The story of **America's Industrial Revolution** is an epic tale, full of heroes and heroines, villains and vagabonds, accomplishments and failures, sweated toil and elegant mechanisms, grand visions and unintended consequences. How did the United States evolve from a group of 18th century agricultural colonies clustered along the eastern seaboard into the world's greatest industrial power? Why did this nation become the seedbed of so many important 19th century inventions and the birthplace of assembly-line mass production in the early 20th century? Who contributed? Who benefited? Who was left behind?

At The Henry Ford in Dearborn, Michigan, school teachers from across the country explored this story with university scholars and museum curators during two week-long teacher workshops supported by the National Endowment for the Humanities.

Workshop participants spent mornings discussing their passion for American history with distinguished university professors, mid-days on field trips to more than a dozen historic farms, mills and laboratories, and afternoons planning activities for their students. They developed methods for incorporating various senses and learning styles into new lesson plans that bring **America's Industrial Revolution** out of the books and into living history. This booklet contains samples of those lesson plans.

In Education,

Paula Gangopadhyay
Director of Education, The Henry Ford
Project Director, NEH Teacher Workshop

2009 NEH Project Staff

Paula Gangopadhyay	Director of Education
Dorothy Ebersole	Curator of Education
Ryan Spencer	Education Coordinator- Special Projects
Marc Greuther	Chief Curator
Bob Casey	Curator of Transportation

2009 Participants for *America's Industrial Revolution* at The Henry Ford

June Workshop Participants

"One of the most rewarding professional development activities imaginable. I cannot thank you enough for all of your organizational trouble. Your work is influencing more lives than you know."

July Workshop Participants

"I just loved the workshop and hate to see it end! It gave me a better understanding of the Industrial Revolution and the people that played the major roles in it."

"Everyone/thing was great. This is my first NEH workshop and I can't wait to do another! This was a wonderful first experience!"

Elementary Lesson Plans provided by the 2009 *America's Industrial Revolution* at The Henry Ford Participants

Table of Contents

America's Greatest History Attraction

Elementary Lesson Plan 1

Matthew Christian, Selma F. Bartlett Elementary, Henderson, NV

Title of the Lesson*:* The Industrial Revolution: Key Players and Important Pieces

Grade Level: 5th grade

Overview: Students will first explore components of the Industrial Revolution through the (See, Think, Wonder) strategy. After evaluating images, students will review key individuals and important pieces that made the Industrial Revolution possible. Students will then be challenged to select an inventor (or individual that played a major role) and establish how they contributed to the Industrial Revolution.

Central Question: How did the Industrial Revolution shape how we see our world today? What did the inventors within the time period itself, do that changed work and labor conditions to overall improve societies?

Learning Objectives*:* Students will (Nevada State Standards):
H3.5.4 Explain how technologies in U.S. history changed the way people lived
H3.5.1 Describe ways individuals display social responsibility

Assessment Tools: Students will be evaluated first through informal observation and their participation with the in classroom discussion. Summatively students will be graded on the presentation they give, sharing their understanding of the inventors and individuals that played a significant role in the Industrial Revolution.

Key Concepts:
1) Industrialization
2) Mechanization
3) Labor
4) Social Responsibility

Evidence/ Sources: Students will have access to (but are not limited to):
1) PowerPoint Presentation (containing images from Henry Ford Primary Sources)
2) The Henry Ford Website (http://www.hfmgv.org) and additional online resources
3) School Library
4) Encyclopedias

Time Frame: Lessons will be conducted over approximately 4 sessions:
1) See, Think, Wonder Activity
2) Teacher Instruction: Key Players of the Industrial Revolution
3) Students collect information on their selected Inventor
4) Students share their findings

Instructional Sequence: Day 1: Students will be led through the attached PowerPoint slide show. As each slide is presented, students will be asked to (See, Think, and Wonder). Students are first asked specifically what do they see in the picture, nothing deep, simply what do they see in the image. Next, students are asked to think about the image, what do they think the pictured item is used for, or was used for. Finally, students are asked to wonder, start a statement with (I wonder…) sharing their thoughts about the image being shown. Students will be lead through the images each time continuing through the steps.

Day 2: Students will be led through a brief discussion focusing on the key inventors and individuals that shaped the Industrial Revolution into what we recognize it as today. With each inventor/individual, students will be given only a basic background for each person, so they can then continue their own research.

Inventor options:
1) James Watt – Steam Engine
2) Eli Whitney – Cotton Gin
3) Samuel Morse – Telegraph
4) Thomas Edison – Phonograph/Light Bulb
5) Alexander Graham Bell – Telephone
6) Nikola Tesla – Electric Engine
7) Wilber and Orville Wright - Airplane
8) Henry Ford – Model T/Assembly Line

Day 3: Students will be given the opportunity to research any inventor given, or any other individual that played a central role in the Industrial Revolution. Students focus will be on what the individual's role in the Revolution, more specifically what was the social impact of their contribution.

Day 4: Students will be given the opportunity to share out their findings. Each student or group of students will share the information they gathered on their individual, sharing with the whole class the information.

Student Project Ideas: Students will have the option to pursue further information outside the classroom setting, also having time in the school library. However, students will be given adequate in class time to complete their assignments.

Anticipated Challenges: Students will probably find difficulty in attaining what they see as adequate resources to establish talking points for their information. The teacher will help alleviate those problems by providing primary sources along with websites that provide easy locations to research their ideas. Additionally, it is likely students will struggle with some of the vocabulary they will encounter when reviewing their resources.

This is primarily resolved by the first PowerPoint discussion, where the teacher will frontload key vocabulary students will likely encounter, making the text more accessible to them.

Curriculum Links: See student objectives.

America's Greatest History Attraction

Elementary Lesson Plan 2

Beth Fortino, Miller Elementary, New Boston, MI

Lesson Title: Tool Detectives on Daggett Farm

Grade Level: 5th Grade (or review lesson for 8th)

Overview: In this lesson, students will explore colonial tools, review economic concepts, and look at gender roles on a New England Colonial Farm. Students will complete this task by studying colonial artifacts and completing an on-line module to better understand Colonial America in the New England region.

Central Question: How did the colonists divide labor among men, women, and children on a New England Colonial Farm?

Objectives: Students will be able to describe the daily life of New England colonists living on a farm.

Students will be able to describe life in colonial New England from the point of view of children, men, and women.

Standards: 5-U2.3.2 Describe the daily like of people living in **New England**, Middle, and Southern Colonies (National Geography Standards 14 and 15)
5-U2.3.3 Describe colonial life in America from the perspectives of 3 different groups of people. (National Geography Standard 6)

Anticipated Challenges: Students will have a clearer understanding of Daggett farm if they have visited Greenfield Village. If students are able to visit the village, have each group chaperone use a digital camera to take photos of artifacts while on the Daggett Farm. Students will then complete the chart when they return or while on the trip by interviewing village staff for answers. In the afternoon, students can take photos of tools that replaced these tools during the Industrial Revolution as an extension activity is time permits. The website portion of this lesson could be completed as an introductory activity or a review activity.

Students may need to review the economic vocabulary learned in fourth grade of Capital Resources, Natural Resources, and Human Resources.

If your school does not have a computer lab, these activities could be done in centers by combining these activities with textbook reading, a video, or an additional article or activity.

Evidence/Sources: Attachment of artifact worksheet

Henry Ford On-line Module about Daggett Farm
http://www.thehenryford.org/exhibits/smartfun/colonial/intro/intro.html#acct

Further Study of Colonial Tools with detailed written information along with a few photographs
http://www.davistownmuseum.org/PDFsforInventory/WebMaritimeI_PDF.pdf

Assessment: Students will correct their prediction sheets after studying Daggett Farm.

The teacher will review their on-line module worksheet in a discussion after the class has completed the activity. Students who do not meet the teacher's expectation will re-do the on-line module during additional computer time or at home if possible.

Have students complete a journal entry. Pretend you are a colonial man, woman, or child on the Daggett Farm……. Describe what your life is like in your journal entry. Your entry should include 3 specific places or artifacts mentioned in the on-line module. Details should be added that show what you are feeling and what your daily life is like on a New England Farm during colonial times.
See attached rubric.

Instructional Sequence: Anticipatory Set:

Ask student what tools they use to do work at school and at home. Divide those tools into people that help them do the work (human capital) and tools (capital equipment).

Activity One: Artifact worksheet. Tell students they are going to be working as historians today as they study photographs of tools used at a farm in colonial New England. As they work in groups (3-5 students), they will discuss who would have used this tool (human capital) and what work would have been completed with the tool. After students have discussed and worked for 10-15 min. Either give them the correct answers or have students (early finishers) search the Davistown Museum Website for possible answers. See teacher answer sheet for correct answers.
As students share their answers ask students why they made the prediction they did. What prior knowledge did they use? Explain your thinking……..

Activity Two: All of the tools analyzed in the first activity were photographs taken at Daggett Farm at Greenfield Village. Now we are going to take a closer look at Daggett Farm by analyzing additional primary sources while we complete an on-line activity. As you complete the activity, fill-out the worksheet because we will be discussing it today or tomorrow after the module is complete.

Extension:

Compare the ingenuity of Colonial America to that of the Industrial Revolution by watching these video clips or by exploring Greenfield Village and taking photos of tools that replaced those used on Daggett Farm.
http://havefunwithhistory.com/HistorySubjects/ScienceInvention.html

Find tools that could have replaces the colonial tools on the Daggett Farm during the Industrial Revolution.
http://www.davistownmuseum.org/PDFsforInventory/WebVclRother_PDF.pdf

Continue to compare the New England Region with the Middle Colonies Region and the Southern Colonies Region throughout your unit of study if teaching fifth grade.

Name_____

A New England Life: Mid 1700's

http://www.thehenryford.org/exhibits/smartfun/colonial/intro/map.html

Go to the website above. Follow the directions on the website. Your goal is to answer all seven questions correctly, solve the picture puzzle, and then pick-up your diploma. Warning: some of the video clips only have pictures (no audio), other video clips only have audio (no video). Read carefully and take notes below.

Introduction

Where was the Daggett Farm located?

_____

Where did the Daggett Family practice their religion?

_____

Question 1… **What work did Samuel Daggett do to earn a living?**

_____

_____

Question 2…… **What was home life like for Anna Daggett and the Daggett children, Asenath, Tabitha, and Isaiah?**

_____

_____

_____

Question 3…… **Who lived in the Daggett family's community?**

_____

_____

_____

Question 4….. When did people in the community get together and what did they do?

_____

_____

_____

Question 5…. How did the Daggett family get the goods they needed for their work and home?

_____

_____

_____

Question 6…… How did the Daggett family find out news from the community, the Connecticut colony and the world?

_____

_____

_____

Question 7…….. **How did the Daggetts and their neighbors travel?**

_____

_____

_____

What was wrong with the picture?

_____ _____

_____ _____

What was wrong with the picture?

_____ _____

_____ _____

Name:___key_____

Answer Sheet

A New England Life: Mid 1700's

http://www.thehenryford.org/exhibits/smartfun/colonial/intro/map.html

Go to the website above. Follow the directions on the website. Your goal is to answer all seven questions correctly, solve the picture puzzle, and then pick-up your diploma. Warning: some of the video clips only have pictures (no audio), other video clips only have audio (no video). Read carefully and take notes below.

Where was the Daggett Farm located? Northeast Connecticut

Where did the Daggett Family practice their religion? First Congregational Church of Andover

Answers should include some to the information listed below each question.

Question 1…What work did Samuel Daggett do to earn a living?

Daggett grew many different crops and raised several types of animals on his farm, for his family's use or to sell or trade for other things the family needed. From his account book, we know that Samuel Daggett grew wheat, corn, barley, oats and tobacco; made cider from the apples in his orchard; and raised cattle, sheep, pigs and chickens.

Like other farmers, Samuel Daggett also had additional sources of income. His main occupation was a "housewright"--meaning that he built houses. Daggett probably built his own house in the early 1750s, around the time he married his wife Anna. He also made chairs, spinning wheels and even coffins! And, from his account book, we also find that he pulled aching teeth for his neighbors, a skill he learned from his father.

Question 2……What was home life like for Anna Daggett and the Daggett children, Asenath, Tabitha, and Isaiah?

On farms in the colonial era, each family member played an important role in producing food, clothing and household goods for the family.

Anna Daggett ran the home and cared for the family. Anna prepared and preserved food; spun yarn; made clothing, towels and sheets; gave the children their earliest lessons in reading and writing; and fed animals like chickens and pigs.

The Daggett daughters, Asenath and Tabitha, learned the skills of "housewifery" from their mother. They prepared yarn by carding and spinning; made clothing, soap and candles; tended the garden; and prepared food. The son, Isaiah, helped his mother and sisters with some of the chores around the house, and learned farming and other skills from his father.

Question 3……Who lived in the Daggett family's community?

Like Samuel Daggett, many of the men in the community both farmed and did other types of work. For example, Aaron Phelps ran a gristmill in addition to farming.

Many people in this Connecticut community came from families whose ancestors had immigrated to the American colonies from England. There were also about 100 enslaved African Americans in the community, including Jenne, who lived with the Reverend Lockwood and his wife. And, it is likely that Native Americans also lived here, laboring on nearby farms or in larger towns--often for low pay.

Not everyone in the community lived in the same circumstances. Widow Rebeckah Gibbs, for example, faced many challenges in running the farm and household on her own after her husband died. Although some people had the opportunity to establish their own farms and businesses, others--like the enslaved Jenne--found their freedoms and opportunities very limited.

Question 4…When did people in the community get together and what did they do?

People saw each other most frequently at church on Sundays, which allowed them to socialize as well as attend religious services. People also got together to help one another with building a house, spinning yarn or harvesting crops. Sometimes just men or just women got together with each other, but most gatherings included some element of fun. These events helped build a sense of community.

New England colonists sometimes held a day of thanksgiving, but Christmas was not celebrated. In keeping with their beliefs, New England Congregationalists did not celebrate religious holy days.

Question 5……How did the Daggett family get the goods they needed for their work and home?

No farm family could make everything for themselves. They traded for or purchased goods they needed or special things they wanted. They could obtain some of these things from local craftspeople, like coopers (who made items like washtubs and barrels) and blacksmiths (who made items like kitchen utensils and door hinges).

Question 6……How did the Daggett family find out news from the community, the Connecticut colony and the world?

Most often they heard news from their neighbors. If they wanted to get a copy of the latest newspaper or needed to pick up mail, the Daggetts had to travel about 20 miles to the larger town of Hartford.

How did news from far away get to the colonists? News from the outside world arrived with ships that anchored in colonial ports. This news, as well as the more local news, was printed in the growing number of newspapers published in larger colonial towns. Information that needed to be shared quickly might be printed on broadsides--cheaply printed sheets of news or advertising--that were distributed or posted around town. People also shared news by writing to their friends and families within the colonies or in England.

But news rarely traveled quickly. When the British government repealed the Stamp Act--a much-hated tax placed upon the colonies in 1765--the news took almost two months to reach the American colonists

Question 7……**How did the Daggetts and their neighbors travel?**

They walked to visit their neighbors or to attend church. Farmers also used horses or oxen for transportation. Sometimes they might rent them from a neighbor if they didn't have their own. When traveling alone, a farmer might ride on horseback, but if he was transporting goods he might use a pair of oxen pulling a cart.

The Reverend Lockwood and his wife owned a 2-wheel chaise, a stylish horse-drawn vehicle that was an unusual sight in rural areas.

Where they existed, roads were stony, muddy and frequently zigzagged to their destination. One major road did pass through the community. Called the "Middle Post Road" it led east to Boston and west to Hartford. Travel for the most part was slow because weather was unpredictable and horses often needed a rest.

What was wrong with the picture?

Answers may vary

_____ _____

_____ _____

Name:

Capital Equipment: Artifact	Human Capital (Circle One)	Prediction and Why	Correct Answer	Industrial Replacmnt
	Men Women Children			
	Men Women Children			
	Men Women Children			
	Men Women Children			

	Men Women Children			

Capital Equipment: Artifact	Human Capital(Circle One)	Prediction and Why	Correct Answer	Industrial Replacement
	Men Women Children			
	Men Women Children			

Name: KEY

Capital Equipment: Artifact	Human Capital (Circle One)	Prediction and Why	Correct Answer	Industrial Replacement
Carpenter's Vice	**Men** Women Children		The carpenter's vice is a tool that the men would use to hold wood steady so they could work on whittling it down. The vice held the wood or furniture in place so it wouldn't move. An apprentice would do this job if there was one around.	
Carding Comes	Men Women **Children**		This device was used by children both young boys and girls to card wool so it could be used to spin into thread for woolen clothes.	
Children's Yolk	Men Women **Children**		This device was used by boys to carry water to and from the well. A similar device was used for animals as well.	
Baby Minder	Men **Women** Children		The baby minder was a tool that mother's used to place their children so they could get some work done.	
Kindling Box	Men Women **Children**		The kindling box was where boys collected wood for the fire.	

Capital Equipment: Artifact	Human Capital(Circle One)	Prediction and Why	Correct Answer	IndustrialReplacement
Spinning Wheel	Men **Women** **Children**		The spinning wheel was used to spin wool into yarn	
Pelch	Men **Women** Children		The pelch was used to pull the kettle in and lift the lid up so the food could be stirred.	

Journal: A Day in the Life of.....

