Research paper on the significance of benjamin franklin inventions

Environment, Electricity

The Significance of Benjamin Franklin Inventions Benjamin Franklin was an American born in 1706. He was one of the founding fathers of the United States. He played many roles in the country such as statesman, publisher and diplomat. He was also an inventor whose theories form the foundations of the inventions that are used today in the world (Borlongan, 1999). The seven major inventions of Benjamin Franklin are:

The Lightning Rod: Benjamin Franklin heard a lecture on electricity in 1743 that inspired him to begin carrying out electric experiments. In the year 1750, he put forward the theory that lightning was a form of electricity. He found out the connection between electricity and lightning when he saw they had a similar crackling sound, color and design (Freshman-Caffrey, 2009). His most famous experiment was the silk kite experiment. The cord was made of hemp. He used silk since paper would be damaged in the rain. There was a metal needle at the top and a key at the bottom. He realized that when he touched the key there was an electrifying sensation and sparks were released. The experiments of Benjamin Franklin become the foundations of many inventions in electricity such as batteries, generators, transformers, incandescent light bulbs and use of electromagnetic fields. He wrote many letters detailing his experiments, analysis of the results and theories explaining the results of the experiments. The electric experiments were at times very dangerous (Butler, 2005).

There was a time while attempting to kill a turkey using electricity he knocked himself unconscious. Another important discovery made by Benjamin was of polarity, showing the negative and positive status in

electricity. At that time, scientists believed the theory that the attraction and repulsion of electrically charged bodies came from separate electric fluids(APS Editors, 2010). Benjamin put forward that there were no different kinds of electric fluids. It was just a single electric fluid that flowed from one medium to the other. Benjamin Franklin proposed that vitreous and resinous electricity were the same electric fluids however at different pressures. He identified them as positive and negative electric points. His findings on electricity were significant as it led to the invention of the lightning rod. He discovered that conductors with sharp points were able to discharge electricity silently unlike blunt points. The lightning rod has helped promote the safety of buildings in storms. The first lightning rod in the world was built in Benjamin Franklin’s own house. After some time during a storm it was hit by lightning saving his house from destruction. This invention caused him to be elected to the prestigious Royal Society. His contribution to science was so important that units of electricity charges were names after him. In electricity, one Franklin (Fr) is equal to one Statcoulumb. It made him famous as the lightning rod was used in ships and the buildings all over the world. Lightning is created when a charged cloud discharges electricity during a storm. By showing lightning was static electricity he assisted the world with the technology of transferring the lightning onto lightning rod. Lightning now used an alternative route to reach the earth (Inventor-Strategies Editors, 2007).

The lightning rod has saved many lives. This is an invention that is still in use today throughout the world. Bifocal Lenses: He invented bifocal eyeglasses

which are used by millions of people today who have nearsighted vision impairment conditions such as presbyopia. In 1784 Benjamin Franklin had become old and was losing his sight. He had to keep changing his spectacles as there were different spectacles for seeing near and far locations. He was both short sighted and long sighted. It was highly tiring and inconvenient. He started wondering whether he could use both the convex and concave lenses at the same time. Since the two types of lenses were focusing on different location areas he called the lenses bifocal lens. These glasses were heavy as there were four lenses for each pair of glasses. In the 20th Century scientists improved the invention by reducing the weight of the glasses through the use of half-cut lenses.

Franklin Stove: In the developed world the winters made the houses extremely cold. There was poor insulation since the houses were made of wood. Many people constructed open fires in the house to help them deal with the cold. Benjamin invented a stove that helped people use less wood and it was very safe. The fireplaces at that time used to produce lots of smoke and the heat was not retained indoors. The heat used to escape through the chimneys. The fireplaces were dangerous as there would be sparks. There were houses that were burnt down since they were constructed of wood. The stove that Franklin invented used only a quarter of the wood the fireplaces consumed. It also generated double the amount of heat (Essortment Editors, 2010). He invented it in the mid 1770’s. It was known as a circulating stove. The Franklin stove had a hood-like enclosure at

the front and baffles behind the stove that improved the flow of air producing more heat.

Wood in that period was scarce and very costly. There was high demand for wood. It was also very expensive to transport it. The stove replaced the open fireplaces at that time. It was used to heat the businesses and homes all over Europe and North America. In the US today, the fireplaces in most homes are in the shape of the Franklin stove.

Odometer: He was the general postmaster in Philadelphia. He came up with a simple odometer to measure the time it took to deliver mails when certain routes were used (Armstrong, 2010). As a postmaster, Benjamin had the responsibility of deciding the routes which the mailing companies would use in the local towns. One day, he went out on his carriage to measure the route distances and he realized the importance of keeping track of the distances. He therefore invented an odometer which he attached to his carriage. The instrument measured the distances by counting the rotations of the axles of the carriage wagon. There was a bell that rang after every 250 yards. The machine enabled him know the best routes to use in mail delivery. It greatly reduced the duration of time one took to get mail by even days in some instances. The odometer is used today to indicate the distance travelled by an automobile or bicycle. The device is a refinement of what Benjamin Franklin invented. It may be electronic, mechanical or electromechanical.

