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The Lemelson Center for the Study of Invention and Innovation



Lewis Latimer: Renaissance Man

Educational Materials

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Lewis Latimer: Renaissance Man Educational Packet

Educational Goals and Learnings

1. Students will learn the story of Lewis Latimer's parents, George and Rebecca Latimer, fugitive slaves who became important symbols in the pre-Civil War abolition movement, and identify William Lloyd Garrison and Frederick Douglass as outstanding abolitionists.
2. Students will learn the story of Lewis Latimer's life, including his military service in the Civil War, his abilities as a self-taught draftsman, the chronology of his subsequent career, and the variety of talents and interests that identify him as a "Renaissance Man."
3. Students will learn of Latimer's contributions to science by identifying his inventions and authorship of a book on incandescent electric lighting.
4. Students will learn of Latimer's work with the following inventors:
 - i. Alexander Graham Bell, inventor of the telephone-Latimer executed the drawings for the telephone and assisted Bell in the procedures for securing a patent.
 - ii. Hiram Maxim, an inventor and chief engineer for the U.S. Electric Lighting Co.- while in Maxim's employ, Latimer developed a carbon filament that made the incandescent electric light bulb longer lasting, less expensive, and practicable.
 - iii. Thomas Alva Edison, inventor of the first practical incandescent electric light bulb-Latimer worked for him as a knowledgeable electrical engineer and pioneer in the development of electricity.

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LEWIS H. LATIMER (1848-1928): RENAISSANCE MAN

Lewis Howard Latimer was born in Chelsea, Massachusetts, on September 4, 1848, six years after his parents, George and Rebecca Latimer, had run away from slavery in Virginia. They were determined to be free and that their children be born on free soil. Because of his light complexion, George was able to pose as a plantation owner with the darker-skinned Rebecca as his slave. Shortly after arriving in Boston, Massachusetts, he was recognized as a fugitive and jailed while his wife was taken to a safe hiding place. The arrest was protested vigorously by the community.

Frederick Douglass, a former slave who had escaped to Massachusetts several years earlier, and abolitionist William Lloyd Garrison spoke forcefully against the arrest. There was a trial, and the attempts to recapture George and return him to Virginia caused considerable agitation in Boston.

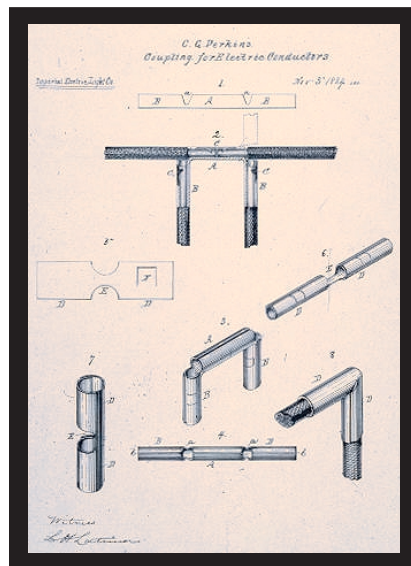
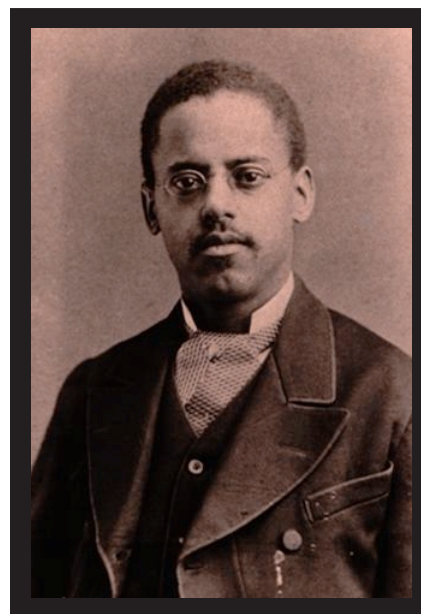
When the trial judge ruled that Latimer still belonged to his Virginia owner, an African-American minister paid \$400 for his release. Although free, George was still extremely poor, working as a barber, paper-hanger and in other odd jobs to support his wife, three sons, and one daughter.

Lewis Latimer, the youngest child, attended grammar school and was an excellent student who loved to read and draw. Most of his time, though, was spent working with his father, which was typical of children in the 19th century. In 1857, the Supreme Court ruled that a slave named Dred Scott could not be considered a free man although he had lived in a free state. George Latimer disappeared shortly after the decision became known. Because he had no official papers to prove he was a free man, he possibly feared for his safety and that of his family.

