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# Ruth Benerito

Ruth Benerito was an American scientist who is best known for inventing cotton fabrics that didn't crease as much as traditional cotton.

Ruth was born in New Orleans in 1916. Her father made sure she got the same education as was available to boys, and she went to University to study Chemistry (the science of materials).

During the 1930's, new materials for clothes such as nylon and polyester were becoming increasingly popular. This was a concern to cotton growers, who feared that people would no longer buy cotton. The new materials were not as long lasting or as comfortable as cotton, but were much easier to look after.

In the 1950's Ruth Benerito came up with a way to make the cotton wrinkle-free and more durable. Her research also led to improving the stain and flame resistance of cotton.

Ruth Benerito received numerous awards for her work and she died in 2013, aged 97. She, herself, played down her contribution, saying the work of scientists before her was also important. "Nature made cotton pretty good to begin with," she insisted, "I just gave it a little boost."

**Questions to consider**

How do you think Ruth Benerito's work affected the cotton growers?

What effect did her work have on family life?

# Madame C.J. Walker

Sarah Bleedlove, known as Madame C. J. Walker, was an American business woman, who is regarded as one of the first millionaires. She made her fortune by developing and marketing beauty and hair products for black women.

She was born in 1867. Her parents were slaves on a plantation, but she was born into freedom under new laws. Both her parents died when she was five or six. She went to live with her older sister, was married at 14, and widowed at 20 with a 2 year old daughter. She moved again to live in St Louis where her brothers lived, and she became a washerwoman.

Working among the chemicals and fumes caused Sarah and her co-workers to lose their hair, so she began to create products to help her hair. She moved again and in 1906 married Charles Walker. He persuaded her to use the name Madam C. J. Walker because it would appeal more to customers. The business continued to grow and in 1910 they built a factory in Indianapolis.

Madam C. J. Walker helped other black women to start their own businesses.

**Questions to consider**

How is Madam C. J. Walker different to other scientists you have found out about?

What made her successful?

What difference did she make to the lives of other people?

# Spencer Silver

Spencer Silver worked for the Minnesota Mining and Manufacturing company (now called 3M). In 1968 he invented a glue that would not leave any marks when it was moved from one place to another. However, the company wanted a stronger adhesive, and felt his invention was useless, so he was given other work to do.

Six years later, Spencer Silver showed the glue to a colleague, Art Fry, who thought he could use the glue on bookmarks that kept falling out of the church hymn books.

After this, Silver and Fry used these removable bookmarks in their own office for some time, and it wasn't until 1977 that they persuaded the executives at 3M to start using them. A year later, 3M began testing "Press 'n' Peel pads, and finally, on 6th April 1980, Post-Its were introduced into American shops. Silver's adhesive was later used in a variety of products including medical bandages and decorating kits.

**Questions to consider**

Why do you think it took so long to find a use for Silver's low-tack glue?

What effect did Silver's invention have on people's lives?

Compare the impact of this low-tack glue with any other inventions you have found out about.

Can you think of a use for a low-tack glue?

# Leo Baekeland

Leo Baekeland was born in Belgium but went to work in America as a scientist.
In 1893 he invented a the first photographic paper which was sold successfully. Although it was not a good time for new inventions, he eventually made a lot of money from his invention. When he was asked why he entered his particular field of science, synthetic resins (man made materials), he is reported to have answered "to make money".

His most significant invention was made in 1907, when he came up with the first mouldable plastic, which he called Bakelite. Bakelite was used in many products because it had excellent electrical insulation and heat resistance. The new plastic could also be produced in bright colours.

Bakelite was eventually succeeded by new plastics, but it was used in over 15,000 different products. There is even a museum for Bakelite products in England.

**Questions to consider**

What do you think of Leo Baekeland's motivation for working as a scientist?

What effect did Bakelite have on people's lives?

How do you think Bakelite changed the way manufacturers made new products?

# Harry Brearly

Harry Brearley was born in Sheffield, England in 1871. He left school aged 12 and joined his father as a labourer in one of the city's steelworks. Later, he started working in the company's chemical laboratory.

By his thirties, Harry Brearley was well known for his ability to solve problems with working in metals. Before the first world war, he started to develop solutions to the problems of gun barrels eroding due to the high temperatures. By adding chromium to the steel, he developed what was initially called a non-rusting steel.

Probably due to the significant cutlery industry in Sheffield, this stainless steel, as it became known, was used in cutlery, saucepans and other food related products. Brearley was one of a line of metallurgists who tried to solve the problem of corrosion in steel by adding chromium to steel. On the 13th August 1913 Brearley created a steel with 12.8% chromium and 0.24% carbon, which is argued to be the first ever stainless steel.

There are several stories involved with this discovery, some of which may not be true. One is that he made his discovery by throwing steel into the rubbish and finding it didn't corrode. However, it is more likely he did so by carefully testing his new material using lemon juice and vinegar.

**Questions to consider**

What were the reasons for Harry Brearley trying to find a solution to erosion and corrosion in steel?

How do you think other scientists helped Brearley create stainless steel?

What do the stories about Brearley's work tell you about science?

What difference did he make to the lives of other people?