Glass Armonica: Music was an important part of Benjamin Franklin’s life. When he was building his home in Philadelphia, he had a large third floor where he entertained his friends in music and songs. He played many instruments such as the violin, guitar, harpsichord and the cello.

He was even a songwriter. Of all the inventions that Benjamin came up with, he revealed that the glass harmonica gave him the greatest personal satisfaction (Cole, 2010). In 1758, he got inspiration after he attended Handel’s water music concert where the musician played on tuned wine glasses filled with water. The harmonica is a musical instrument where a series of glass bowls are mounted and rubbed to produce musical sounds. The glass rims were painted in different colors according to the musical pitch they produced. At that time in the harmonica that existed, the water bowls and goblets were mounted vertically. The sound was mesmerizing. The different levels of water in each glass produced different pitch notes. Benjamin was highly captivated by the sound that was produced. He looked for a way to recreate the sound. He wanted an instrument that did not use water. Benjamin Franklin invented a radical version where the bowls were placed horizontally. Benjamin’s harmonica did not necessitate water tuning to be played. He mounted 37 bowls horizontally on an iron spindle. A foot pedal was used to turn the whole spindle. The spinning of the harmonica and rubbing the glasses with moistened hands produced a replica of the sound at the concert. In 1761 he had fully finished working on his invention and it could be used in public. The instrument became quite popular in the town especially among musicians. Great musicians such as Mozart and Beethoven

composed music on the instruments. In 1764, the first public concert was held where the harmonica was played. His invention enabled one to play up to ten glasses simultaneously which is extremely difficult to do when the glasses are upright.

He advised the musicians to use a small quantity of powdered chalk on their fingers in order for the produced sound to be clear. The instrument was compact as the glasses were nestled horizontally together. The harmonica in the design that Benjamin invented is still in use today in the world.
Flexible Urinary Catheter: Benjamin will always be remembered in the world of medicine. He was a man who was interested in seeing things work well even in the human body. Benjamin was staying with his brother in the 1770's who was in the printing business. He was an apprentice in his brother's business. His brother had a problem with his kidney. He had kidney stones in his body system. To help his brother he invented a flexible urinary catheter (BBC Editors, 2005). A catheter is inserted into a body cavity to assist in the drainage and the administration of fluids in the body.

The catheter may also be used to allow access to surgical instruments to pass through it. The device used today is an improvement of the catheter as the one Benjamin invented was crude. Benjamin sketched an appropriate design of a flexible tube which he gave his brother to use. Unfortunately, later in life he also developed kidney stones. He told doctors he could feel the stones when he shifted in position. They were too enormous for the doctors to remove however by avoiding certain foods and alcoholic beverages he was able to cope.

The Gulf Stream: Benjamin was interested in the North Atlantic and the travelling patterns in use at that time. He wanted to know why it took longer for British ships carrying mail to reach New York than it took merchants ships to reach Rhode Island yet the British ships used a shorter route. He learnt that the merchants worked hard to avoid an adverse wind current while travelling in the sea. Benjamin was the first scientist to research on the Gulf Stream. He researched on the wind speeds, speed and temperature. He drew the charts showing the Gulf Stream flowing from the West Indies to the Atlantic Ocean in Europe. He published an article on how ships can avoid the adverse wind current however it took many years for his advice to be followed but once the sea captains followed his advice they were able to reduce the time they took to make their journey by even two weeks. He helped in ships in travelling faster and reduced the time people took to receive mail or goods from suppliers.

Conclusion

This inventions mentioned above are just the major inventions. This man contributed immensely to science and men’s lifestyle through numerous inventions. In desiring to make the world a better place, his brain never stopped thinking on what needs improvement. Indeed he is one of the world’s greatest inventors. He will be remembered even in the future generations.

Works Cited

Armstrong, Vince. Inventions of Benjamin Franklin. Enzine Articles, 2010. Web. 9th April, 2011.

APS Editors. Benjamin Franklin. 2010. Web. 9th April, 2011.

BBC Editors. Franklin’s Legacy to Medine. BBC News, 2005. Web. 9th April, 2011.

Borlongan, Josienita. About the Electric Experiments of Benjamin Franklin. Ehow, 1999. Web. 9th April, 2011.

Butler, Allen. Benjamin Franklin’s Kite: A Story of Lightning and Electricity. Associated Content, 2005. Web. 9th April, 2011.

Cole, Rhyan. Benjamin Franklin: The Musician and his Armonica. Suite 101, 2010. Web. 9th April, 2011.

Essortment Editors. The Achievements of Benjamin Franklin. Essortment. com, 2010. Web. 9th April, 2011.

Freshman- Caffrey, Kayley. Benjamin Franklin Inventions and Scientific Inquiries. Helium, 2009. Web. 9th April, 2010.

Inventor-Strategies Editors. Benjamin Franklin Inventions. Inventor-Strategies. com, 2007. Web. 9th April, 2011.

Nair, Tulika. Benjamin Franklin Inventions. Buzzle. com, 2010. Web. 9th April, 2011.