Teacher Name: **National Endowment for the Humanities**

Student Name: _____

CATEGORY	4 - Above Standards	3 - Meets Standards	2 - Approaching Standards	1 - Below Standards	Score
Support for Position	Includes 3 or more pieces of evidence (facts or examples) that describe the colonial time period and colonist's life.	Includes 2 or more pieces of evidence (facts or examples) that describe the colonial time period and colonist's life	Includes 1 piece of evidence (facts or examples) that describe the colonial time period and colonist's life.	Begins to show evidence, but does not succeed.	
Evidence and Examples	All of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence relates to the colonial time period.	Most of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence relates to the colonial time period.	At least one of the pieces of evidence and examples is relevant and has an explanation that shows how that piece of evidence relates to the colonial time period.	Evidence and examples are NOT relevant AND/OR are not explained.	
Voice	The character has a strong voice filled with personality by showing how he/she feels about life in the colonial times.	The character has a voice filled with personality by showing how he/she feels about life in the colonial times.	The character beings to show a voice, but needs more examples.	The character created does not show enough evidence of having a voice.	

Sentence Structure	All sentences are well-constructed with varied structure.	Most sentences are well-constructed and there is some varied sentence structure in the essay.	Most sentences are well constructed, but there is no variation is structure.	Most sentences are not well-constructed or varied.	

America's Greatest History Attraction

Elementary Lesson Plan 3

Beth Hanna, Pattengill Elementary School, Berkley, MI

Title of Lesson: How Did They Get Here?: Industrialization of Transportation to Michigan

Grade Level: 3rd

Overview: Students will use primary and secondary sources to explore how people traveled to Michigan in the 1800s. They will compare the different types of transportation used at that time, considering the questions that historians ask. Based on the given sources and discussions they will examine why people moved to Michigan (push/pull).

Learning Objectives: Students will:

Explore the different types of primary source documents that an historian can use when researching the past.

Use secondary sources to help form opinions and ideas about the time period.

Write a journal entry of a fictional pioneer based on the documents.

Time Frame: Three 45 minute lessons

Materials: Primary sources pertaining to wagon/stagecoach travel, railroads and waterways

Secondary sources pertaining to wagon/stagecoach travel, railroads and waterways

Charts

Procedures:

Day 1:

Question to Contemplate: How do people move from place to place?
Record answer on post-it note and place on observation wall.
Distribute copies of primary sources to each table for students to examine for 10-15 minutes.

Students discuss with their tablemates what they notice about each artifact and then record ideas on the Primary Source Chart.

Discuss as a class what they learned about transportation during the 1800s from the primary sources.

Record questions that are raised by the class about the time period based on the studied sources.

Day 1 resources:

1842 Michigan Southern Railroad Broadside
Railroad and Steamboat Routes of Michigan
Erie Canal Distances
Erie Canal Fees
Map of the Great Central Route
New York and Erie Railroad
Travelling on the Erie Canal
Conestoga Wagon
Steamboat Walk-in-the-Water
"I Arrived in Detroit" 1827
A Boy's Story of Pioneer Life in Michigan
View of the Upper Village of Lockport
Toledo Ann Arbor line 1878
Early Michigan Railroad

Day 2:

Question to Contemplate: Why do people move to a new home?

Record answer on post-it note and place on observation wall.

Show video on the Erie Canal to the class. Students record what they notice about the types of transportation they observed in the video on Secondary Source Chart.

Distribute copies of secondary sources to each table for student to examine for 10-15 minutes.

Students discuss with their tablemates what they notice about each artifact and then record ideas on the Secondary Source Chart.

Discuss as a class what they learned about transportation during the 1800s from the secondary sources.

Record questions that are raised by the class about the time period based on the studied sources.

Day 2 Resources

The Erie Canal: A Journey Through Time (video)

http://www.epodunk.com/routes/erie-canal/index.html#

The Mitten: Pioneer Life
http://www.michiganhistorymagazine.com/kids/pdfs/mitten05.pdf

The Mitten: Pioneer Life – teacher supplement

http://www.michiganhistorymagazine.com/kids/pdfs/mittensupp05.pdf

"**Pioneers Settling a State**". Michigan History for Kids. Spring 2004

http://www.michiganhistorymagazine.com/kids/pdfs/mhksp04a.pdf
http://www.michiganhistorymagazine.com/kids/pdfs/mhksp04c.pdf

The Amazing Impossible Erie Canal by Cheryl Harness

The Northwest Ordinance of 1787. Cobblestone Magazine

A Pioneer Story by Barbara Greenwood

Pioneers Kids Discover

Settling in Michigan and other true pioneer stories retold by Lynne Deur

Day 3:

Review what the class learned about how people traveled during the 1800s. Discuss why people were moving from the east and south to Michigan in the 1800s (push/pull).

Each student will write a journal entry from a fictional pioneer's point of view. The following ideas must be included on the entry:

- Area or place that you (fictional pioneer) came from.
- Where you are going.
- How you are traveling there.
- Why are you going.
- Who you are traveling with.

Curriculum Links:

Michigan Grade Level Content Expectations- 3rd Grade:

3 - H3.0.1: Identify questions historians ask in examining the past in Michigan (e.g., What happened? When did it happen? Who was involved? How and why did it happen?).

3 - H3.0.2: Explain how historians use primary and secondary sources to answer questions about the past.

3 – H3.0.3: Describe the causal relationships between events in Michigan's past (e.g., Erie Canal, more people came, statehood).

3 - H3.0.7: Use a variety of primary and secondary sources to construct a historical narrative about daily life in the early settlements of Michigan (pre-statehood).

Primary Source Chart

Resource	What You Noticed	What Does This Tell You

1842.

SEASON ARRANGEMENTS.

MICHIGAN
SOUTHERN RAILROAD,
FROM MONROE TO ADRIAN.

The most direct, expeditious and Safest Route.

The public are respectfully notified that the SOUTHERN RAILROAD in now in complete operation *from Monroe to Adrian;* and being well furnished with Locomotives, Passenger and Freight Cars, will transport Freight and Passengers *safer, cheaper and more expeditiously* than any other road in competition.

This road was built by the State of Michigan, at an expense of

Four hundred thousand dollars

and in its construction is not surpassed by any in the United States.

PASSENGERS

Going to Illinois, Indiana, Wisconsin, Iowa and Western, Southern, or Central parts of Michigan, will preceive, by referring to the Map, that *no Public thoroughfare* is so direct for them as the

SOUTHERN RAILROAD.

☞ *Great care is taken in keeping this Road in good repair, thereby avoiding accidents similar to those occurring upon other roads almost daily, jeopardizing "life and limb."*

STEAMBOATS

Are running from MONROE TO BUFFALO in connection with the Cars upon this Road.

STAGES, CARRIAGES, WAGONS, ETC.

Are always in attendance to convey Goods and Passengers to any direction from Adrian.

☞ Passengers passing over this Road will be met at the boats by Railroad Cars, and conveyed to the Depot, and from the Depot to the Boats *without charge.*

Cars leave Monroe daily for Adrian, Sundays excepted, at 8 o'clock A. M. and leave Adrian for Monroe at 2 o'clock P. M. Running time 2½ hours.

The public may rely upon statements here made, and their patronage is respectfully solicited.

J. H. CLEVELAND,

July, 1842. Superintendent S. R. R.

Rob't D. Foy, Printer, 159 Main st., Buffalo.

The Railway Agent and Station Agent 1889

Railroad and Steamboat Routes of Michigan

Doggett's railroad guide & gazetteer 1848

Erie Canal Distances

A LIST

OF THE PRINCIPAL PLACES ON THE ERIE CANAL, AND THEIR DISTANCE FROM EACH OTHER.

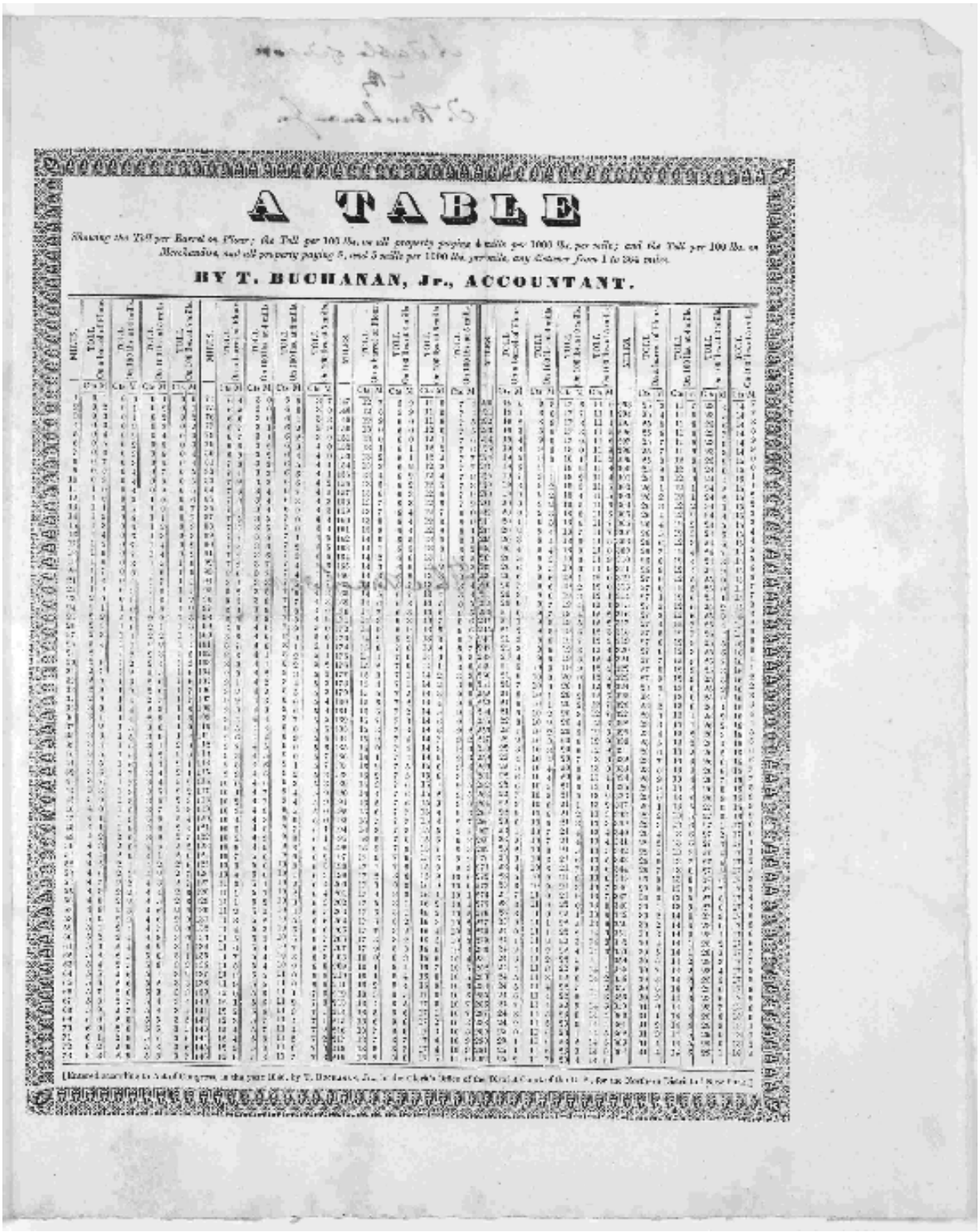
TO PLACES.	DISTANCE FROM Albany.	Schenectady.	Utica.	Syracuse.	Montezuma.	Palmyra.	Rochester.	Albion.	Lockport.	Buffalo.
ALBANY.	0	17	100	150	195	218	253	276	322	364
Port Schuyler	5	22	105	155	200	223	258	281	327	369
Schenectady	17	0	83	133	178	201	236	259	305	347
WEST TROY, Junction,	7	10	93	143	188	211	246	269	315	357
Colvin,	13	47	120	161	195	218	253	276	322	364
Lower Aqueduct,	15	44	97	148	193	216	251	274	320	362
Willow Spring,	12	29	91	141	186	209	244	267	313	355
Upper Aqueduct	25	31	84	134	179	202	237	260	306	348
SCHENECTADY,	10	27	93	143	188	211	246	269	315	357
Boorsdale,	32	38	77	128	173	196	231	254	300	342
Phillis's Locks,	43	28	93	137	182	205	240	263	309	351
Amsterdam,	47	30	63	113	158	181	216	239	285	327
Fort Jackson,										
Schoharie Creek,	62	6	35	70	115	138	173	196	242	284
Smithtown,	54	8	63	117	151	180	215	238	284	326
FULTONVILLE,	67	9	53	104	149	172	207	230	276	318
Big Nose,	64	3	46	107	141	170	205	228	274	316
Spraker's Basin,	66	5	44	104	139	168	203	226	272	314
Canajoharie,	69	15	41	93	128	157	192	215	261	303
Fort Plain,	58	12	38	88	123	152	187	210	256	298
Diefendorf's Landing,	56	15	43	93	128	157	192	215	261	303
St. Johnsville,	53	22	33	83	118	147	182	205	251	293
East Canada Creek,	64	23	33	83	118	147	182	205	251	293
Indian Castle,	58	27	37	87	122	151	186	209	255	297
Nowadaga Creek,										
Finck's Ferry,	56	29	34	84	119	148	183	206	252	294
LITTLE FALLS,	65	31	32	82	117	146	181	204	250	292
Rabbit's Lock, No 7,	70	37	27	77	112	141	176	199	245	287
Herkimer Lower Bridge,	75	38	25	75	110	139	174	197	243	285
Herkimer Upper Bridge,										
Mohawk,	82	50	14	58	103	132	167	190	236	278
Gibbs's Creek,	70	40	13	74	119	148	183	206	252	294
Horsen's Landing,	85	41	15	58	103	132	167	190	236	278
Steel's Creek,	93	49	11	53	103	141	173	196	242	284
Frankfort,	101	44	9	50	101	129	164	187	233	275
Frankfort's,	107	50	3	44	95	123	158	181	227	269
UTICA,	110	57	0	51	85	114	149	172	218	260
York Mills,	113	54	3	55	100	127	162	185	231	273
Whitesboro,	14	57	3	37	91	120	155	178	224	266
Oriskany,	121	61	7	34	79	108	143	166	212	254
ROME,	125	65	10	40	80	113	148	171	217	259
Wood Creek Aqueduct,										
Post Bell,	142	70	17	41	76	105	140	163	209	251
Hawley's Basin,	123	78	13	42	77	111	146	169	215	257
Oneida Creek,	137	92	27	41	73	101	136	159	205	247
Rose Landing,	146	97	32	51	93	98	133	156	202	244
Bingley's,	151	75	20	31	68	97	132	155	201	243
Lenox,	148	81	26	31	65	93	128	151	197	239
Oneida Creek,										
Durhamville,	243	81	24	101	64	93	128	151	197	239
Canastota,	148	86	28	33	59	95	130	153	199	241
New Boston,	150	63	31	91	86	90	125	148	194	236
Chittenango,	153	96	41	78	51	87	116	139	185	227
Fred's Brook,	155	99	43	28	48	84	119	142	188	230
Kirkville,	157	101	45	28	46	82	117	140	186	228
Little Lake,	160	103	48	17	43	87	112	135	181	223
Nichols,	162	105	50	3	43	75	110	133	179	221
Limestone Marsh,										
Hall's Landing,	167	105	55	8	46	77	112	135	181	223

TO PLACES.	DISTANCE FROM Albany.	Fellowville.	Utica.	Syracuse.	Montezuma.	Palmyra.	Rochester.	Albion.	Lockport.	Buffalo.
Quaker Farms,	166	126	60	6	40	75	114	133	168	138
Lodi,	170	113	60	1	35	70	99	118	163	131
SYRACUSE,	171	124	64	0	34	69	98	117	162	130
Geddes,	173	126	68	2	36	67	96	115	160	128
Salina,	177	130	67	6	35	63	92	111	156	124
Nine Mile Creek,	178	131	68	7	27	62	91	110	155	123
Camillus,	179	132	69	8	25	61	90	109	154	122
Camillus,	184	137	74	13	21	56	85	104	149	117
Penn,	180	140	70	15	19	54	83	102	147	115
Jordan,	190	150	80	25	13	50	79	98	143	111
Weed Spring,	191	134	81	20	14	49	78	97	142	110
Weedsport,	196	139	86	25	9	44	73	92	137	105
Centerport,	197	140	87	26	8	43	72	91	136	104
Port Byron,	199	142	89	28	6	41	70	89	134	102
MONTEZUMA,	205	148	94	31	0	35	64	83	128	96
Lockport,	211	154	101	37	6	29	58	77	122	90
Clyde,	210	153	100	43	11	24	53	72	117	85
Lock Berlin,	220	163	111	54	13	19	48	67	112	80
LYONS,	233	167	116	51	25	10	44	59	108	76
Lockville,	231	174	120	60	26	9	35	54	103	71
Newark,	232	175	122	61	27	8	37	52	101	69
Port Gibson,	230	176	120	61	28	5	34	49	98	66
PALMYRA,	241	183	130	69	36	0	29	44	93	61
Macedonia,	244	187	134	73	39	4	25	40	89	57
Weyanport,	247	190	137	76	42	7	25	37	86	54
Perinton,	249	192	139	78	44	9	23	35	84	52
Parma Centre,	251	194	141	80	46	11	18	28	77	45
Parma,	256	197	142	81	47	12	17	25	71	42
Hilton's Basin,	253	194	139	78	44	9	15	23	69	40
Gadsden's Basin,	255	196	141	80	46	11	15	23	67	38
Pittsford,	260	201	146	85	51	16	15	18	62	33
Gillingham's Basin,	263	204	149	88	54	19	18	15	59	30
Lees, No. 3,	265	206	151	90	56	21	20	13	57	28
ROCHESTER,	276	215	160	99	61	26	0	8	52	23
Brockway's,	276	215	160	99	61	26	0	8	52	23
Spencer's Basin,	281	220	165	104	66	31	5	3	47	18
Adams' Basin,	284	223	168	107	69	34	8	0	44	15
Carter's Basin,	287	226	171	110	72	37	11	3	41	12
BROCKPORT,	293	232	177	116	78	43	17	9	35	6
Bailey,	294	233	178	117	79	44	18	10	34	5
Holberton,	299	238	183	122	84	49	23	15	29	0
ALBION,	304	243	188	127	89	54	28	20	24	5
Gaines' Basin,	306	245	190	129	91	56	30	22	22	7
Eagle Harbor,	309	248	193	132	94	59	33	25	19	10
Long Bridge,	314	253	198	137	99	64	38	30	14	15
Knowlesville,	317	256	201	140	102	67	41	33	11	18
Reed Culvert,	318	257	202	141	103	68	42	34	10	19
Medina,	323	262	207	146	108	73	47	39	5	24
Shelby Basin,	328	267	212	151	113	78	52	44	0	29
Side cut,	327	266	211	150	112	77	51	43	1	28
Reynold's Basin,	324	263	208	147	109	74	48	40	4	25
Hulett,	329	268	213	152	114	79	53	45	0	30
LOCKPORT,	333	272	217	156	118	83	57	49	4	34
Pendleton,	340	283	228	167	129	94	68	60	15	45
Wendle,	349	292	237	176	138	103	77	69	24	54
E. Starkey's,	348	291	236	175	137	102	76	68	23	53
Tonawanda,	358	301	246	185	147	112	86	78	33	63
Lower Black Rock,	360	303	248	187	149	114	88	80	35	65
Tuck Bros.,	361	304	249	188	150	115	89	81	36	66
BUFFALO,	364	307	252	191	153	118	92	84	39	69

A. W. DODGE, PRINTER, No. 2 SOUTH STREET, UTICA, N. Y.

www.eriecanal.org

Erie Canal Fees



A TABLE

Showing the Toll per Barrel on Flour; the Toll per 100 lbs. on all property paying 4 mills per 100 lbs. per mile; and the Toll per 100 lbs. on Merchandize, and all property paying 5, and 6 mills per 100 lbs. per mile, any distance from 1 to 364 miles.