With his father gone and his mother struggling to keep the family together, Lewis falsified his age and joined the U.S. Navy in 1864 when he was sixteen years old. When the Civil War ended he was honorably discharged and returned to Boston to seek employment. In 1868 he secured a job as an office boy in the Crosby and Gould patent law firm, a company that specialized in helping inventors protect their patents. By closely observing

draftsmen at work and reading books on the subject, Latimer taught himself mechanical drawing. He learned to skillfully use the vital tools of the trade, such as T squares, triangles, compasses, and rulers, and mastered the art of drawing to scale. Since all of the drawings were done by hand and in ink, it was very important that a draftsman not make mistakes. Latimer's drawings in this medium are as beautiful as works of art. After several months of studying on his own, he requested and was given an opportunity by the firm to show what he could do. Upon discovering that Latimer was indeed a skilled draftsman, he was promoted from office boy, earning a salary of \$3.00 per week, to draftsman at \$20.00.

In the period immediately following the Civil War, important scientific advances occurred in America. There was an explosion of inventions and new uses of technology, and inventors were securing thousands of patents in growing



industries. While working at the Boston firm, Latimer met Alexander Graham Bell who hired him to draw the plans for a new invention, the telephone. Bell was in a race to have his invention patented before anyone else registered a similar device. By working with him late at night, Latimer was able to provide Bell with the blueprints and expertise in submitting applications that allowed him to file his telephone patent on February 14, 1876, just a few hours earlier than that of a rival inventor. They had won the race!

In 1880 Latimer began work as a mechanical draftsman for Hiram Maxim, an inventor and founder of the U.S. Electric Lighting Company in Brooklyn, N.Y. In his new job, Latimer was given the opportunity to become familiar with the field of electric incandescent lighting, an area in which there was fierce competition to secure patents. In addition to his work with light bulbs and lamps, he went to U.S. cities and abroad supervising installation and production of Maxim equipment.

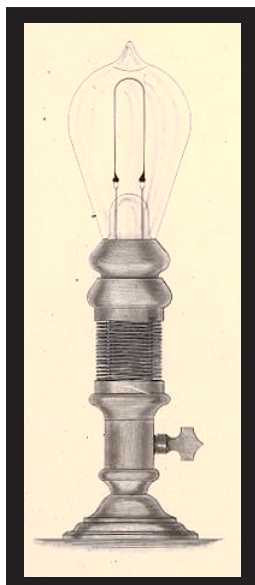
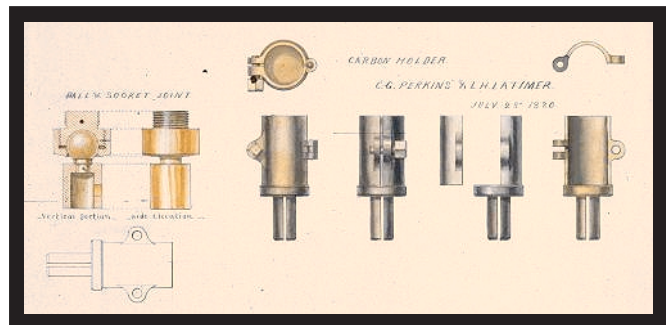
In 1884 he was invited to work for Maxim's arch rival, Thomas Alva Edison, in New York. An expert electrical engineer, Latimer's work for Edison was critical for the following reasons: his thorough knowledge of electric lighting and power guided Edison through the process of filing patent forms properly at the U.S.

Patent Office, protecting the company from infringements of his inventions; Latimer was also in charge of the company library, collecting information from around the world, translating data in French and German to protect the company from European challenges. He became Edison's patent investigator and expert witness in cases against persons trying to benefit from Edison's inventions without legal permission.

Edison encouraged Latimer to write the book, *Incandescent Electric Lighting: A Practical Description of the Edison System*. Published in 1890, it was extremely popular as it explained how an incandescent lamp produces light in an easy-to-understand manner. On February 11, 1918, Latimer became one of the 28 charter members of the Edison Pioneers, the only African-American in this prestigious, highly selective group.

After leaving Edison's employ, Latimer worked for a patent consultant firm until 1922 when failing eyesight caused an end to his career. His health began to fail following the death of his beloved wife Mary Wilson Latimer in 1924. To cheer and encourage him to carry on, his children, two daughters, had a book of his poems printed in 1925 in honor of his 77th birthday. The poems are beautifully sensitive, and complement Latimer's designation as a "Renaissance Man" who painted, played the flute, wrote poetry and plays.

