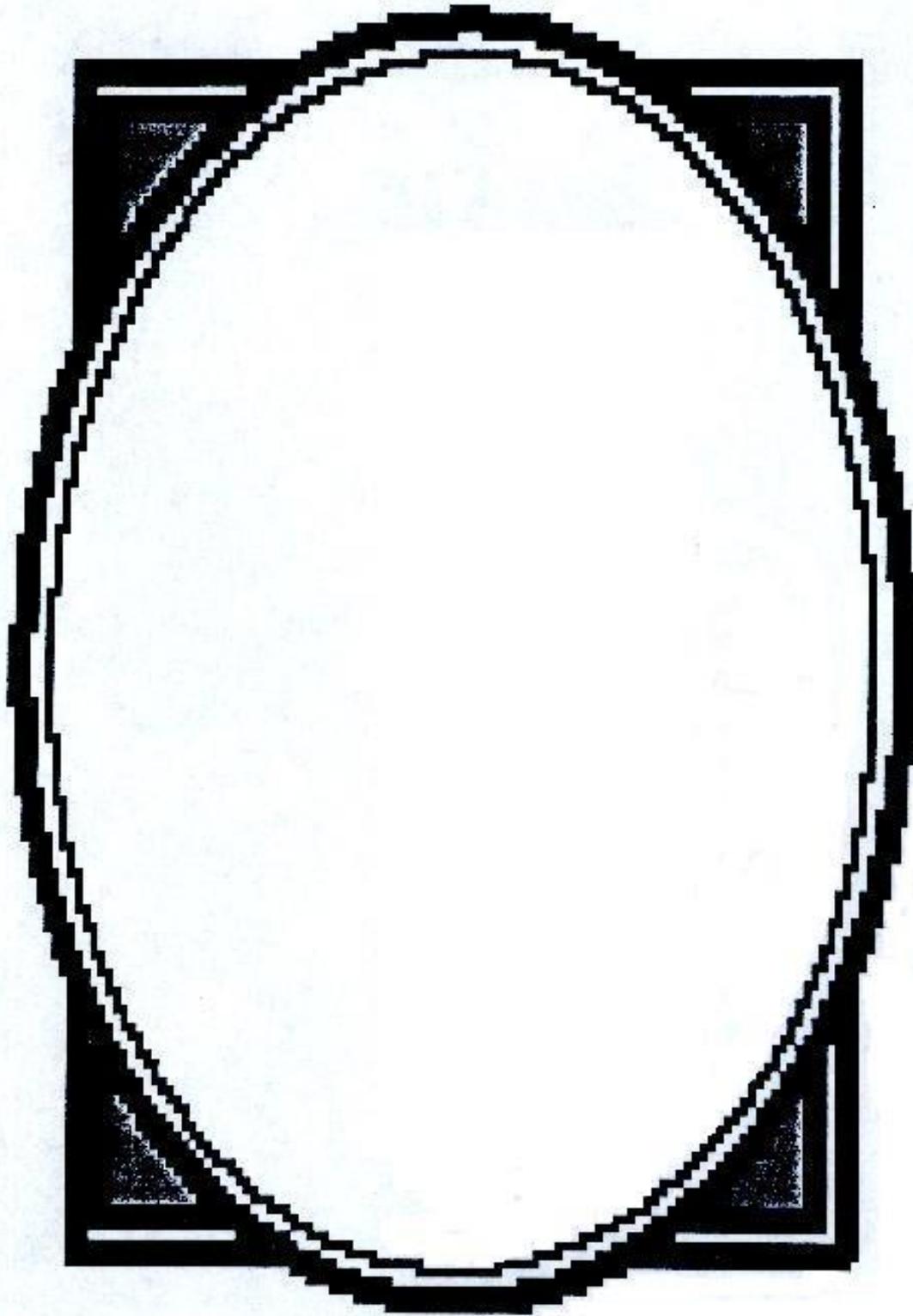
How is the clock an important capitol resource to workers today?



Directions: Explain how Grandma Molly modified the land to meet the wants of her family, and how Benjamin and his father continued to use the farm to meet their wants.