BY T. BUCHANAN, Jr., ACCOUNTANT.

www.eriecanal.org

memory.loc.gov

New York & Erie Railroad

NEW YORK & ERIE RAILROAD.

The GREAT DOUBLE TRACK, and ONLY

BROAD GUAGE RAILROAD.

RUNNING WEST.

THROUGH TICKETS AT REDUCED RATES!

FROM BOSTON

To Dunkirk, Buffalo, Niagara Falls, Detroit, Cleveland, Columbus, Cincinnati, Louisville, Lexington,

CHICAGO, ST. LOUIS, BURLINGTON, DAVENPORT, ROCK ISLAND,

ST. PAUL, MILWAUKIE;

Kansas Gold Mines,

Cairo, Memphis, Natchez, New Orleans, and all Intermediate Places, and to all the Principal Cities and Towns in the

WEST & SOUTHWEST!

BOSTON OFFICE,

15

STATE STREET.

For Safety and Comfort, this Great Double Track and Broad Guage Railway is unsurpassed by any Competing Road, and is undeniably the very best Run, and best equipped in the United States.

The Best Ventilated and Most Splendid New SLEEPING CARS with all the Modern Improvements, are on this Road.

Trains Leave Boston,

5:30 P. M., Via Stonington, Fall River and Norwich.

8:30 A. M., and 3 P. M., Via Worcester and Springfield Road.

TICKETS VIA THIS ROUTE, obtained at our several Offices and Agencies in New England, and at the

General Ticket Office, No. 15 State Street, Boston,

Where CORRECT Information may be obtained about the West, and of the different Railroads.

CHARLES MORAN, President. HENRY R. HALL, General Agent New York & Erie R. R.

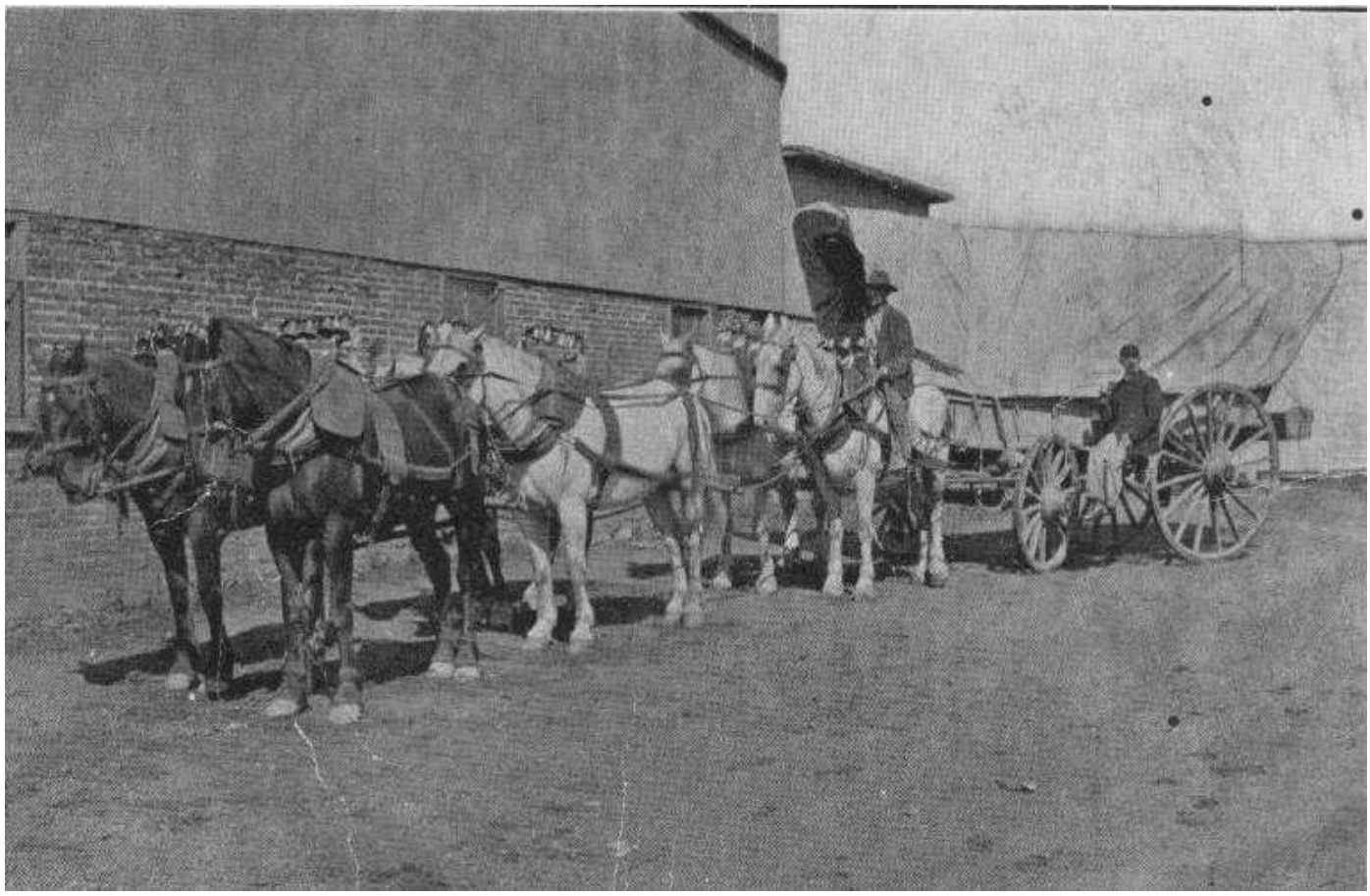
Farwells & Forrest, Steam Job Printers, 5 LindallStreet, Boston.

Farwells & Forrest, Steam Job printers [1856]

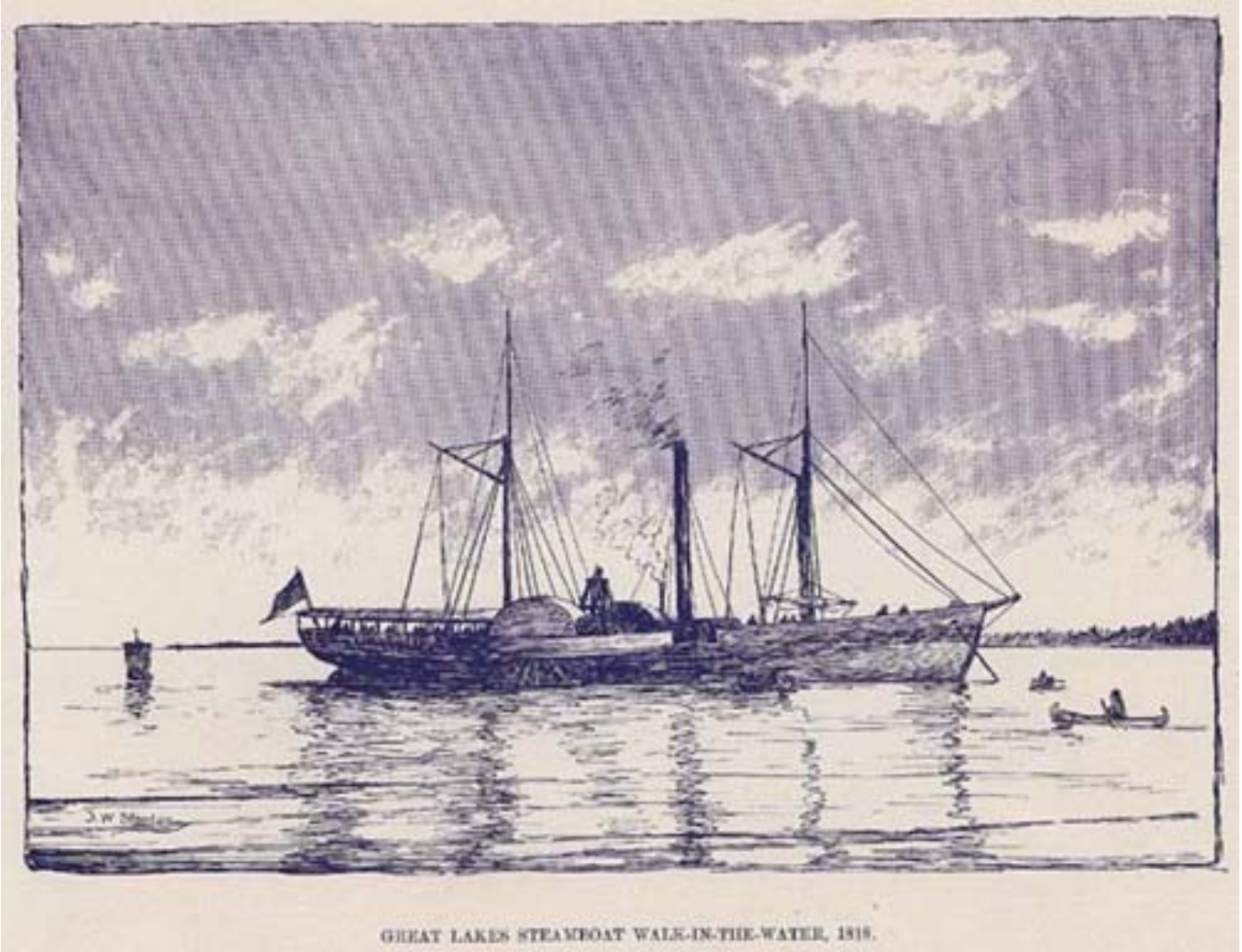
"Travelling on the Erie Canal" by H. Inman -- from: The Northern Traveller and Northern Tour. New ed. published by J. & J. Harper, 1831. (4 3/8 in. x 2 5/8 in.) -- Reproduction available from The Farmer's Museum, Cooperstown, NY.

http://www.eriecanal.org/general-1.html

Conestoga Wagon



THE CONESTOGA AREA HISTORICAL SOCIETY



GREAT LAKES STEAMBOAT WALK-IN-THE-WATER, 1818.

http://springcitychronicle.com

“I Arrived at Detroit..."

1827

Friend Palmer. Early Days in Detroit

Friend Palmer [1820-1906] came to Detroit as a child in 1827. In 1906 he wrote a book of personal reminiscences about his life in Detroit: Early Days in Detroit: Papers Written by General Friend Palmer of Detroit: Being his Personal Reminiscences of Important Events and Descriptions of the City for over Eighty Years. (Detroit: Hunt & June, 1906)

[Wayne County Historical and Pioneer Society. Chronography of Notable Events in the History of the Northwest Territory and Wayne County. Compiled and arranged by Fred. Carlisle. Detroit: O.S. Gurley, Bornman & Co., 1890. Pp. 125-126.]

I came to Detroit in May, 1827, with my mother and two sisters, on the steamer "Henry Clay." We were under the friendly guidance of Mr. Felix Hinchman (father of Guy Hinchman), who took charge of us at Canandaigua, N. Y. My father, Friend Palmer, had proceeded us some two or three months, on account of urgent business matters connected with the firm of F. & T. Palmer, of Detroit, of which he was the senior partner.

Our trip through New York from Canandaigua to Buffalo was by stage and very rough, the roads having been rendered almost impassable by recent rains. It took us, I think, two days and two nights to reach Buffalo. We had to wait at that point two or three days for the steamboat "Henry Clay". We did not mind in the least, for we were quartered at the Old Eagle Hotel, kept by Benjamin Rathbun, a most sumptuous resting place, I thought it, and so it was for those days. Our trip up the lake to Detroit on the "Henry Clay" was uneventful. We had a pleasant passage that occupied, I think, two or three days. The "Henry Clay," commanded by Captain Norton, was a floating palace, we thought, and we greatly enjoyed the time spent on it. The Henry Clay had no cabin on the upper deck - they were all below. When you desired to retire for the night or for meals, or get out of the reach of rain and storms, downstairs or between decks you had to go.

The "Henry Clay" was one of the three steamers that composed the line from Buffalo to Detroit, viz: "Henry Clay," "Superior" and "Niagara." It was the only regular line between the above points. Now and then the steamers "William Penn" and "William Peacock" would put in an appearance. We could only count upon about one boat a week. The mails came by these boats during the season of navigation and the balance of the year by land through Ohio.

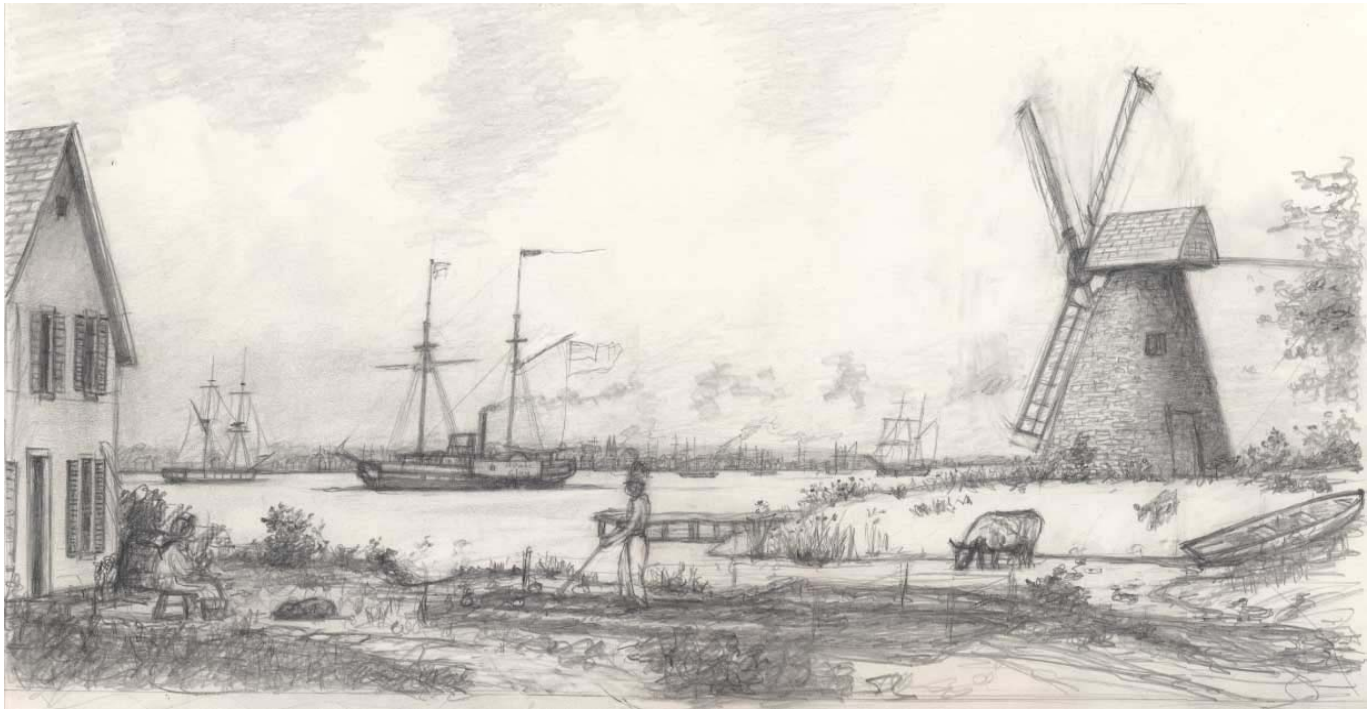
We landed at Jones' dock, between Griswold and Shelby streets, on a fine day, about ten o'clock in the morning and all walked up to the residence of my uncle, Thomas Palmer, corner of Jefferson Avenue and Griswold Street. There were no public

conveyances in those days. Thomas Palmer lived over his store, as did many of the merchants doing business here at that time.