Active in the Unitarian Church, Latimer found time to teach mechanical engineering, drawing and English to new immigrants at the Henry Street Settlement House. He had remained extremely patriotic, participating as an officer of the famed Civil War Veterans' organization, the Grand Army of the Republic (GAR). In addition, he supported the civil rights activities of his era. On December 11, 1928, Lewis Howard Latimer died, leaving a remarkable legacy. His name will be forever associated with two of the most revolutionary inventions of all time: the incandescent electric light bulb and the telephone.



Two Poems by Lewis H. Latimer

Friends

*Friend of my childhood,
Of life's early days
When together we wandered
Through bright sunny ways
Each true to the other,
Till full manhood came,
And found the old friendship
As ever the same.*

*Came summer and winter,
Years waxed and waned.
Youth it had left us
But friendship remained
And now as with white locks
I bend o'er life's page,
The friend of my childhood
Is the friend of my age.*

Ebon Venus

*Let others boast of maidens fair,
Of eyes of blue and golden hair;
My heart like needles ever true
Turns to the maid of ebon hue.*

*I love her form of matchless grace,
The dark brown beauty of her face,
Her lips that speak of love's delight,
Her eyes that gleam as stars at night.*

*O'er marble Venus let them rage,
Who sets the fashions of the age;
Each to his taste, but as for me,
My Venus shall be ebony.*

What is a puppet?

Educational Goals and Learnings

1. Students will become aware of and be able to identify different types of puppets, ie. Kermit the frog, a muppet who is a hand puppet.
2. Students will appreciate the use of puppets as a way of experiencing the emotions involved in being Lewis Latimer, his parents and colleagues through the performances of the Crowtations.
4. Students will become aware of puppets as both entertainment and educational media, and the construction of puppets as a recognized form of technology.

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What is a puppet?

Puppets are man-made figures whose movements are controlled by humans. They can be moved by hand, strings, wires, or rods. Puppets may be persons, animals, plants; look like stuffed toys, dolls, or anything else one desires; and are usually featured in plays called puppet shows. People who operate, or manipulate, puppets are called puppeteers.

People have enjoyed puppets for thousands of years, but no one knows exactly when the fine art of puppetry began; puppet-like figures have been found in tombs and ruins in ancient Egypt, Greece, and Rome. There are many types of puppets, each type having its identifying characteristics. Some of the basic types described below represent a variety of inventive technologies inherent in their construction.

Since the hands alone can produce movements, the **hand puppet** is one of the easiest to make, but requires practice to operate successfully. In its simplest form, it requires only your hand to be the puppet's head with the thumb as the mouth or jaw. The hand can also be the entire body of the puppet: two fingers can move the arms and one finger be the head. For example, when a costume or piece of cloth is drawn over the head like a glove, the thumb and middle finger can be the arms and the forefinger the head. **Finger puppets** are probably the simplest kind of hand puppet. The puppeteer's index and middle fingers serve as the puppet's legs, and the face can be painted on the back of the hand.

Another type of hand puppet is the **glove puppet**. Although most glove puppets do not have feet or legs, they are able to pick up and toss things and move the head and arms. Glove puppets became popular on children's television programs such as "Sesame Street" and "Captain Kangaroo."

Perhaps the most famous glove puppet character is Punch, star of English **Punch and Judy** shows. Punch is a savvy, comic character who most often emerges victorious from his encounters with a cast of stock characters. His best known adversary is his wife, Judy. There are a number of standard characters in the Punch and Judy performances that different puppeteers vary to suit their individual needs and tastes. The shows were popular in the United States in the 19th and early 20th centuries.



Darren Brown from the Brewery Puppet Troupe operates a Crowtation. Crowtations are hand, rod and string puppets.



Punch and Judy cast used by a traveling minister about 1900.

The **ventriloquist's dummy** can be a hand puppet, such as Shari Lewis' Lamb Chop and Hush Puppy, or a rod puppet as large as Edgar Bergen's Charlie McCarthy, which is about one-half adult size. The performance consists of action and conversation between the dummy and the ventriloquist, who "throws" his or her voice so that the dummy seems to be talking. A dummy such as Charlie McCarthy was controlled from the back and held level with the ventriloquist, Edgar Bergen. Strings and rods on the inside worked the head, while the ventriloquist's arm gave movement to the dummy's body as it supported it. The dummies are actually puppets that play an important part in the art of ventriloquism.

