

УДК 628.9

Сукманюк С. – ст. гр. ЕС-21

*Тернопільський національний технічний університет імені Івана Пулюя*

## **WHERE THERE IS DARKNESS, LET THERE BE LIGHT: A BRIEF HISTORY OF THE LIGHT BULB**

Науковий керівник: к. психол. н., доц. Кухарська В. Б.

The modern world is an electrified world. The light bulb, in particular, profoundly changed human existence by illuminating the night and making it hospitable to a wide range of human activities. The electric light was not “invented” in the traditional sense in 1879 by **Thomas Alva Edison**, although he could be said to have created the first commercially practical incandescent light. He was neither the first nor the only person trying to invent an incandescent light bulb. However, T. A. Edison is often credited with the invention because his version was able to outstrip the earlier versions because of a combination of three factors: an effective incandescent material, a higher vacuum than others were able to achieve and a high resistance that made power distribution from a centralized source economically viable.

In 1809, an English chemist, **Humphrey Davy**, started the journey to the invention of a practical incandescent light source. He used a high power battery to induce current between two charcoal strips. The current flowing through the two charcoal strips produced an intense incandescent light, creating the first arc lamp.

In 1820, **Warren De la Rue** made the first known attempt to produce an incandescent light bulb. He enclosed a platinum coil in an evacuated tube and passed an electric current through it. The design was based on the concept that the high melting point of platinum would allow it to operate at high temperatures and that the evacuated chamber would contain less gas particles to react with the platinum, improving its longevity. Although it was an efficient design, the cost of the platinum made it impractical for commercial use.

In 1850 an English physicist **Joseph Wilson Swan** created a light bulb by enclosing carbonized paper filaments in an evacuated glass bulb. And by 1860 he had a working prototype, but the lack of a good vacuum and an adequate supply of electricity resulted in a bulb whose lifetime was much too short to be considered an effective producer of light. However, in the 1870's better vacuum pumps became available and J. W. Swan continued experiments on light bulbs. In 1874, Russian engineer **Alexander Lodygin** received a patent for light bulb with the carbon filament. A year later his countryman electrician **Vasiliy Didrikhson** improved A. Lodygin's lamp by making pumping air out of it and adding a few spare filaments. Later in 1878, J. W. Swan developed a longer lasting light bulb using a treated cotton thread that also removed the problem of early bulb blackening.

In 1879, with the help of low current electricity, improved vacuum, carbonized filament, T. A. Edison produced long lasting and reliable source of light. He tried to offer practical lighting for homes. Eventually he not only gave us incandescent lighting but also gave electrical lighting mechanism containing necessary elements to make incandescent light safe, economical and practical. After working for around 18 months, T. A. Edison attained success in form of incandescent lamp that had filament of the carbonized thread that burned for around fourteen hours. He publicly demonstrated his incandescent lighting mechanism in December 1879 and then spent several following years in development of electric industry.

Modern incandescent bulbs are not energy efficient. However these inefficient light bulbs are still widely used today due to many advantages such as: wide, low-cost availability, easy incorporation into electrical systems, adaptability for small systems and low voltage operation.