Let me refer once more to Captain Norton, one of the most conspicuous and popular captains on the lakes at that early day. The "Henry Clay" was a crack steamer and, of course, must have a corresponding chief officer. Of commanding presence, Captain Norton, of the "fastest steamboat 'Henry Clay,'" when he appeared on Jefferson avenue, clad in his blue swallowtail coat with brass buttons, nankeen pants and vest, and low shoes with white stockings, not forgetting the ruffled shirt and tall hat, was the observed of all observers. Steamboat captains were kings in those days. All were pleased and anxious to show them every attention. When the "Clay" rounded Sandwich point, Detroit lay before us and, though small, the city presented quite an attractive appearance. The most conspicuous object in the distance was the steeple or cupola of the statehouse or territorial capitol building, that pushed its head up among the surrounding trees, its tin covering glittering in the morning sun. This statehouse was located, where is now Capitol Square, and where the remains of Michigan's first governor, Stevens T. Mason, now repose.

The windmills along the river also attracted our wondering attention. Three were located on the Canadian side of the river, one on the point opposite the residence of the late Joseph Taylor and two just above the present site of Walkerville. The one on the American side was on the small point where Knagg's creek then entered the river and opposite the old Knagg's homestead, Hubbard's farm (since destroyed).

The four mills presented to us a wonderful sight on that bright May morning. They were in full operation; their four immense arms, covered with white sailcloth, were whirled through the air by the force of the wind, and, as said before, filled us with delighted amazement as all the New York state could not produce a scene to match it.



http://masseymarineart.com

A Boy's Story of Pioneer Life in Michigan

By: Theodore E. Potter

I was born in Saline, Washtenaw County, Michigan, March 10, 1832. My early life was spent like that of other boys in the territory about that time. My father and mother, with two small children, came to Michigan in the spring of 1830 from Cayuga county, New York, by way of the Erie canal to Buffalo, and from there by steamboat to Detroit within seven day's time. They then walked to Plymouth, thirty miles, in two days, carrying their two children in their arms, stopping a few days with relatives there, then walked to Saline, a distance of twenty miles further, where they first settled, and my father built one of the first frame houses in that part of the country, one story high, and located on the present village plat. In this house he not only lived, but worked at tailoring, a trade he had learned when a boy at Huntington, PA, where he was born in 1798.

Clarke Historical Library
Michigan Pioneer and Historical Collections, 1907

View of the Upper Village of Lockport, Niagara County, New York

Lithograph by J. H. Bufford after W. Wilson, 1836

Courtesy of the Library of Congress

Toledo Ann Arbor Line 1878

EVERYBODY REJOICE

HANG OUT YOUR BANNERS!

THE IRON ON THE TOLEDO & ANN ARBOR

RAILROAD!

WILL BE LAID INTO ANN ARBOR

TO-DAY!

MAY 16, 1878.

Citizens will meet at the Opera House at 3 o'clock P. M., to-day, and accompany the Band to South Main street, and there meet the track-layers. After short speeches by HENRY C. WALDRON and HON. JOHN L. BURLEIGH, a countermarch will be made to the Opera House, where a SUPPER will be provided for all.

Let every one turn out and lend a helping hand to furnish the men a good square meal.

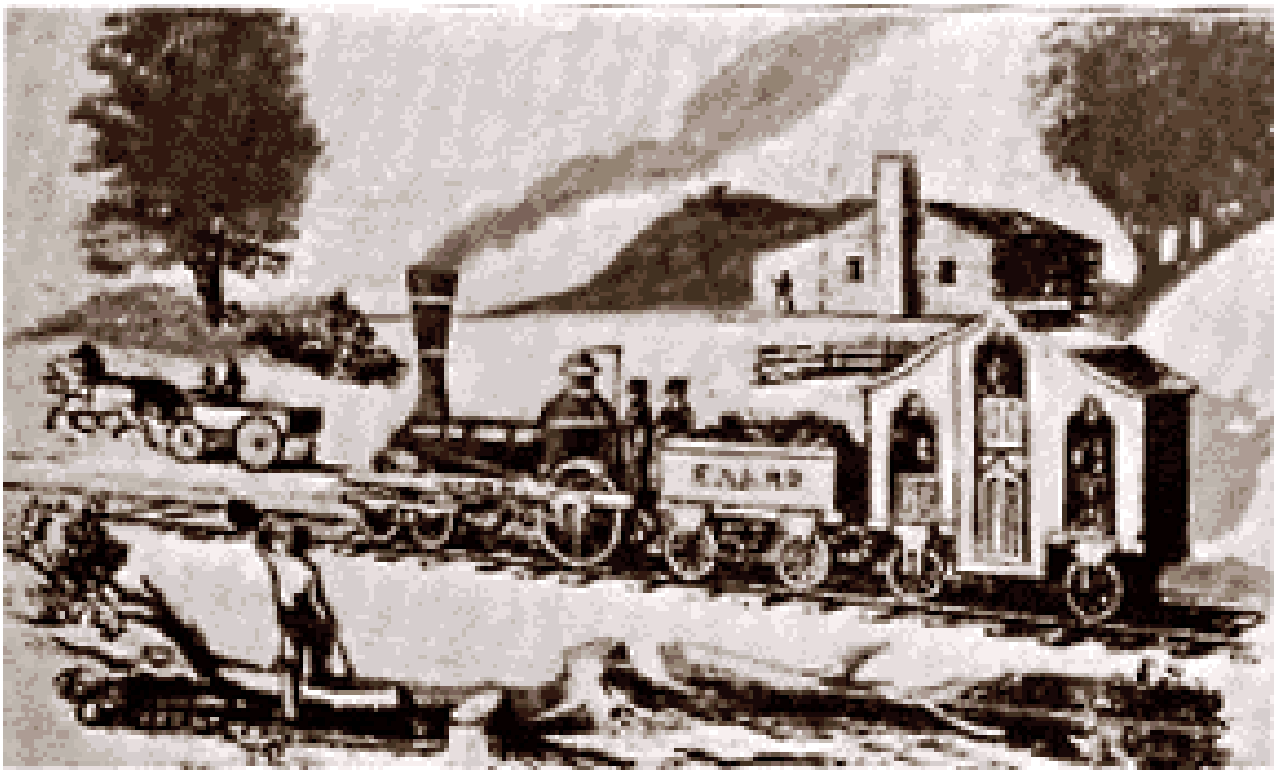
BY ORDER OF COMMITTEE.

www.artsofcitizenship.umich.edu

Early Michigan Railroad

A horse-drawn rail car from 1829

The first steam locomotive arrived in Michigan on the E&K in 1837



info.detnews.com/

Secondary Source Chart

Resources	What Did You Notice	What Does This Tell You

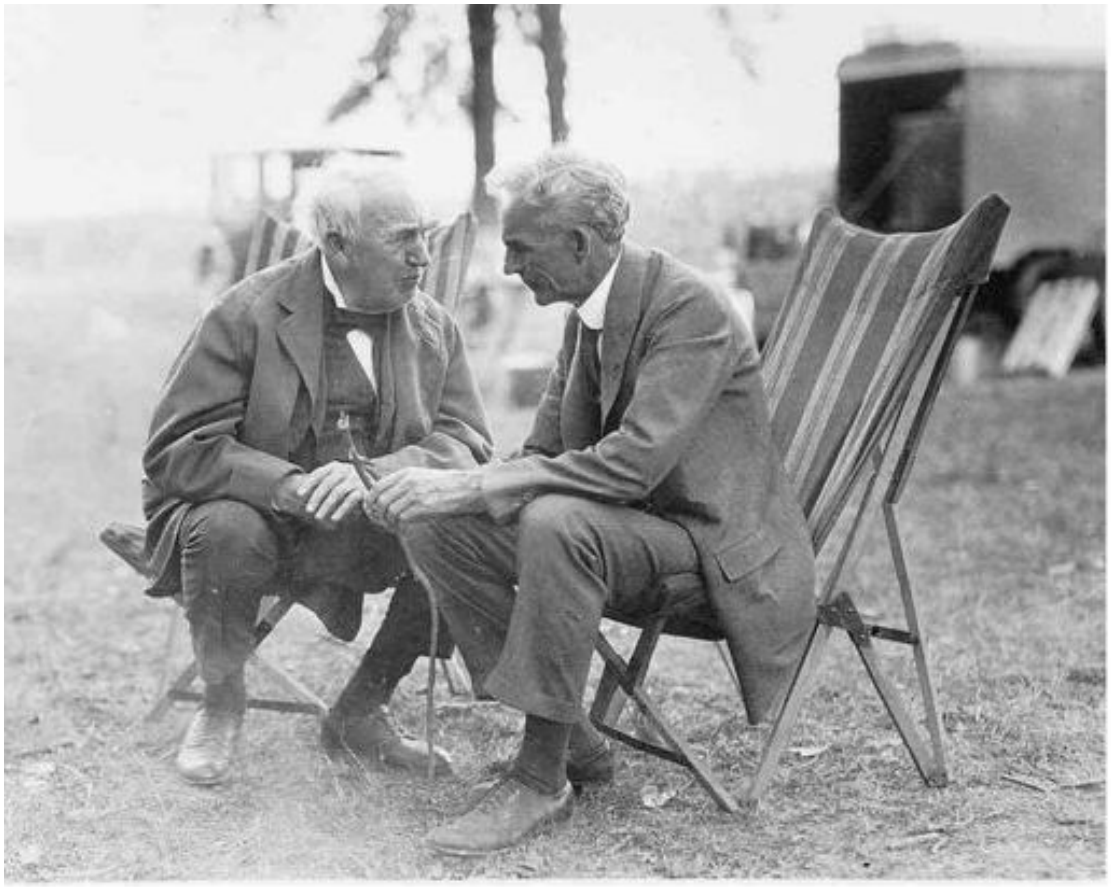
America's Greatest History Attraction

Elementary Lesson Plan 4

Sally Meyer, Crabapple Lane Elementary School, Peachtree City, GA

American Innovators:

Henry Ford and Thomas Edison



Source: http://www.nps.gov/archive/edis/graphics/ford-tae.jpg

Title of Lesson: American Innovators: Henry Ford and Thomas Edison

Grade Level: 5th

Overview: This unit is designed to allow gifted fifth-grade students the opportunity to explore the lives of two remarkable American innovators, Henry Ford and Thomas Edison. After hearing a brief biography of each personality, students will create a timeline of their lives, compare them using a Venn diagram, and then do more extensive research on one of them. Using that research, students will create a memorial to the individual they have chosen and present their project to classmates.

Instructional Sequence

Introduce the topic; students brainstorm

↓

Read Henry Ford's biography; students take notes

↓

Read Thomas Edison's biography; students take notes

↓

Compare/Contrast Henry Ford and Thomas Edison

- Timeline
- Venn diagram
- Writing

↓

Student Research and Projects

↓

Presentations

Established Goals (standards)

Georgia Gifted Benchmarks:

5.2 Students will develop and practice creative thinking and creative problem-solving skills.

- The student will be able to forge possible options for compromise between divergent positions.
- The student will be able to evaluate solutions (results) and identify the most elegant.

5.3 Students will develop and practice critical thinking and logical problem-solving skills.

- The student will be able to defend strategies used to solve problems and identify the most elegant solution.
- The student will be able to explain the interconnected relationships of real-world problems and possible solutions in terms of economic, sociological, environmental, and political issues.

5.4 Student will develop advanced communication skills.

- The student will be able to organize elements of a task and promote engagement of peers to accomplish a desired result.

5.5 Students develop an understanding of self.

- The students will be able to demonstrate recognition of their responsibilities as a result of their membership in a community.

Georgia Performance Standards

Social Studies

SS5H3 The student will describe how life changed in America at the turn of the century.

- b. Describe the impact on American life of …Thomas Edison (electricity).

SS5H4 The student will describe U.S. involvement in World War I and post-World War I America.

- b. Describe the cultural developments and individual contributions in the 1920s of…..the automobile (Henry Ford)…

SS5E1 The student will use the basic economic concepts of trade, opportunity cost, specialization, voluntary exchange, productivity, and price incentives to illustrate historical events.

- f. Give examples of technological advancements and their impact on business productivity during the development of the United States.

SS5E2 The student will describe the functions of the three major institutions in the U.S. economy in each era of United States history.

- a. Describe the private business function in producing goods and services.

What enduring understandings are desired?

Students will understand that…

- learning is driven by questions and a desire for knowledge
- risk and success go hand in hand
- hard work and success go hand in hand
- different people have different talents

What essential questions will be considered?

- What is Henry Ford's legacy?
- What is Thomas Edison's legacy?

What key knowledge and skills will students acquire as a result of this unit?

Students will know…	*Students will be able to…*
▪ The important events in the life of Henry Ford ▪ The important events in the life of Thomas Edison ▪ The impact of the innovations of Henry Ford and Thomas Edison on life in the 19th century and beyond	▪ Create a timeline of the important events in the life of Henry Ford ▪ Create a timeline of the important events in the life of Thomas Edison ▪ Research and analyze the innovations of Henry Ford and Thomas Edison ▪ Compare and contrast the character traits and personal interests of Henry Ford and Thomas Edison ▪ Create a memorial to either Henry Ford or Thomas Edison

Who was Henry Ford?

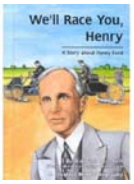
Vocabulary: innovator, innovation, invention, mobility, Model T, assembly line

Lesson Questions:

- What is an innovation? An innovator?
- What is the difference between an innovation and an invention?
- Why do we remember Henry Ford?
- What is the Model T, and how did it change America?
- What is the assembly line? How has it impacted production?

Activities

- Begin the lesson by brainstorming what students know about Henry Ford.
- Discuss the meaning of innovations.
  - How are innovations different from inventions, or are they the same thing?
  - What do you think provides the impetus for an innovation?
  - Is an innovator the same as an inventor?
  - Can a person who improves someone else's invention be considered an innovator?
- Read the book, *We'll Race You Henry: A Story about Henry Ford* by Barbara Mitchell. Instruct students to take notes on the Henry Ford note taking sheet. Provide instruction about what an *important* event is, if necessary. For example, who he married is not the reason we remember him, but improving the assembly line is.



- As you read, discuss the events in the story. At the end, ask students to share their choices for important events, character traits, challenges faced, and what they liked best about Henry Ford.
- Share primary source documents, such as Ford's patent for the "motor carriage" and pictures of the Model T and the assembly line.
- Spend an extended amount of time on:
  - the assembly line: how its implementation changed the efficiency of modern factories, the mind numbing tasks workers were expected to complete, how it is now an integral component of almost every type of production around the world, etc.
  - the Model T: how it made America mobile, creating the need for highways, motels, and fast food

Formative Assessment

- Teacher observation
- Class discussion
- Note taking sheet

Summative Assessment

- Memorial project

Resources:

- *We'll Race You Henry: A Story about Henry Ford* by Barbara Mitchell
- Notes worksheet

Primary Source Documents

- Patent number 686,046 (Motor Carriage)
- Photos of the assembly line, Model T, and Henry Ford

Henry Ford

Date of Birth _____Date of Death _____

Famous for _____

Important events in Henry Ford's life (include year or age):

1.

2.

3.

4.

5.

What challenges did Henry Ford overcome?

What character traits did Henry Ford exhibit? Explain your choice.

What do you like best about Henry Ford? Explain your choice.

Henry Ford

Old 16
In 1908, Old 16, the Locomobile race car, won the prestigious Vanderbilt Cup. Its victory marked the first time an American car won an international auto race and served notice to the rest of the world that America was poised to change the auto industry forever.

Made: 1906
ID: 97.9.1
Photo ID: G981

15 Millionth Ford Model T Touring Car
This was the last car of the Model 'T' series. After completing this car, the Ford Motor Company began preparations to build the new Model 'A'. The 4-cylinder, 22.5hp, 5-passenger touring car is marked with Engine No. 15,000,000.