Directions: Explain why the Ellicott Brothers built the mill on the Patapsco River and the importance of this location for exchanging goods and services with other towns in Maryland, other states and countries.



1996 NOVEMBER, THE ELEVENTH MONTH

The Great Square of Pegasus is high in the southwest at mid-evening, trailing from its upper left corner the lines of stars that form Andromeda. Orion the Hunter is rising due east. Higher and visible earlier in the evening is Taurus the Bull with the big V-shaped Hyades cluster and orange Aldebaran, and the beautiful dipper-shaped Pleiades cluster. To the upper left of the Pleiades are the bright star Capella and bright constellation Perseus. High above the North Star, the compact zigzag of stars that is Cassiopeia shines bright. Jupiter sets soon after dusk. Venus rises soon before dawn. Saturn shines in the south all evening. Watch for possibly more Leonid meteors than usual from the south before morning twilight on the 17th.

☾ Last Quarter	3rd day	2nd hour	52nd min.
☉ New Moon	10th day	23rd hour	17th min.
☽ First Quarter	17th day	20th hour	10th min.
☾ Full Moon	24th day	23rd hour	11th min.

For an explanation of this page, see "How to Use This Almanac," page 30; for values of Key Letters, see Time Correction Tables, page 196.

Yr	Mo	Day	Hour	Min	Sec	Length	Full	Declina-	Time								
of	of	of	of														
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
3066	1	Fr.	6:18	D	4:37	B	10:19	32	3	9:44	B	11:43	E	14:40	GEM	20	
3072	2	Sa.	6:19	D	4:36	B	10:17	32	31	4	10:44	B	12:41	E	14:59	CAN	21
3078	3	Su.	6:20	D	4:35	B	10:15	32	41	5	11:40	B	12:45	D	15:17	CAN	22
3084	4	Mo.	6:22	D	4:33	B	10:11	32	51	6	12:40	B	12:45	D	15:17	CAN	23
3090	5	Tu.	6:23	D	4:32	B	10:09	32	61	7	13:40	B	12:45	D	15:17	CAN	24
3100	6	W.	6:24	D	4:31	B	10:07	32	71	8	14:40	B	12:45	D	15:17	CAN	25
3110	7	Th.	6:25	D	4:30	B	10:05	32	81	9	15:40	B	12:45	D	15:17	CAN	26
3120	8	Fr.	6:27	D	4:29	B	10:02	32	91	10	16:40	B	12:45	D	15:17	CAN	27
3130	9	Sa.	6:28	D	4:28	B	10:00	32	101	11	17:40	B	12:45	D	15:17	CAN	28
3140	10	Su.	6:29	D	4:27	B	9:58	32	111	12	18:40	B	12:45	D	15:17	CAN	29
3150	11	Mo.	6:30	D	4:26	B	9:56	32	121	13	19:40	B	12:45	D	15:17	CAN	30
3160	12	Tu.	6:32	D	4:24	B	9:51	31	111	14	20:40	B	12:45	D	15:17	CAN	31
3170	1	W.	6:33	D	4:24	B	9:51	31	121	15	21:40	B	12:45	D	15:17	CAN	32
3180	2	Th.	6:34	D	4:23	B	9:49	31	1	16	22:40	B	12:45	D	15:17	CAN	33
3190	3	Fr.	6:35	D	4:22	B	9:47	31	11	17	23:40	B	12:45	D	15:17	CAN	34
3200	4	Sa.	6:37	D	4:21	B	9:44	31	21	18	24:40	B	12:45	D	15:17	CAN	35
3210	5	Su.	6:38	D	4:20	B	9:42	31	31	19	25:40	B	12:45	D	15:17	CAN	36
3220	6	Mo.	6:39	D	4:19	B	9:40	30	41	20	26:40	B	12:45	D	15:17	CAN	37
3230	7	Tu.	6:40	D	4:19	B	9:39	30	51	21	27:40	B	12:45	D	15:17	CAN	38
3240	8	W.	6:42	D	4:18	B	9:36	30	61	22	28:40	B	12:45	D	15:17	CAN	39
3250	9	Th.	6:43	D	4:17	B	9:34	30	71	23	29:40	B	12:45	D	15:17	CAN	40
3260	10	Fr.	6:44	D	4:17	B	9:33	30	81	24	30:40	B	12:45	D	15:17	CAN	41
3270	11	Sa.	6:45	D	4:16	B	9:31	29	91	25	31:40	B	12:45	D	15:17	CAN	42
3280	12	Su.	6:46	D	4:15	B	9:29	29	101	26	32:40	B	12:45	D	15:17	CAN	43
3290	1	Mo.	6:47	D	4:14	B	9:28	29	111	27	33:40	B	12:45	D	15:17	CAN	44
3300	2	Tu.	6:49	D	4:14	B	9:25	28	111	28	34:40	B	12:45	D	15:17	CAN	45
3310	3	W.	6:50	D	4:14	B	9:24	28	121	29	35:40	B	12:45	D	15:17	CAN	46
3320	4	Th.	6:51	D	4:14	B	9:23	28	1	30	36:40	B	12:45	D	15:17	CAN	47
3330	5	Fr.	6:52	D	4:13	B	9:21	27	1	31	37:40	B	12:45	D	15:17	CAN	48
3340	6	Sa.	6:53	D	4:13	B	9:20	27	21	32	38:40	B	12:45	D	15:17	CAN	49