Marionettes are puppets that are operated from above by strings attached to the body. The strings run from the head, shoulders, hands, and knees to a small wooden frame. The puppeteers, who are hidden above the stage, manage the marionettes by moving the strings where they are fastened to the frame. These string-operated puppets are among the most complicated types.

Muppets, another type of hand puppet, were developed for television by Jim Henson. This small puppet has a wide mouth, with the puppeteer's thumb forming the jaw. The fingers form the upper part of the muppet's face. The puppeteer moves various fingers to change the muppet's expression and the shape of its head. The puppeteer's other hand, which is concealed in a glove, forms the muppet's body or hand.

Shadow puppets are flat silhouette figures which are moved by means of rods held by the puppeteers. The figures cast either a black shadow or a brightly colored one, depending on the materials used to make them. They may consist of one piece or of two or more pieces that are jointed together to give movement. Traditionally, shadow puppets are made from animal hides which have the thickness and stiffness of a drum head.

Rod puppets are operated by rods or sticks, usually from below the stage. Sometimes called stick puppets, they are supported from below by a rod held in one hand, while the other hand operates rods attached to the puppet's hands. Rod puppets are particularly popular in Asia. You can make a puppet come to life by moving rods attached to the puppet's arms, legs, and body. When your hand moves the rods, the rods move the puppet. The simplest of these are figures made on a single stick. More complicated rod puppets have jointed limbs, jaws, and even eyes that are operated by additional rods or by strings. Rod puppets are used frequently to represent objects other than people and animals, such as hats, flowers, trees, and simple shapes such as mountains. The most basic type of rod puppet is the **marotte**, which is simply a head mounted on a stick. The **Crowtations** are of the large hand, rod, and string type. Due to the relative complexity of their construction, they can be manipulated to appear as very real-life characters.



Charlie McCarthy, a ventriloquist's dummy; Kermit the frog, a hand puppet, manipulating Howdy Doody, the marionette.

CROWTATION CREATION

Making rigid and soft puppets for *Lewis Latimer: Renaissance Man*



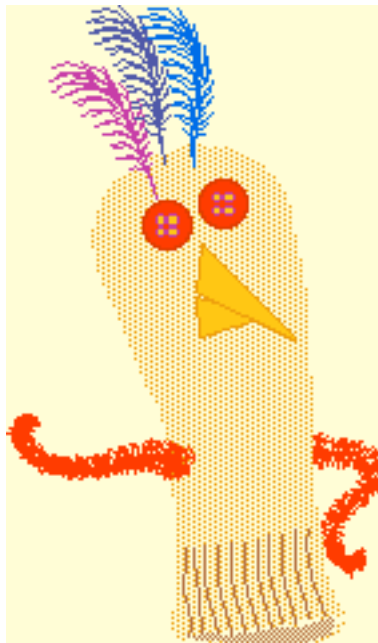
Clockwise from bottom left: Richard Gardiner sands a solid puppet head; foam beginnings of the Lewis Latimer puppet; Brad Brewer sculpts a solid head with paper mache; Glen King applies a thin layer of plastic wood (a type of putty) for protection of the solid heads; Finished Lewis Latimer soft puppet.

Invent your own hand puppet

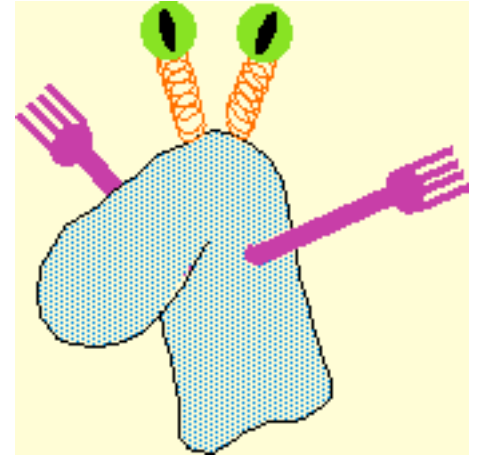
from supplies around your home and school!



Hair can be feathers, yarn, or pipe cleaners



The **body** of your puppet can be a **glove** or a **sock** or a **paper clip**



Eyes can be made of felt circles, buttons, beads, bottle tops, paper, springs, or balls

Can you think of other ways to make bodies, eyes, arms, or hair?

Arms can be made of forks, straws, or pipe cleaners

Connect the pieces of your puppet with glue, string or tape