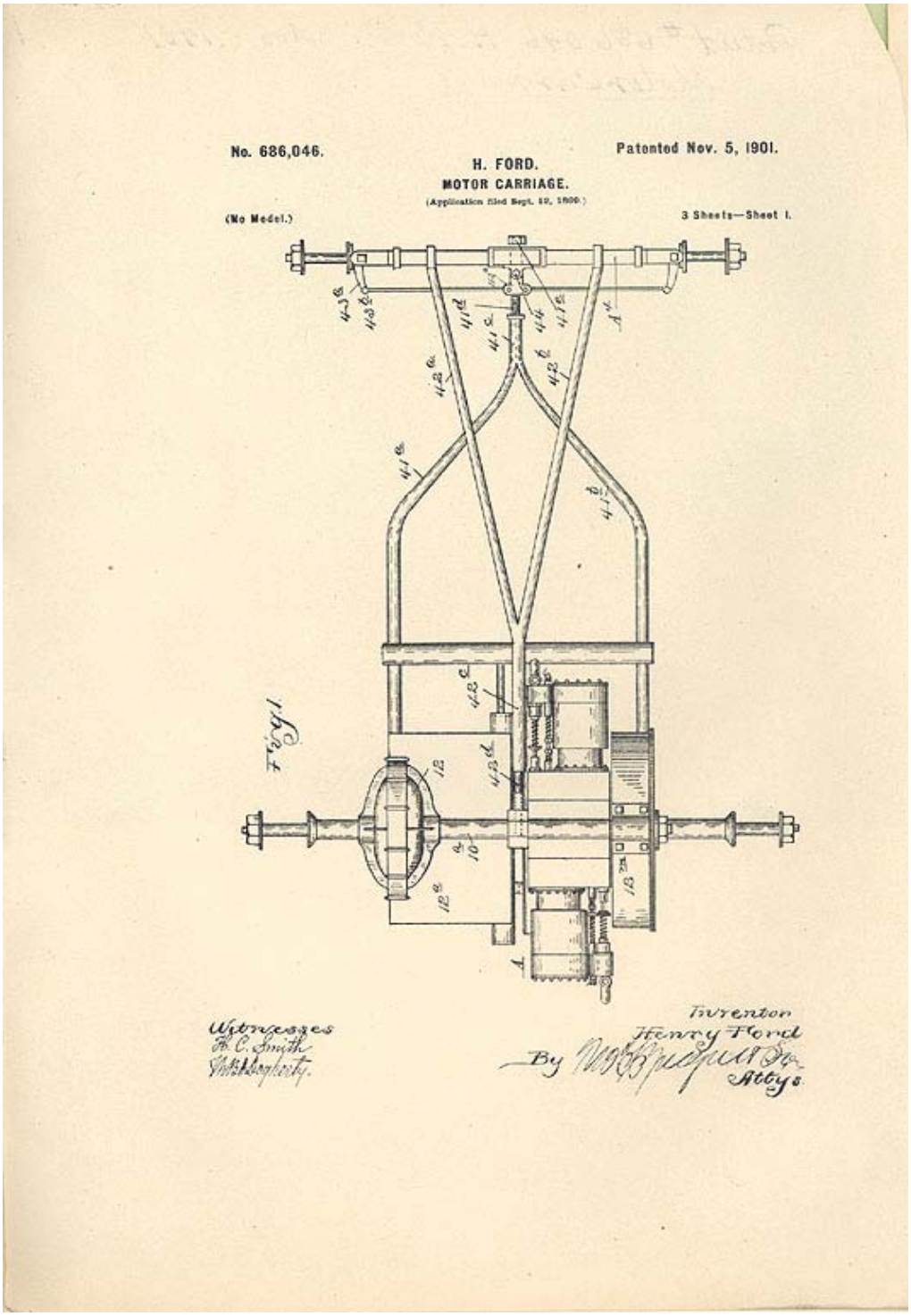
Made: 1927
ID: 00.136.124

Ford Model T Truck
Hauling 8,000 Pounds of Hay

McDonald's Sign
Standing 26 feet high, this neon-illuminated sign was installed in August of 1960 at the second McDonald's franchise in the state of Michigan. It reads, "Licensee of the MCDONALD'S Speedee Service System -- HAMBURGERS Over Million Sold."

Made: 1960
ID: 86.137.1

Source http://www.thehenryford.org/museum/automobile.aspx:



U.S. Patent No. 686,046 on the Motor-Carriage granted to Henry Ford and the Detroit Automobile Company, 11/5/1901
Source: www.fi.edu/learn/case-files/ford/full/01_11_0...

Who Was Thomas Edison?

Vocabulary: incandescent, perseverance,

Lesson Questions:

- What is an innovation? An innovator?
- What is the difference between an innovation and an invention?
- Why do we remember Thomas Edison?
- What important inventions did Thomas Edison develop?
- What is the incandescent light bulb, and how did it change America?

Activities

- Begin the lesson by brainstorming what students know about Thomas Edison.
- Review the meaning of innovations and inventions.
  - How are innovations different from inventions, or are they the same thing?
  - What do you think provides the impetus for an innovation?
  - Is an innovator the same as an inventor?
  - Can a person who improves someone else's invention be considered an innovator?
- Instruct students to list the five materials things they could not live without and set it aside.
- Read the book, *Inventing the Future: A Photobiography of Thomas Edison* by Marfe Ferguson Delano. Instruct students to take notes on the Thomas Edison note taking sheet. Review what an *important* event is, if necessary. For example, that he nicknamed his children Dot and *Dash* is not the reason we remember him, but the light bulb is.

- As you read, discuss the events in the story. At the end, ask students to share their choices for important events, character traits, challenges faced, and what they liked best about Thomas Edison. Discuss/debate results. Ask students if they think Edison is an innovator, an inventor, or both. With a partner, have students discuss how Edison could have developed ideas for 1093 patents.
- Share primary source documents, such as Edison's patent for the light bulb, his quotes about work ethic, and photos of him sleeping on a table. Discuss.
- Instruct students to review the list of items they could not live without. Discuss how many of them are the result of Thomas Edison's inventions. For example,
  - MP3 player-sound recording. You can listen to an original recording of Thomas Edison at the National Park website. http://www.nps.gov/edis/photosmultimedia/the-recording-archives.htm
  - Movies-the light bulb, movie camera, and recorded sound.

Formative Assessment

- Teacher observation
- Class discussion
- Note taking sheet

Summative Assessment

- Memorial

Resources

- *Inventing the Future: A Photobiography of Thomas Edison* by Marfe Ferguson Delano
- Notes worksheet

Technology/Primary Source Documents

- Copies of Edison's patents for the phonograph and light bulb
- Photographs of Edison at work and sleeping
- Photographs of Edison's inventions

Thomas Edison

Date of Birth _____Date of Death _____

Famous for _____

Important events in Thomas Edison's life (include year or age):

1.

2.

3.

4.

5.

What challenges did Thomas Edison overcome?

What character traits did Thomas Edison exhibit? Explain your choice.

What do you like best about Thomas Edison? Explain your choice.

To the Honorable Commissioner of Patents:

Your Petitioner Thomas A. Edison

of Menlo Park in the State of New Jersey

prays that LETTERS PATENT may be granted to him

for the invention of an Improvement in Electric Lamps and in the method of manufacturing the same

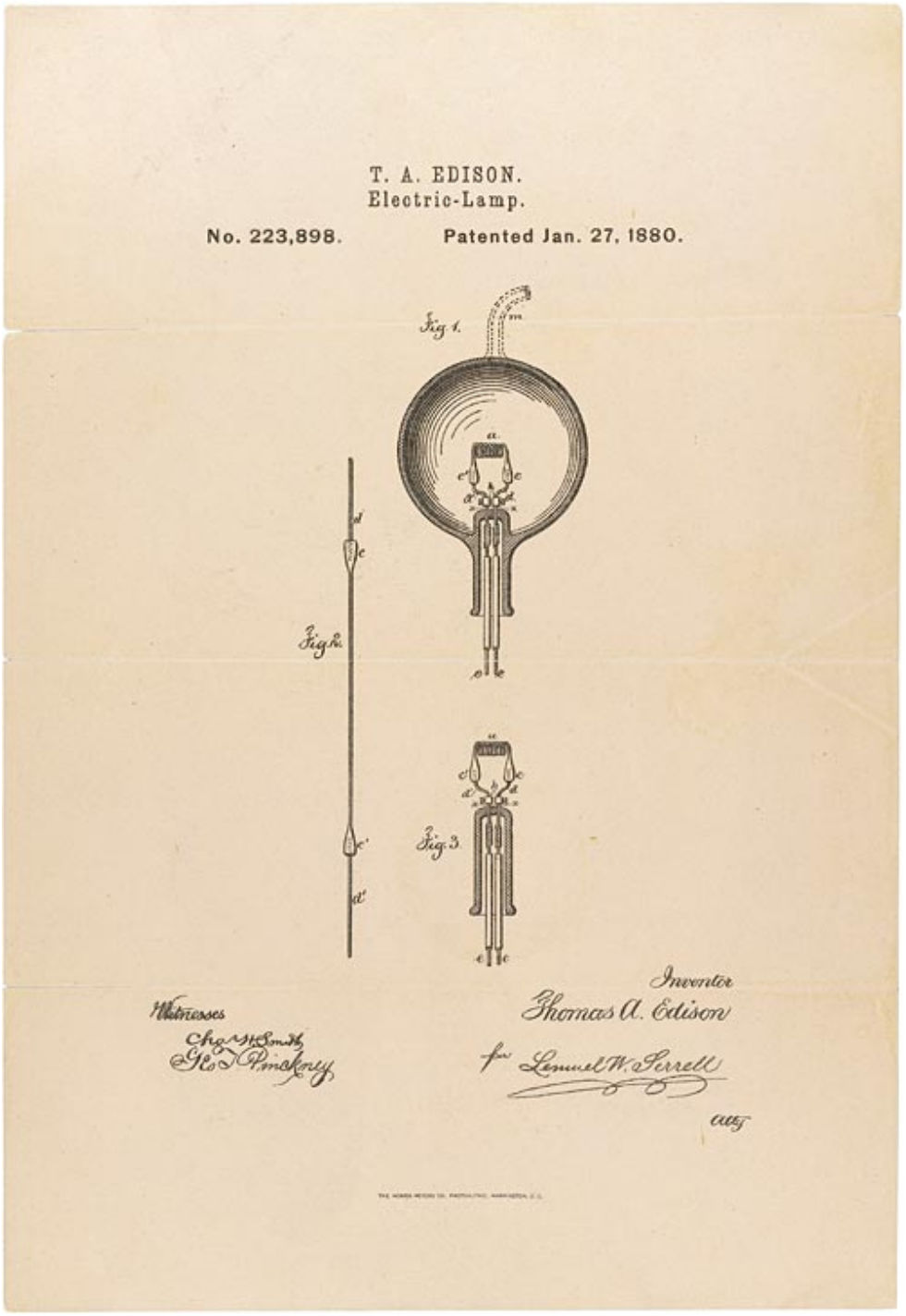
set forth in the annexed specification. (Case No. 186.)

And further pray that you will recognize LEMUEL W. SERRELL, of the City of New York, N. Y., as his Attorney, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the Patent, and to transact all business in the Patent Office connected therewith.

_____

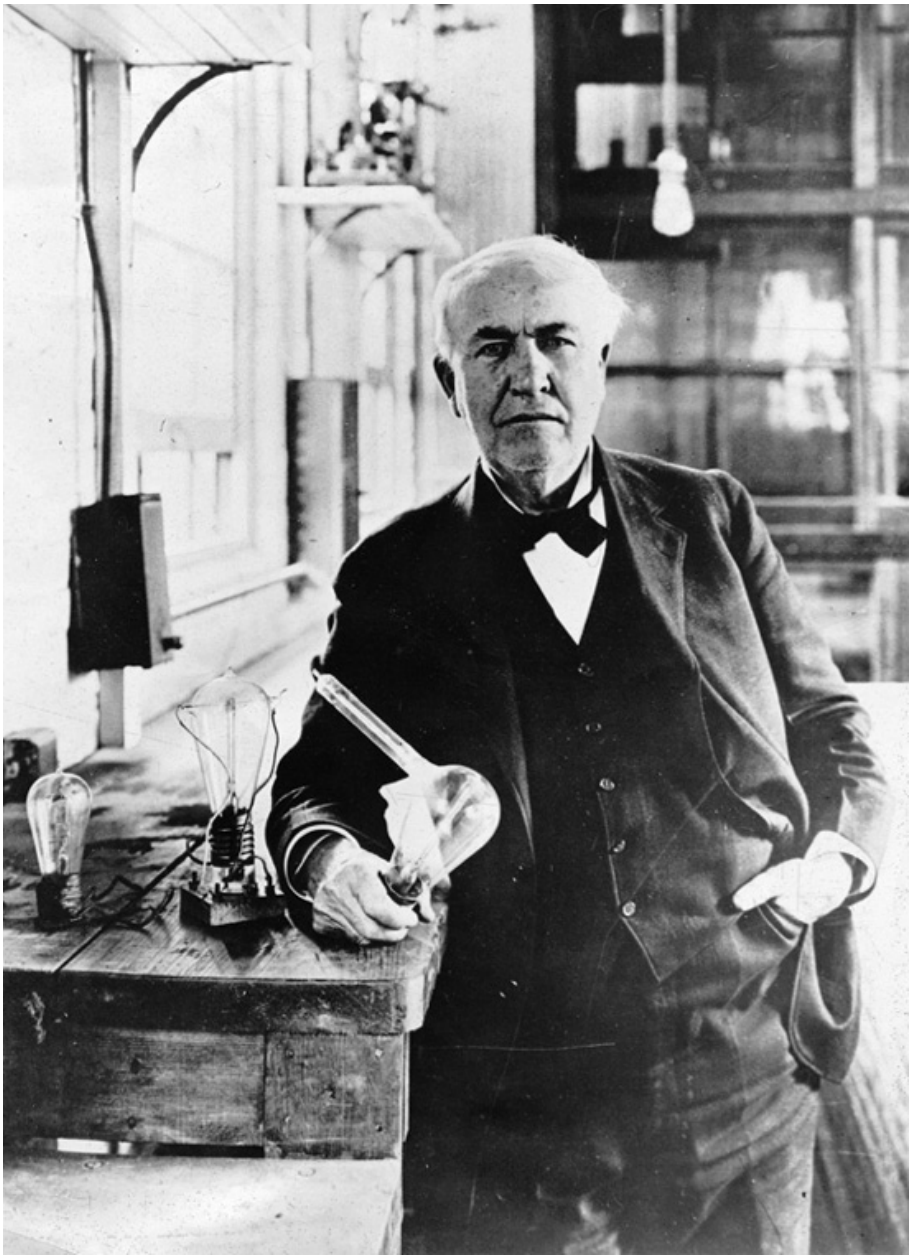
_____ 1879.

Source: www.ourdocuments.gov

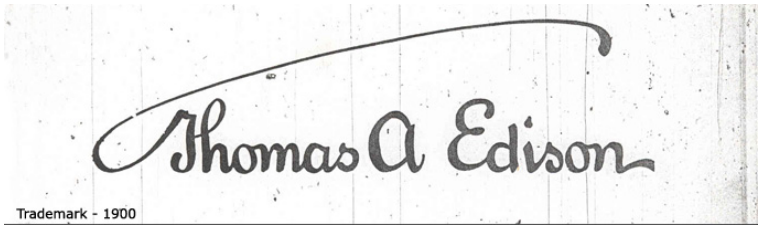


Thomas Edison's Electric Lamp
Patent Drawing

Record Group 241
Records of the Patent and Trademark Office
National Archives and Records Administration
ARC Identifier: 302053
Source: www.ourdocuments.gov



Source:
http://www.archives.gov/exhibits/american_originals_iv/images/thomas_edison/thomas_edison.jpg



Comparing and Contrasting Henry Ford and Thomas Edison

Vocabulary:

Lesson Questions:

- How were Henry Ford and Thomas Edison alike?
- How were Henry Ford and Thomas Edison different?
- What do you think they talked about when they spent time together?

Activities:

- Provide students with white construction paper (18x24). Instruct them to fold the paper in half lengthwise. Working in groups, students will use their notes to create a timeline of Thomas Edison's life on one half of the paper. On the other half of the paper, they will create a timeline for Henry Ford's life. The class will discuss similarities and differences they note in the lives of the two men.
- Provide students with a blank Venn diagram (or instruct them to create one). Working alone, students will add details about Ford and Edison to the two circles, and add things they have in common to the middle. These can be events or experiences they shared (i.e., camping, the 50-year anniversary of the light bulb) or character traits, like perseverance and curiosity.
- The class will discuss results.
- Finally, the class will discuss the following questions:
    - Were Henry Ford and Thomas Edison innovators or inventors?
    - Which one do you think was more important to our history?
    - Why do you think they were friends?
    - What do you think they talked about when they were together?
- This portion of the unit will conclude with students writing a persuasive paper about this prompt:
    - Who created the biggest change in American life, Henry Ford or Thomas Edison?