OLD FARMER'S ALMANAC 1996

NOVEMBER hath 30 days. 1996



"What do you hunt, Orion,
This starry night?"
"The Ram, the Bull and the Lion,
And the Great Bear," says Orion.
—Robert Graves

Farmer's Calendar

On front pockets, doorsteps, and frost-bitten lawns, Halloween jack-o'-lanterns, undisciplined, contemplate with degrees of chagrin their fate: They're stuck in the wrong festival, they have outlived their time and now show faces full of regret to a world for which they are unprepared. The icon of All-Hallow's Eve, a feast of misrule derived no doubt from pagan hell-raising far older than Christianity, ought not to endure in Thanksgiving, that mild and pious exercise in Puritan merry-making—but it does.

My jack-o'-lantern is never thrown out. I haven't the heart; I simply leave it where it is, on the stoop. I then watch over the succeeding weeks as it softens and transforms. The manic grin I carved on October 31 says and acts. It decays into a mask of pain and finally, by the end of November, becomes a hollow retina of despair. In the features of the pumpkin, spread over a month or more, see all the changes that pass in a few seconds over the face of the man who walks into the wrong bar and finds, where he expected the chamber of commerce dinner, the outlaw Angels in full leather, chains, and hair.

Sad mortality. The eyes drop, the mouth falls at the corners, the skin draws in, the whole pumpkin seems to spread at the equator, halting, con- rupting into a stick and pathetic wreck- age—the vegetable equivalent of an idle matchstick come to the end of a long life of self-indulgence.

It's not a pretty sight. Each year as the season turns past Thanksgiving and into the winter storms, I'm relieved to find my poor old friend's decline covered at last with a decent blanket of snow.

Day	Sign	Aspect	Time	Weather
1	Fr.	♂	♂	Too
2	Sa.	♂	♂	Too
3	Su.	♂	♂	Too
4	Mo.	♂	♂	Too
5	Tu.	♂	♂	Too
6	W.	♂	♂	Too
7	Th.	♂	♂	Too
8	Fr.	♂	♂	Too
9	Sa.	♂	♂	Too
10	Su.	♂	♂	Too
11	Mo.	♂	♂	Too
12	Tu.	♂	♂	Too
13	W.	♂	♂	Too
14	Th.	♂	♂	Too
15	Fr.	♂	♂	Too
16	Sa.	♂	♂	Too
17	Fr.	♂	♂	Too
18	M.	♂	♂	Too
19	Tu.	♂	♂	Too
20	W.	♂	♂	Too
21	Th.	♂	♂	Too
22	Fr.	♂	♂	Too
23	Sa.	♂	♂	Too
24	Mo.	♂	♂	Too
25	Tu.	♂	♂	Too
26	W.	♂	♂	Too
27	Th.	♂	♂	Too
28	Fr.	♂	♂	Too
29	Sa.	♂	♂	Too
30	Su.	♂	♂	Too

Robert B. Thomas (Yankee Publishing Inc., Dublin, NH, 1996)