

Virtual Lesson for Lighting Design for Advanced Theatre Design students in the ISD:

April 6

This lesson will explain the evolution of lighting and how that evolution affected the way that we light for stage productions.

Shedding Light on the Story

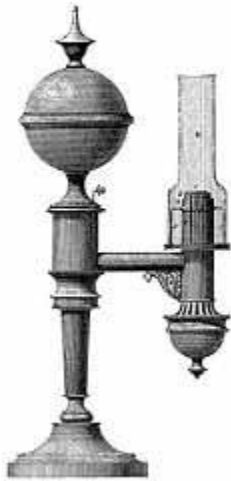


From ancient storytelling around the campfire, lighting has always set the mood for narration and theater. However, in a large auditorium, a simple campfire is not enough and limiting performances to daylight hours, harnessing the sun for illumination of outdoor stages, is impractical. Over the centuries, theatrical lighting professionals developed steadily improving ways to light the stage and direct attention to the actors. In this lesson, we will look briefly at these developments and highlight some of the innovators contributing to the craft's advancement.

Advances in Power Sources



It's hard to imagine candles as an advancement or innovation, but using them to provide stage lighting only occurred 500 years ago in the court theaters of Italy. Soon after, their use spread to England and France. Thousands of candles filled chandeliers providing general illumination while others served as footlights, rows of light at the front-most edge of the stage to light the faces of actors. Barely 200 years later, in the 1780s, modern oil lamps designed by Swiss chemist Aime Argand replaced candles in the same light fixtures, providing greater illumination.



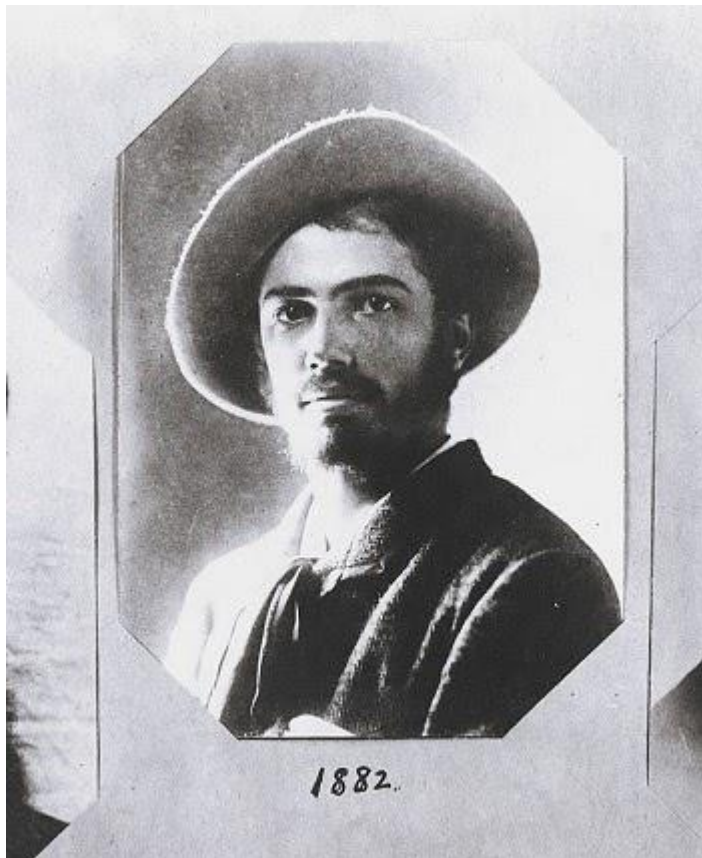
The use of oil lamps was short-lived as lighting technology rapidly increased. Less than 40 years later, gas lighting began to fill streets, homes, and even theaters. The Chestnut Street Theatre in Philadelphia saw the first gas stage-lighting system in 1816 while a year later Drury Lane and Covent Garden, two London theaters, followed suit. The drawback to candles and oil lamps, mainly oxygen depletion and heat were exacerbated by gas lamps, yet the invention of incandescent electric lamps in the late 1870s solved this problem. The first theater to install a full electric lighting system, the Savoy Theater in London, used electricity to light both the stage and the auditorium. A year later, Boston's Bijou Theatre installed their own system.

Innovations in Lighting Fixtures

Theatrical lighting systems gained a great improvement when inventor Thomas Drummond invented the calcium light, famously known as limelight, allowing a focused beam of bright light to illuminate specific parts of a stage. The first of these spotlights appeared in London's Covent Garden in 1837 but the innovation quickly grew in popularity, gaining widespread use in the 1870s and 1880s. Shortly after, during the 1890s, the brighter carbon arc lamp, powered by a 2,000 cell battery rather than flame, began to replace limelights. The carbon arc lamp was technically invented before the limelight but power supplies limited its adoption. With the turn of the century and the increased prevalence of electricity, incandescent spotlights using 1000 watt lamps, a theater term referring to light bulbs, became the primary form of spotlight from the 1920s until the end of the century, with advancements and modifications to the original design along the way.

Innovators in Lighting Design

While up to this point, we have focused on the physical innovations of theatrical lighting and a few of the inventors of new chemical and mechanical lights, we will conclude by looking at a few innovators in lighting design, responsible for how the mechanical innovations were incorporated in theater with new uses and positioning. Modern lighting design really began with the famous stage designer Adolph Appia who advocated for the use of specifically placed, directional light and colored lenses to add depth and mood to stage productions.



In the late 1800s and early 1900s, a gifted actress named Maude Adams tackled the persistent problem of natural stage lighting and the difficulties of footlight casting strange shadows. Adams designed a 2-foot by 32-foot light bridge with seven, human-operated spotlights. This innovation eliminated the use of footlights and illuminated stage actors like never seen before.

Finally, we have Abe Feder, the first to be honored for a lifetime achievement in lighting with the title USITT Distinguished Lighting Designer. Over his fifty-year career in lighting, he developed some of the most complex and nuanced arrangements for more than 300 Broadway productions. His lighting systems further influenced the future of theater lighting when he wrote the stage lighting unit in John Gassner's seminal theater textbook *Producing the Play* in 1940.

Time for the Quiz

Name _____ High School _____

Mark an "X" before the correct answer.

1. The first form of theatrical spotlight, invented by Thomas Drummond, went by what popular name?

- Limelight
- Ellipsoidal Spotlight
- Calcium Light
- Drummond Light

2. Swiss chemist Aime Argand created what innovation that replaced candles in theater lighting fixtures?

- Carbon Arc Lamp
- Gas Lamps
- Modern Oil Lamp
- Calcium Light

3. What famous theater designer began modern lighting designs with directional and colored lighting?

- Maude Adams
- Adolph Appia
- Aime Argand
- Abe Feder

4. The Chestnut Street Theatre in Philadelphia was the first theater to install what innovative lighting system?

- **Gas stage lights**
- **Limelights**
- **Electric stage lights**
- **Incandescent Lamp lights**

5. What two drawbacks to candles, oil lamps, and gas lighting were eliminated by electric lighting systems?

- **Frequent costume fires from the footlights and ambient smoke choking patrons**
- **Depletion of oxygen and increased heat**
- **Visibility loss from ambient smoke and overheating patrons**
- **Risk of fire and smoky air**

Answers key.

1. Limelight

2. Modern oil lamps

3. Adolph Appia

4. Gas stage lights

5. Depletion of oxygen and heat