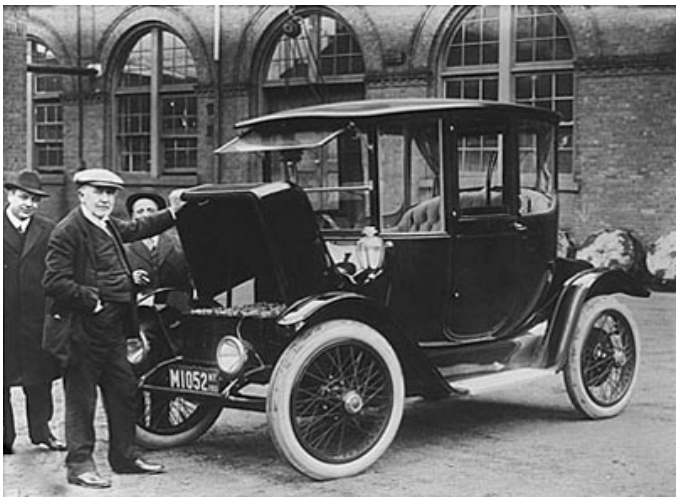
Formative Assessment

- Teacher observation
- Class discussion
- Venn diagram
- Timeline
- Writing

Summative Assessment

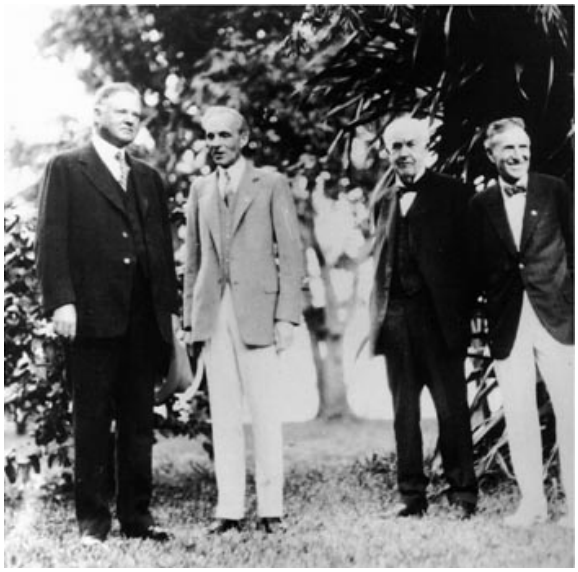
- Memorial

Resources: Venn diagram, white construction paper (18x24)

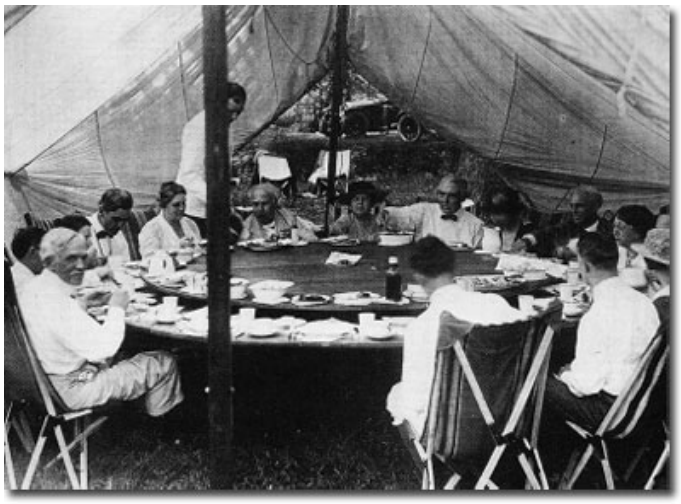


Thomas Edison inspects electric car in 1914. He and Henry Ford had planned to use Edison's nickel iron battery to power clean, efficient, affordable cars for the masses that would be recharged by home wind turbines, according to author Edwin Black in 'Internal Combustion'.

Source:
www.evworld.com/images/edison_ev1914.jpg



President Herbert Hoover, Henry Ford, Thomas Edison, and Harvey Firestone at Edison's 82nd birthday. Ft. Myers, Florida, February 11, 1929.Credit: Herbert Hoover Library
http://teachpol.tcnj.edu/amer_pol_hist/thumbnail341.html



Camping with Thomas Edison, Henry Ford, and Harvey Firestone
Source:
www.dnr.state.md.us/feature_stories/00000141.jpg

Research and Project

Vocabulary: memorial, commemorate, expectations

Lesson Questions:

- How should we remember Henry Ford and Thomas Edison?

Activities

- Discuss why we would want to memorialize a person, such as Henry Ford or Thomas Edison. Explain the history and purpose of The Henry Ford Museum and Greenfield Village.
- Review/introduce possible ways to memorialize a person (flag, coin, monument, school, roads, statue, etc.)
- Explain project and expectations:
    - Students research and take notes on the life of either Thomas Edison or Henry Ford.
    - Students create a memorial that reflects the importance of Henry Ford or Thomas Edison.
- Students present projects to the class.

Formative Assessment

- Teacher observation
- Teacher/student conferences
- Notes

Summative Assessment

- Project

Resources:

Encyclopedias, biographies, non fiction books, approved internet sites, such as www.nps.gov/edis

Poster boards, clay, markers, paint, etc.

American Innovators
Final Project

The personality I have chosen is

_____

Due Date:

Using the skills you have developed this year, you will research either Henry Ford or Thomas Edison, create a memorial to your choice, and present your work to the class.

Presentation

Your presentation must be 4-5 minutes long and address the following:

General Information

- Background information (childhood, school, early life, etc.)
- What were his/her important accomplishments?
- Why was Henry Ford or Thomas Edison influential?
- Which of his inventions/innovations do you think was the most important?

Character

- What challenges did he face?
- What character traits did he represent?
- Who were his friends?

Evaluation of your personality

- Who influenced him?
- Would he have been in the gifted program?
- Would you want to be a friend of Ford/Edison?
- Do you think he was in inventor or an innovator? You can only choose one.

Note: You should be able to tell, not read, about your personality on (date).

Visual

- Think about the impact this person has made on the world. Remember the many ways a person can be memorialized.
- Create an innovative memorial to either Thomas Edison or Henry Ford. There are no limitations, other than it must be your personal best.
- Your visual must include a commemorative "plaque" that provides a brief summary of his life.

We will be devoting at least one hour in class each week to research, but you will also need to do some of the work at home, especially during the initial research period.

I understand that my child has a research project due in Enrichment on (date).

Parent Signature

Self Assessment/Teacher Assessment Name_____

Scale: 4-Excellent (I would be proud to show the principal and my parents)
3-Good (Hard Work is evident, but there is room for improvement)
2-Fair (I can improve this in many ways to meet the objective)
1-Poor (I can't believe I turned this in)
0-Not Observed

	4	3	2	1
Background • Major life events • Accomplishments • Why is this person influential? • Most important innovation	All topics covered in depth with examples	All topics covered, but not in depth OR Most topics covered in depth	Most topics covered or topics not covered in depth	Topics barely covered and/or no examples given
Character • Challenges • Friends • Character Traits	All topics covered in depth with examples	All topics covered, but not in depth OR Most topics covered in depth	All topics covered, but not in depth OR Most topics covered in depth	Topics barely covered and/or no examples given
Gifted Program? • Qualifications (ability, achievement, creativity, motivation)	Choice fully supported using all four qualifications and explained with examples	Decision partially explained (only some areas or no examples)	Decision made, but not fully explained in terms of qualifying areas	Decision stated, but not explained at all
Memorial ▪ Represents the character AND his accomplishments ▪ Is creative and innovative	▪ It is easy to see exactly who is being memorialized and why. ▪ Very innovative.	▪ The observer can tell who is being represented, but the memorial presents an incomplete picture. ▪ Innovative	▪ The memorial presents an incomplete picture. ▪ It is not innovative.	▪ Not clear who is being memorialized or what he accomplished ▪ Mundane presentation

Presentation • Told-did not read • Made Eye contact • 4-5 minutes	Spoken confidently with frequent eye contact for 4-5 minutes	Spoken with eye contact most of the time for 4-5 minutes OR Spoken confidently with continuous eye contact for less than 4 minutes	Spoken with limited eye contact for 4-5 minutes OR Spoken with eye contact most of the time for less than 4 minutes	Read with limited eye contact for four minutes or less
Total Score				

Comments:

America's Greatest History Attraction

Elementary Lesson Plan 5

Lina Moukalled-Khadr, Miller Elementary School, Dearborn, MI

Title of Lesson: Amber Waves of Grain

Grade Level: 4th

Overview: A 5 day social studies and language arts lesson plan; students will learn about the process of producing wheat in Michigan through a reading selection, pictures, and data.

Curriculum Links: Michigan Content Level Expectation:
4.E1.0.1 Identify questions economists ask in examining the United States (e.g., what is produced? How is it produced? How much is produced? Who gets what is produced?

4.H3.0.5 Use visual data and informational text or primary accounts to compare a major Michigan economic activity today with that same related activity of the past

R.WS.04.05 Acquire and identify strategies to identify unknown words or word parts…

Materials:
KWL chart
Encyclopedia - dictionaries
Internet Access if available
Grains of wheat
Michigan's counties map

Procedures: If possible bring some dry wheat grains and have the students touch them and smell them. Give the students a KWL chart and have them record in the "K" column what they know about the grain.

Tell the students that they are going to read a selection about the history of wheat and have them record under the "W" what they want to know about wheat.

Divide the students into groups of four; assign each group a paragraph from the reading selections and tell each team that they are going to be experts in explaining their selection to the rest of students. Encourage them to look up the definitions of vocabulary in the dictionary or use the computer.

- Read the selections together and have the expert students explain to their peers any unclear parts. (Teacher should always interfere to enforce comprehension.)
- Divide the students into small groups and have the students summarize and record what they learned about wheat under the "L" column.
- Again, assign each group a paragraph and based on the information in it, have the students brainstorm the type of jobs that are required to accomplish the tasks discussed in the selection. The students may draw a picture of different careers that relate to farming
- Give the students a map of Michigan and have them locate and color the following 5 top counties that produce wheat: Sanilac, Huron, Lenawee, Tuscola, and Saginaw
- Post the wheat table information on a transparency and ask the students questions related to the information

The History of Wheat

Wheat is one of the world's most important food crops. It is believed that wild relatives of wheat first grew in the Middle East. Wheat was one of the first plants to be cultivated. It was grown about 11,000 years ago.

Enormous changes in people's lives occurred because of wheat being grown. People began growing their own food and no longer needed to wander in search of food. Permanent settlements were established because wheat provided people with a stable food supply. Soon people grew enough wheat to feed people from other lands. Once there was extra wheat available, trade between various cultures developed.

By 4,000 B.C. wheat farming had spread to Asia, Europe and North Africa. New species of wheat developed because early farmers probably selected kernels from their best wheat plants to use as seeds for planting the following year's crop. That way, only the best wheat qualities were passed from one generation to the next. Soon wheat became an important world wide crop.

How Wheat Farming Has Changed

Until the early 1800's, wheat was grown and harvested very similar to the ancient Egyptian way of farming. Farmers harvested wheat by hand with a sickle. They tied the stalks into bundles to await the threshing. Livestock trampled the stalks or farmers beat the stalks to loosen the grain from the stalks. The grain was tossed into the air, and the chaff blew away. This left only the kernels behind. This process was called winnowing.

In 1834, Cyrus McCormick, an American inventor, patented a reaping machine. A threshing machine was also invented in 1834 by two brothers from Maine. The development of these machines allowed farmers to do the work that once took several days in only a few hours. Another advancement that helped in the production of wheat was the development of the steam engine in the 1880's and the internal combustion engine in the 1920's. Animals did not need to pull the farm equipment anymore. The use of machines allowed farmers to plant larger areas of wheat and harvest it in a shorter amount of time.

How Wheat Is Grown

Wheat grows in a variety of climates and soil. Suitable weather and proper soil are needed to produce a healthy wheat crop. Wheat farmers must use high-quality seed that is free from disease to produce high yields. Farmers also must plant and harvest the wheat at the correct time. They must protect the growing crop from damage caused by disease and pests.

Wheat likes to be grown in fairly dry and mild climates. Weather conditions influence when wheat is planted. Winter wheat is planted from September to November. It is planted a few inches deep in narrow channels called furrows. Snow fills the furrows and protects the plants from the cold. Spring wheat is planted from early March to mid-April. It has a shorter growing period than winter wheat.

The steps for growing wheat are much the same throughout the world. However, wheat farms are different in size and levels of mechanization (work done by machinery). In many non-industrial countries, wheat farmers use animals to pull their plow across their fields. They also may plant and harvest their crop by hand. In industrialized countries, nearly all the wheat is grown on large farms and is harvested with the help of tractors and specialized machinery.

Wheat farmers prepare their fields by plowing the soil. This breaks up the surface of the soil and allows moisture to soak into the ground where it is stored for the next crop. Plowing the field also buries weeds that have grown in the damp soils.

A tractor-drawn machine called a drill is used to plant wheat seed. Long narrow channels (furrows) are dug by the drill. At the same time, it drops seeds into the furrows and covers them with soil. Fertilizer can also be dropped into the furrow along with the seed.

While the wheat is growing, farmers must protect it from diseases, insect pests, and weeds. Rust is the most destructive wheat disease. Rust is a fungus that grows on the wheat plant and produces small, rust-colored spots on the leaves and stems. Insects damage about ten percent of the United States wheat crop every year. Grasshoppers and locusts are two of the more than one hundred insects that attack wheat plants. Weeds rob the wheat plants of the moisture and nourishment they need.

Where Wheat Is Grown

More of the earth's surface is covered by wheat than any other food crop. The leading wheat producing countries are China, Russia, the United States, India, and Canada. The world's farmers grow enough wheat every year to fill a freight train stretching around the world two and one-half times.

In the United States, the two major types of wheat grown are spring wheat and winter wheat. Spring wheat is mainly grown in the northern Great Plains states such as North Dakota, South Dakota, Montana, and Minnesota. Winter wheat is grown from the southern Great Plains states (Nebraska, Kansas, and Oklahoma) through the Eastern United States (Missouri, Illinois, Indiana, Ohio, Michigan, Pennsylvania, Virginia, North Carolina, South Carolina and Georgia). California has also become a winter wheat producing state.

Harvesting and Marketing Wheat

 Because bad weather can damage the wheat crop, farmers use huge machines called combines to cut the stalks and separate the kernels from the rest of the plant.

 After the harvest, most farmers haul their wheat in trucks to a country grain elevator for storage. The grain from each truck is emptied into a pit. A conveyer belt then picks up the grain, and carries it to the top of the elevator. The grain is then dumped into a tall storage bin. The grain is dried and cleaned. Workers give one of six grades to the wheat, based on its weight and its quality. Wheat is sold based on its grade.

 Wheat then travels by truck or railroad boxcar to an elevator located in a large grain market or shipping center. If the grain is to be exported, the United States Department of Agriculture inspects and grades it.

 Some wheat is then loaded onto ships for export. In other words, the wheat is sent to other countries. Trucks, railroad cars, or barges carry the remainder of the wheat to mills for grinding into flour. The rest is shipped off to other processors to be used in animal feed or other industrial products. Some wheat is bought directly from farmers, or buyers may purchase wheat already in storage.

Plowing in the past…

…and in the present

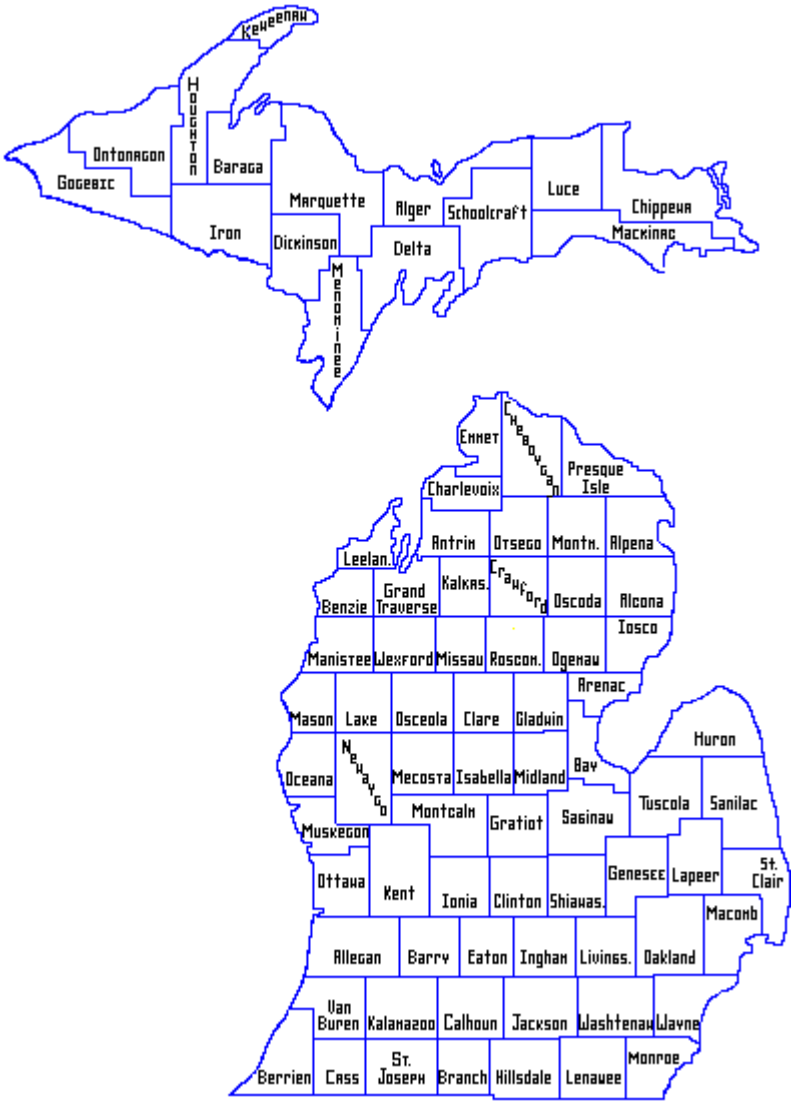
Uses of Wheat

Foods made with wheat are a major part of the diet for over a third of the world's people. In fact, wheat can be found in some form at almost every meal. Breads, cookies, cakes, crackers, macaroni, spaghetti, and other forms of pasta are made from flour, which is ground up kernels of wheat.

Extended Activity:

If possible have the students visit The Daggett Farm, The Firestone Farm, and Loranger Gristmill at Greenfield Village, Dearborn, to have a better understanding of how wheat is processed.

