

Victorian Inventors

Read the history files to discover more about three great 19th-century inventors whose creations continue to affect our lives today.

Name: Margaret E. Knight

Most Famous Invention: Paper Bags

Margaret E. Knight was born in Maine, USA on 14th February 1838 to her father, James Knight, and her mother, Hannah Teal. Sadly, her father passed away when she was young. This meant that Margaret received only a basic education and went to work in a cotton mill when she was still a child.

At 12, Margaret witnessed an accident at the mill. She decided to invent a safety device for the mill machine, which is thought to have stopped it if something got caught in it. In 1867, Margaret was employed by the Columbia Paper Bag Company. In 1868, she invented a machine that folded and glued paper to form flat-bottomed paper bags. Charles Annan stole her design but Margaret took him to court and won the right to call the design her own. Margaret continued inventing useful objects, including a number of engines, for the rest of her life.



Did You Know...?

During the Victorian era, women were seen as less intelligent than men. Many people did not believe that Margaret was capable of inventing useful things.

Name: George Washington Carver

Most Famous Invention: Peanut products

George Washington Carver was an African-American teacher, scientist and inventor. He became known as 'the peanut man' due to his inventions that used peanuts to create many useful objects and materials.



George was born into slavery in the early 1860s to an enslaved couple owned by Moses Carver. In 1865, slavery ended but Moses and his wife, Susan, decided to continue to look after and educate George and his brother in their home. George was interested in science and the arts. In 1896, George became a teacher at Tuskegee University where he taught for 47 years. During this time, he also worked on his inventions. He invented more than 300 products from peanuts, including plastics, paints, soap and wood stains. He even invented a plantbased petrol.

During the Victorian era, many African-Americans were sold as slaves. They were not treated as equals and were often not allowed to receive an education.

Did You Know...?

Name: William Henry Fox Talbot

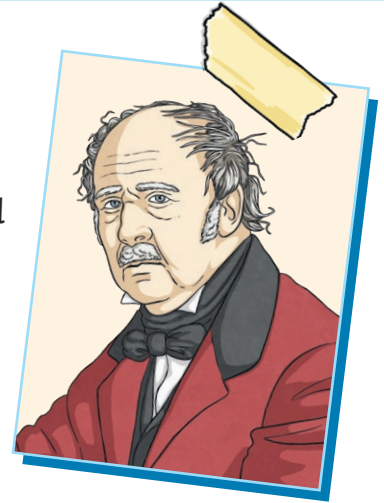
Most Famous Invention: Light-sensitive paper

William Henry Fox Talbot was born on 11th February 1800 in Melbury, Dorset. He went on to become a Member of Parliament (MP), scientist and inventor.

William's father died when he was less than a year old and he and his mother lived in many different homes until she remarried in 1804. William received his early education at home, before going to Harrow School and then to Cambridge University in 1817.

In 1832, William married Constance Mundy. He was also elected as MP for Chippenham in the same year. In 1833, he visited Lake Como in Italy. He wanted to record the beauty around him but his sketching skills were limited. He dreamed up a machine that would make the sketch for him.

William was interested in studying light and chemicals. He used this knowledge to invent his 'art of photogenic drawing', which used light-sensitive paper. He went on to further develop photography with the use of chemicals which 'fixed' the image onto the paper.