Images from The Henry Ford


Keweenaw
Houghton
Ontonagon
Baraga
Gogebic
Marquette
Alger
Schoolcraft
Luce
Chippewa
Mackinac
Iron
Dickinson
Delta
Menominee
Emmet
Cheboygan
Presque Isle
Charlevoix
Antrim
Otsego
Montm.
Alpena
Leelan.
Grand Traverse
Kalkas.
Crawford
Oscoda
Alcona
Benzie
Iosco
Manistee
Wexford
Missau
Roscom.
Ogemaw
Arenac
Mason
Lake
Osceola
Clare
Gladwin
Huron
Bay
Oceana
Newaygo
Mecosta
Isabella
Midland
Tuscola
Sanilac
Montcalm
Gratiot
Saginaw
Muskegon
Genesee
Lapeer
St. Clair
Ottawa
Kent
Ionia
Clinton
Shiawas.
Macomb
Allegan
Barry
Eaton
Ingham
Livings.
Oakland
Van Buren
Kalamazoo
Calhoun
Jackson
Washtenaw
Wayne
Berrien
Cass
St. Joseph
Branch
Hillsdale
Lenawee
Monroe

Wheat

Michigan's 2006 winter wheat crop totaled 47.45 million bushels, a 22 percent increase from 2005. Planted acres increased to 660,000 acres from 600,000 the previous year. Harvested acreage was up 10 percent from last year, at 650,000 acres. The average yield, at 73 bushels per acre, surpassed the previous record set in 2000. The value of the crop increased 32 percent to $161 million. Sanilac, Huron, Lenawee, Tuscola, and Saginaw, were the top five counties in wheat production.

Winter wheat planting began on schedule and progressed faster than the five-year average. Emergence was ahead of normal. The crop over-wintered fairly well despite concerns of ice on a few fields. Warm temperatures and rainfall advanced crop growth, pushing development well ahead of normal. Winter wheat continued to advance well with some reports of powdery mildew due to overly wet conditions. By the middle of June, heading was completed and flowering was nearly completed in many areas. Ninety-two percent of the crop was turning yellow by the first week of July, compared with a five-year average of 66 percent.

Harvest began the second week in July and concluded the second week in August. Fields were harvested with low incidence of disease. Some damage due to considerable rainfall was reported, but the crop remained in good to excellent condition.

Wheat: Acres, yield, production, and value, 2002-2006

Year	Planted	Harvested	Yield	Production	Price [1]	Value of production
	1,000 acres	*1,000 acres*	*Bushels*	*1,000 bushels*	*Dollars*	*1,000 dollars*
2002	450	440	67	29,480	3.28	96,694
2003	680	660	68	44,880	3.25	145,860
2004	660	640	64	40,960	3.01	123,290
2005	600	590	66	38,940	3.13	121,882
2006	660	650	73	47,450	3.40	161,330

[1] Marketing year average.

References:

Agriculture A Brief History. R. Douglas Hurt. Purdue University Press, West Lafayette, Indiana. 2002

http://library.thinkquest.org/5443/wuses.html

http://www.michaglabor.org/general_services/MI_STATS.pdf

Glossary:

barges - a long flat bottom boat used for carrying freight
granary - a place or building were grain is stored
industrial products - goods made in large quantities by people and machines that work together
internal combustion engine - a motor that gets its power from an explosion that happens inside the motor itself
patented - sole right to make, sell, or use a new invention
plow - plowing - to cut, lift and turn over the soil
sickle - a tool with a curved blade on a short handle used by the Egyptians to cut wheat
species - a group of related living things that have characteristics in common
stalks - the main stem of a plant
threshing - to separate the grain from the wheat
winnowing - to get rid of the chaff by blowing it with air

America's Greatest History Attraction

Elementary Lesson Plan 6

Mary Foulke, Gier Elementary School, Hillsdale, MI

Title of the Lesson/Activity:	Thomas Edison Jeopardy Game
Grade Level:	3rd Grade
Overview:	This activity will be used as a review at the end of our unit study of *Thomas Edison: His Life and Times*
Central Question:	How much do you know about Thomas Edison?
Learning Objectives:	Students will be able to answer problems using the questions format of a Jeopardy game.
Assessment Tools:	Teacher will observe the students as game is played. Further study and review may be required depending
Key Concepts:	This game will be used as a review tool after students have been introduced Thomas Edison, his life and his key inventions.
Evidence/ Sources:	Identify the evidence and resources that students will use in working on the question or problem. May include information from scholarly presentations, Power Points, curator talks, presenter talks, and readings, as well as images, videos, photos, field trips etc.
Time Frame:	This review will take one class period.
Instructional Sequence:	*See game directions.
Anticipated challenges	Students with a learning disability may work with a partner to answer the problem.
Curriculum Links:	H3.0.1, H3.0.2, H3.0.8

***See Attached game and directions.**

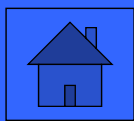
Directions for Playing Jeopardy

- After you download the game, you will already be in the slide show.
- Divide the class into two teams. They will form two lines in front of the classroom.
- The first student in line will pick a problem. Just click on the point value and it will take you to that problem. The student will have one minute to answer the question.
- After the given time period, just click anywhere on that slide and it will take you to the correct answer.
- The scorekeeper is the teacher.
- If an incorrect answer is given, the opposing team will have a chance to answer and gain the points.
- To get back to the main page, just take the mouse and roll over the house in the lower right-hand corner.
- It is now the next teams turn. Just repeat the above steps.
- The team with the most points is declared the winner!
- If you want to add more excitement to the game, choose a captain for each team at the beginning of the game. The captains will answer the Final Jeopardy Question for 10 extra points!
- Final Jeopardy question: In 1928, in recognition of a lifetime of inventing and achievement, the United States Congress voted to give Thomas Edison this.
- Answer: What is a Medal of Honor?

Early Life	Friends and Family	Employment	Inventions	Teacher's Choice
1pt	1 pt	1 pt	1pt	1 pt
2 pt	2 pt	2pt	2pt	2 pt
3 pt	3 pt	3 pt	3 pt	3 pt
4 pt	4 pt	4pt	4 pt	4pt
5pt	5 pt	5 pt	5 pt	5 pt

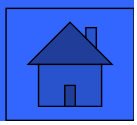
The state where Thomas Edison was born.

What is the state of Ohio?



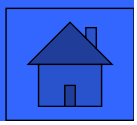
The Michigan town where Thomas spent most of his childhood.

What is Port Huron, Michigan?



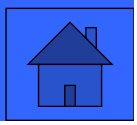
When Thomas was 12 years old, he began selling these on the Grand Trunk Railway.

What are newspapers?



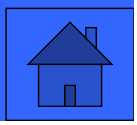
For saving the life of a station official's child,
Thomas was taught this.

What is telegraphy?



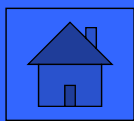
In 1862, Tom published a weekly newspaper known as the “Grand Trunk Herald”, printing it is a freight car that also served as something else for Tom to try things in his spare time.

What is a laboratory?



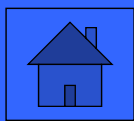
Young Tom spent only three months in school. This person taught him the three “R’s” at home.

Who is Thomas Edison’s mother?



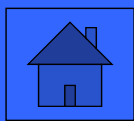
Thomas Edison and his wife Mary called their first two children by these nicknames.

What are the names ‘Dot’ and ‘Dash’?



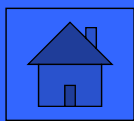
Tom proposed marriage to his second wife over this communication device using Morse Code.

What is the telegraph?



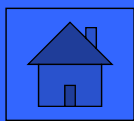
This friend of Thomas Edison asked him if he could find an alternative use of rubber for automobile tires.

Who is Harvey Firestone?



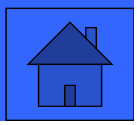
One of Edison's best friends was a car maker from Dearborn, Michigan, who also perfected the assembly line.

Who is Henry Ford?



Edison made $40,000 on his first successful invention
He used the money from this invention to set up a laboratory in New Jersey.

What is a Stock Ticker?



The first great invention developed by Edison in Menlo Park was this invention. This machine could record and reproduce sound. This invention also brought Edison international fame.

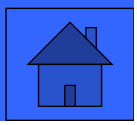
What is a phonograph?

Although not new, Edison developed the first one that was practical for home use and safe. Although they look somewhat different, we still use them today.

What is the incandescent light bulb?

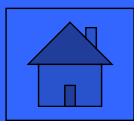
While working on his phonograph, Thomas Edison began working on a device that, “does for the eye what the phonograph does for the ear”.

What is the motion picture camera?



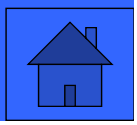
This invention became Edison's most profitable product. It also took him ten years to develope First thought to be used for storage for electric cars, it was later used to help provide lighting. You might use these in a flashlight today.

What is an alkaline battery?



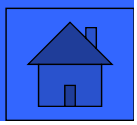
By the time Edison was sixteen years old, he was proficient enough to work at this job full time.

What is a telegraph operator?



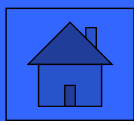
When Edison moved to Boston, he began to change his job from a telegrapher to this, something he would do for the rest of his life.

What is an inventor?



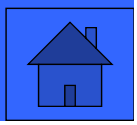
In 1876, Edison moved his family to this small village, twenty-five miles southwest of New York City, to a place containing all the equipment necessary to work on any invention.

What is Menlo Park New, Jersey?



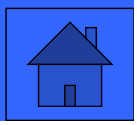
While working at inventing at his test laboratory in New Jersey, Thomas Edison gained this famous nickname.

Who is the ‘Wizard of Menlo Park’?



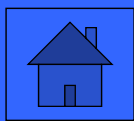
After his marriage to his second wife Mina, Thomas Edison built his last laboratory in this New Jersey town.

What is West Orange, New Jersey?



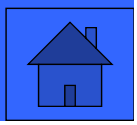
While working in New York City, Thomas Edison slept in the basement of this building.

What is the basement of a gold company?



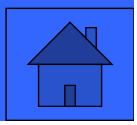
The words from a nursery rhyme that Edison used to speak into the first phonograph.

What is “Mary Had a Little Lamb?”



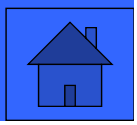
A president of the United States that invited Thomas Edison to visit him at the White House in 1878, after the invention of the phonograph.

Who is President Rutherford B. Hayes?



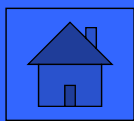
Thomas Edison was probably the world's greatest of these.

What is an inventor?



Three days after Edison's death, these were dimmed for one minute all over the United States in honor of the great inventor.

What is dim the lights?



America's Greatest History Attraction

Elementary Lesson Plan 7

Deborah Limage, Carstens School, Detroit, MI

Title of Lesson: Changing Lifestyles

Grade Level: 4-5

Overview: Students will compare lifestyles of people from the mid 18th - 19th century to current lifestyles of the early 21st century

Central Question: Have people used technology to improve the way they work?

Learning Objective: Students will be able to compare and contrast technology from the past to the technology used today. Students will also be able to "invent" or improve "old" technology to meet the demands of the future.

Assessment Tools: A chart noting the technology used in the past to technology used today. This chart should also show improvements made to this technology to meet the demands for the future.

Key Concepts: Technology, Efficiency, Growth, Invention, Innovation, Compare/contrast

Evidence/Sources: The United States (grade 5 textbook), Scott Foresman, 2008, pp. 200-229, 536-558, 560-592

Regions: Adventures in Time and Space (grade 4 textbook), Macmillan/McGraw-Hill, 1997, pp. 228-237, 260-263, 320-325, 326-327,

Cowan, Ruth Schwartz, "More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microware" (New York: Basic Books, 1983) pp. 3-75.

Larkin, Jack, "The Reshaping of Everyday Life 1790-1840" (New York: Harper, 1989) pp. 1-61.

Site Exploration: Daggett Farm: a 1760's Connecticut farmstead in which students will experience spinning, weaving and sewing and discuss issues from the perspective of a yeoman farm family.

Susquehanna Plantation: an 1850's Maryland tobacco plantation worked by 50 slaves.

Hermitage Plantation Slave Quarters: Students will investigate the cultural lives of enslaved African Americans.

Firestone Farm: an 1880's farm where students will study farming tools.

Mattox Family Home: During the Great Depression, Amos Mattox worked as a farmer, shoe maker, and preacher during the 1880's.

Time Frame: Two days (including a trip to Greenfield Village)

Instructional Sequence: Using the following concept words, students should give a definition (using their own words) and an example for each - Technology, Efficiency, growth, invention, and innovation

Students, in groups, should brainstorm for the different types of technology we use today. Students should also describe the uses for each. (For example: microwave oven, high definition television…)

Students will begin completing the chart: "Technology for the Past and Present".

A. Before visiting Greenfield Village (GFV): Students should develop a list of examples of technology used today. This list should be listed under the column labeled "Present". For example, this list could include microwave under "cooking" or television under "entertainment".

B. While visiting GFV, students will visit Daggett Farmhouse, Susquehanna Plantation, The Hermitage, Firestone House, and The Mattox Family Home and match-up the various types of technology they see at these locations with the technology they labeled in the "Present" column.

C. After visiting GFV, students will compare/contrast the technology labeled under the "Past" and "Present" columns and think of how these technologies have changed over the years. Using the "Future" column, students should imagine how these technologies could evolve or improve for future uses.

Student Project Idea: With partners, students should design a home of the future illustrating technology labeled under "Future" on their chart. This home should include all categories listed on this chart.

Anticipated challenges: Students may have a difficult time "imagining" future situations for inventing or improving existing technology. A possible solution for overcoming this hurdles may be to examine existing technology and its reasons for need then projecting this method toward forcasting future concerns and looking for solutions for these concerns.

Students oftentimes want to "invent" fantastical solutions to every day problems. For example, them may envision super robots or teleporting. A possible solution to this dilema may be to envision "real-life" solutions to "real-life problems. For example: a "real-life" problem may be high traffic. A possible solution may be inventing a bullet-speed mass transit system.

Curriculum Links: Michigan Grade Level Content Expectations Grade 4:

4-H3.0.1 Use historical inquiry questions to investigate the developoment of Michigan's major economic activities (agricultural, mining,manufacturing,lumbering, tourism, technology, and research) from statehood to present. What happened? When did it happen? What was involved? How and why did it happen? How does it relate to other events or issues in the past, in the present,

4-H3.0.4 Draw upon stories, photos, artifacts, and other primary sources to compare the life of people in towns, and cities in Michigan and in the Great Lakes region during a variety of time periods from 1837-1900.

4-H3.0.5 Use visual data and informational text or primary accounts to compare a major Michigan economic activity today with that same or a related activity in the past.

4-G4.0.2 Describe the impact of immigration to the United States on the cultural development of different places or regions of the United States (e.g., forms of shelter, language, food).

Michigan Grade Level Content Expectations Grade 5:

5-U2.3.2 Describe the daily life of people living in the New England, Middle, and Southern colonies.

5-U2.3.3 Describe colonial life in America from the perspectives of at least three different different groups of people (e.g., wealthy landowners, farmer, merchants, indentured servants, laborers and the poor, women, enslaved people, free Africans, and American Indians).

5-U2.3.4 Describe the development of the emerging labor force in the colonies (e.g., cash crop farming, slavery, indentured servants).

5-U2.3.5 Make generalizations about the reasons for regional differences in colonial America.

5-U3.1.8 Identify a problem confronting people in the colonies, identify alternative choices for addressing the problem with possible consequences, and describe the course of action taken.

Technology for the Past and Present

1. Before visiting Greenfield Village (GFV): Students should develop of list of examples of technology use today. This list should be listed under "Present".
2. While visiting GFV, students will visit Daggett Farmhouse, "Susquehanna Plantation, The Hermitage, Firestone House, and The Mattox Family Home and match-up the various types of technology they see at these locations with the technology they labeled in the "Present" column.
3. After visiting GFV, students will compare/contrast the technology labeled under the "Past" and "Present" columns and think of how these technologies could evolve or improve for future uses.

TECHNOLOGY	PAST	PRESENT	FUTURE
Cooling 			
Cooking 			
Heating 			
Sleeping 			
Washing Clothes 			
Entertainment 			
Communication 			

America's Greatest History Attraction

Elementary Lesson Plan 8

Ann Mischler, Cleveland Hill Elementary, Cheektowaga, NY

Title of Lesson: Thomas Edison Alphabet Book

Grade Level: 4

Overview: After completing the unit on current electricity and reading, A Picture Book of Thomas Alva Edison, the students will produce a Thomas Edison Alphabet Book.

Central Question: How did Thomas Edison impact the United States?

Objectives: Students will construct a Thomas Edison Alphabet Book.

Assessment Tools: Rubric

Key Concepts: Industrialization, Invention, Innovation

Evidence/Sources: Dictionaries, computers, A Picture Book of Thomas Alva Edison by David A. Adler, images from scholars, images from the Benson Ford Research Center, Images from http://www.hfmgv.org/village/map.aspx

Time Frame: 45 minute class period to read A Picture Book of Thomas Alva Edison by David A. Adler

30 minute class period to work in small groups to draft pages

45 minute class period for individual production and publication of pages

Instructional Sequence: Students have substantial prior experience using the computer.

1. As a large group, the students will read A Picture Book of Thomas Alva Edison by David A. Adler.

2. Students will identify important or challenging vocabulary related to Thomas Edison.

3. Each group will assign students to draft pages. Each page will contain the following: 1 – Vocabulary word (one for each letter of the alphabet), 2 – Definition, 3 - Part of speech, 4-Picture related to the word, and 5-Sentence using the word related to Thomas Edison. The book can be in the shape of the Menlo Park Lab.

4. Students will utilize the computer template to publish. The students will include the vocabulary word, definition, part of speech, and sentence. The students will import an image appropriate to their vocabulary word. An image bank will be provided.

Student Project: Working in small groups, students will publish a Thomas Edison Alphabet Book.

Anticipated Challenges: Students may have difficulty producing words for specific letters. Students without substantial computer experience may have difficulty producing the book from the template.

Curriculum Links: New York

Subjects: English Language Arts
Social Studies
Math, Science, and Technology

Standards: ELA Standard 1 and 2
SS Standards 1, 3, and 4
MST Standards 2 and 6

Possible Words for Alphabet Book

A – apparatus, ailment
B – Bell, battery, boxcar
C – Carver, carbon, current, carbon transmitter
D – duplex, discover, depot, dynamo
E – experiment, electricity, engineer, electric pen, electromagnet
F – Faraday, fuse
G – galvanometer, glass, generator
H – house
I – invention, inventor, incandescent, illustrate, innovator
J – job
K – kinetoscope
L – light bulb, laboratory, lamp, lampblack
M – Menlo Park, Morse, Mina Miller, Mary Stilwell
N – New Jersey
O – Ohm's Law, operator
P – phonograph, patent, power, parallel circuit
Q – quadruplex
R – research, repeater
S – storage battery, sawmill, stock ticker, socket
T – telegraph, telephone, thread
U – ulcer
V – voice, vacuum
W – wet cells, Western Union, wires, West Orange
X – (x – marks the spot where Edison signs)
Y – yellow
Z – zap

A

Vocabulary Word

Definition
Part of Speech

Image

Sentence

Name:
Rubric for Thomas Edison Alphabet Book

	4	3	2	1
Cover • Title • Authors • Image • Publication Date	Includes all four components	Includes three components	Includes two components	Includes one component
Pages • Vocabulary word • Part of Speech • Definition • Image	Every page includes all components	Most pages include all components	Most pages include only three components	Most pages include only one or two components
Sentence	Every page includes a sentence relating to Thomas Edison	Most pages include a sentence relating to Thomas Edison	Some pages include a sentence relating to Thomas Edison	Few pages include a sentence relating to Thomas Edison
Mechanics • Capitalization • Punctuation • Spelling • Structure	Few or no errors	Some errors	Many errors that do not interfere with the understanding of the text	Many errors that do interfere with the understanding of the text

America's Greatest History Attraction

Elementary Lesson Plan 9

Amanda Mulbay-Harries, Spinning Hills Middle School, Dayton, OH

Title of the Lesson: The Railroad Revolution

Grade Level: 5th grade

Overview: Students will spend a short unit learning how transportation has evolved over time, the ways the railroad changed the United States, and how the railroad has affected our environment in both positive and negative ways.

Central Question*:* Can you identify and give examples of how the railroad aided in the expansion of industry?

Learning Objectives:

1. Students will be able to identify how the railroad helped the US expand.

2. Students will compare and contrast methods of transportation.

3. Students will recognize various types of power and how they relate to industry.

4. Students will be able to identify pros and cons of different types of power.

Assessment Tools:

Formative Assessments:

- Exit slips
- Venn Diagrams
- Notes from gallery walk
- Classroom Discussion

Summative Assessments:

- Student extension projects

Key Concepts:

1. Evolution of transportation methods across history

2. Use of steam power to expand the railroad and the United States

3. Positive and negative environmental impacts of industry

Evidence/ Sources: Photos of train and roundhouse taken at The Henry Ford

Additional photographs from Ohio Historical Society

Duration: 3 days (45 minutes per day), plus extra days for extension projects

Instructional Sequence: Introductory Activity:

Students will complete a gallery walk with various pictures of the railroad.

Photos will be posted around the room, and the students will move from station to station in small groups. They will have a series of questions at each station to respond to.

Students will write their responses directly on the chart paper containing the photo. Once all groups have visited each station, we will
complete a K-W-L chart as a class.

Teaching Activity:

Students will be working in their small groups. Each group will receive two copies of *Graphic America: the Revolution in Industry* by John Perritano. As students read, they will record main points about each method of 'power.' When each group is completed, go over chart as a class and make sure they are complete. Complete exit slip today with the answer to the following question: *Which method of power do you think is the most useful? Explain your answer.*

Re-Teaching Activity:

Students will draw a method of power from a baggie while in their group. They will choose from the following: man, animal, steam, nuclear, and electric power. The students will then regroup into small groups with the same type of power. While in their new 'power' group, students will discuss and list the pros and cons of their type of power, including effects on people, the environment, and industry. When the 'power' groups have completed their charts, they will

report their findings back to their original group. We will then share and discuss any interesting points or questions as a class.

Student Project Ideas:

Extension Activity Possibilities:

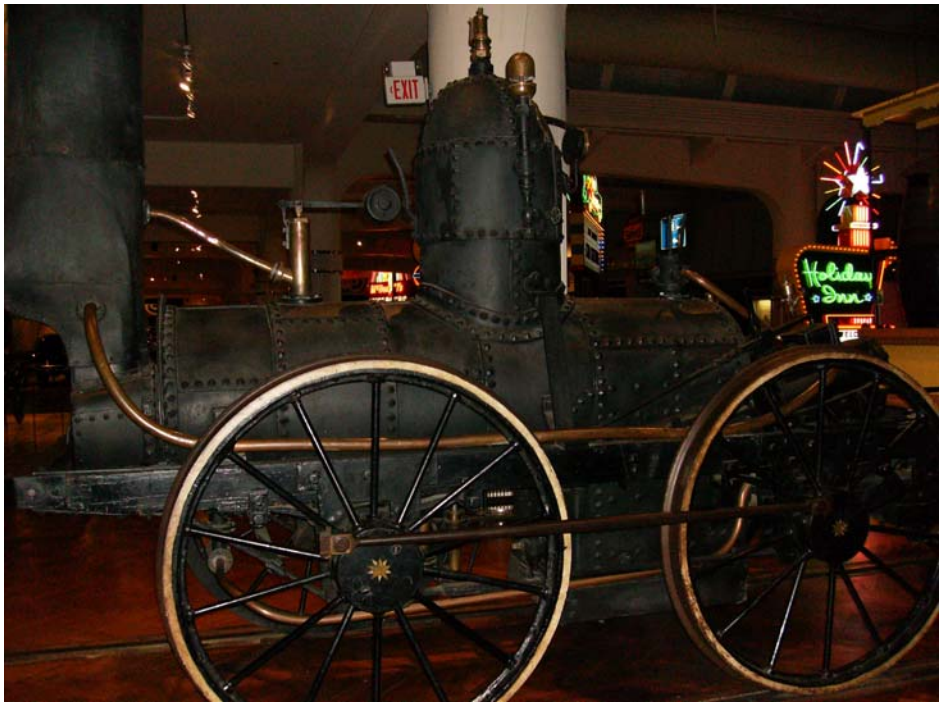
- Research and create a photo collage of a power type we studied.
- Create a cartoon showing the progression from man power to modern day power methods.
- Create a final copy of a Venn-diagram comparing and contrasting any two types of power.
- Write a newspaper article detailing the first use of one of the types of power. Include the who, what, where, when, why, and how.
- Create a poster advertisement selling one of the types of power. Be sure to explain why your type is better than the others. Use one of the advertising methods we have talked about.

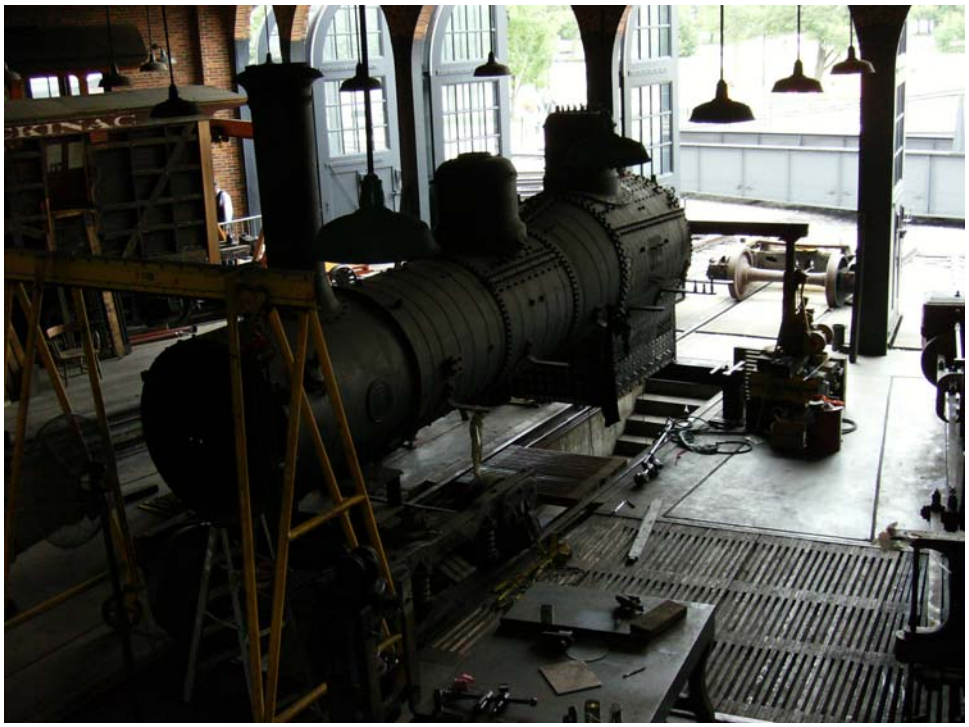
Curriculum Links:

Ohio 5th Grade, Social Studies Content Standards:

1. Explain the impact of settlement, industrialization and transportation
   on the expansion of the United States.
2. Analyze the positive and negative consequences of human changes to the physical environment including:
3. Differentiate between primary and secondary sources.

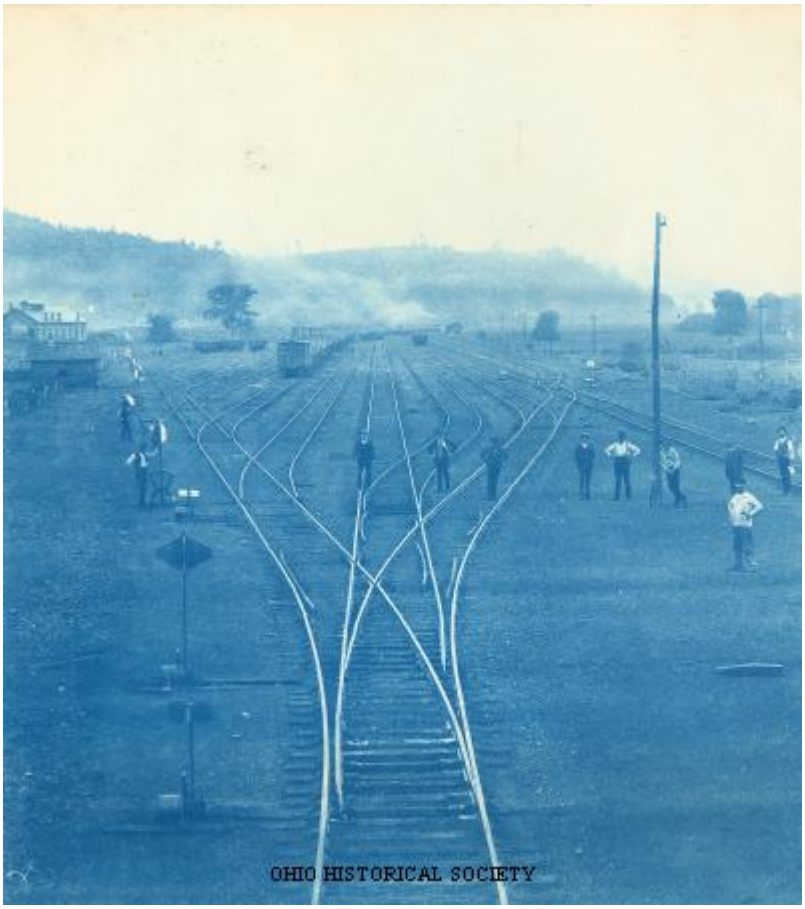
Photos for Gallery Walk





The above photos were taken at The Henry Ford

Modes of Transportation in Dayton, Ohio, photograph, image number AL02993, Ohio Historical Society, Columbus.



Converging Railroad Tracks in South Central, Ohio, Cyanotype, image number AL03634, Ohio Historical Society, Columbus.

Name: _____

Types of Power

Fill in the following chart with key points about each type of power. The information you need can be found in *Graphic America: the Revolution in Industry* by John Perritano. You do not need to write in complete sentences as these are notes.

Type of Power	Where Does the Power Come From?	Where is the Power Used?	Interesting Points
Man Power			
Animal Power			
Steam Power			
Electric Power			
Nuclear Power			

Name: _____

Type of Power:

_____

Pros (good things)	Cons (not so good things)

Would you recommend this type of power to a business who needed a cost effective and green factory? Why or why not?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Staff and Scholar Bios

2009 Workshop Staff

Workshop Staff

Paula Gangopadhyay, Director of Education, NEH Project Director

Paula Gangopadhyay is the Director of Education at The Henry Ford. She is responsible for the leadership, strategic direction, design and development of education. She believes that classroom experiences for all types of learners can be enhanced by the holistic, cross-disciplinary and hands-on educational tools offered by museums. She has a master's degree in history, certification in archival, museum and editing studies and a fellowship in education policy. During her 14-year career, Gangopadhyay has served as curator of education, public programs and visitor services at the Public Museum of Grand Rapids, executive director of the Great Lakes Center for Education, Research and Practice and executive director of the Commission for Lansing Schools Success (CLASS). She was also selected as a finalist for the 2000 Governor's Service award. In addition, she serves on several regional, state and national education boards and panels.

Dorothy Ebersole, Curator of Education

Dorothy is Curator of Education at The Henry Ford and has been involved in developing a wide array of partnerships, programs and materials for teachers and students for the past 16 years at The Henry Ford. Dorothy ensures that all of the educational programs at The Henry Ford are aligned with state standards and grade level expectations. Dorothy received her B.A. in history from Oklahoma State University and completed the Michigan Education Policy Fellowship Program at Michigan State University. Her career in museum education has included employment at the Public Museum of Grand Rapids, The Strong Museum in Rochester, New York, and the Geneva Historical Society in Geneva, New York. She is on the board of directors of the Michigan Council for History Education.

Ryan Spencer, Education Coordinator- Special Projects

Ryan is the Education Coordinator, Special Projects at The Henry Ford. He received his Master of Letters in Museum Studies from the University of St. Andrews, Scotland and his B.A. in History at Hillsdale College, Michigan. Ryan is a Michigan Certified Teacher in History and English and has taught high school courses in two charter schools. Before joining the Education Team, Ryan worked as a presenter in Greenfield Village in the Working Farms and Porches and Parlors Districts. Ryan has additional museum experience through The National Museum of Scotland, Edinburgh; St. Andrews Museum, St. Andrews, Scotland; and the Will Carleton Poor House, Hillsdale, Michigan.

The Henry Ford Curators

Bob Casey, Curator of Transportation

Bob Casey is an automotive historian and author of a forthcoming centennial history of the Model T Ford. Bob Casey has combined his love of engineering and of history. He is a graduate mechanical engineer and worked for Bethlehem Steel. He also holds degrees in American history and the history of technology. He has been a historian and curator for the Institute of Electrical and Electronics Engineers, Sloss Furnaces National Historic Landmark, and the Detroit Historical Museum. Since 1991 he has been John and Horace Dodge Curator of Transportation at The Henry Ford. He is a judge at the Meadow Brook and Glenmoor Gathering concourses, and his book *The Model T: A Centennial History* was published by Johns Hopkins University Press in July, 2008.

Marc Greuther, Curator of Industry and Design

Marc has a B.A from the Courtauld Institute of Art at the University of London, and over twenty years of experience with industrial technology at The Henry Ford. His seven years as a member of the institution's Historic Operating Machinery unit involved him in the operation and troubleshooting of a wide range of artifacts, from 19th century machine tools and steam engines to late 20th century robots and production equipment. His writings for The Society for the History of Technology's journal *Technology and Culture* usually spring from or explore areas where art history and the history of technology overlap.

Guest Scholars

Dr. Paul Israel, Rutgers University

Paul is director and general editor of the Thomas A. Edison Papers at Rutgers University. The Edison Papers provides leadership in publishing and developing the documentary legacy of America's most prolific inventor and innovator. To date the project has produced six volumes of The Papers of Thomas A. Edison as well as an online edition with over 200,000 document images (http://edison.rutgers.edu). In 2005 the Edison Papers received a special Eugene S. Ferguson Prize from the Society for the History of Technology (SHOT) as an outstanding and original reference works that will support future scholarship in the history of technology. The Edison Papers are also working to advance the Edisonian legacy through interdisciplinary initiatives in young and higher education. Dr. Israel is the author of *Edison: A Life of Invention* (Wiley, 1998), which was awarded the Dexter Prize by the Society for the History of Technology. He is also the author of *From Machine Shop to Industrial Laboratory: Telegraphy and the Changing Context of American Invention, 1830-1920* (Johns Hopkins University Press, 1992) and coauthor of *Edison's Electric Light: Biography of an Invention* (Rutgers University Press, 1986).

Prof. R. Douglas Hurt, Purdue University

Doug received his Ph.D. from Kansas State University and is Head of the History Department at Purdue University. Dr. Hurt is a specialist in American Agricultural History. He is a past president of the Agricultural History Society and has served as the editor of the international journal for agricultural history entitled *Agricultural History*. Dr. Hurt is the author of eighteen books, the most recent being *The Great Plains during World War II.* He is currently writing a book entitled *The Big Empty: The Great Plains during the Twentieth Century* and is conducting research on agriculture during the Civil War.

Nancy Gabin, Purdue University

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