Margaret E. Knight



George Washington Carver



William Henry Fox Talbot

Questions

1. When was Margaret E. Knight born? Tick one.

- 11th February 1800 14th February 1867
 14th February 1838 14th February 1868

2. Match the innovator to their invention:

Margaret E. Knight

Flat-bottomed paper bag machine

George Washington Cover

Light-sensitive paper

William Henry Fox Talbot

Plant-based petrol

3. Which two inventors sadly lost their fathers at a young age?

- _____
- _____

4. Fill in the missing words: Many people in the _____ era did not believe that _____ were as intelligent as _____.

5. Find and copy a phrase which shows that **William's drawing was not good**.

6. Which of these inventors do you think had the most impact on our lives? Explain your answer.

7. Sum up Margaret's inventions in your own words.

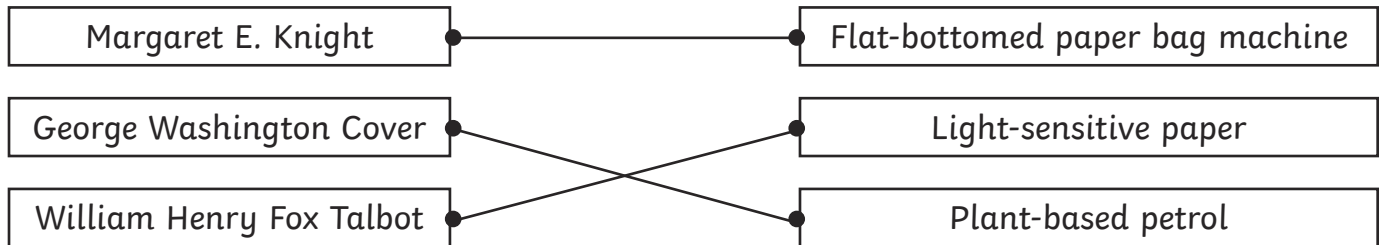
8. How do you think George felt when he became a teacher? Explain your answer.

Answers

1. When was Margaret E. Knight born? Tick one.

- 11th February 1800 14th February 1867
 14th February 1838 14th February 1868

2. Match the innovator to their invention:



3. Which two inventors sadly lost their fathers at a young age?

- **Margaret E. Knight**
- **William Henry Fox Talbot**

4. Fill in the missing words: Many people in the **Victorian** era did not believe that **women** were as intelligent as **men** .

5. Find and copy a phrase which shows that **William's drawing was not good**.
his sketching skills were limited

6. Which of these inventors do you think had the most impact on our lives? Explain your answer.

Pupils' own responses, such as: I think that William had the most impact on our lives because everyone enjoys taking photos and looking back on them to remember happy or exciting events from our lives.

7. Sum up Margaret's inventions in your own words.

Pupils' own responses, such as: Due to an accident that she witnessed in the mill where she worked, Margaret invented a safety device for the machine. She also invented a machine to make flat-bottomed paper bags and a variety of engines.

8. How do you think George felt when he became a teacher? Explain your answer.

Pupils' own responses, such as: I think that George would have felt very proud and keen to help others due to the fact that he was the child of slaves so was not entitled to an education himself as a child.

Victorian Inventors

Delve into the history files and discover more about three great 19th-century inventors whose creations continue to affect our lives today.

Name: Margaret E. Knight

Most Famous Invention: Paper Bags

Born in Maine, USA on 14th February 1838, Margaret E. Knight was nicknamed 'the lady Edison' due to the amount of inventions she made. She was the daughter of James Knight and Hannah Teal but sadly her father passed away when she was young. This meant that Margaret received only a basic education and went to work in a cotton mill when she was still a child.

At 12, Margaret witnessed an accident at the mill. This prompted her to invent a safety device for the **mechanical loom**, which is thought to have stopped the loom if something got caught in it.

In 1867, Margaret was employed by the Columbia Paper Bag Company. In 1868, she invented a machine that folded and glued paper to form flat-bottomed paper bags. Charles Annan stole her design but Margaret took him to court and won the right to **patent** her design. Margaret continued inventing useful objects, including a number of engines, for the rest of her life.



Name: George Washington Carver

Most Famous Invention: Peanut products

George Washington Carver was an African-American teacher, scientist and inventor. He became known as 'the peanut man' due to his inventions that used peanuts to create many useful objects and materials. George was born into slavery sometime in the early 1860s to Mary and Giles, an enslaved couple owned by Moses Carver. In 1865, slavery ended but Moses and his wife, Susan, decided to continue to look after and educate George and his brother, James, in their home. George was interested in science and the arts and later became a **botanist** after attending university.



In 1896, George became a teacher at Tuskegee University where he taught for 47 years. During this time, he also worked on his inventions. There were all related to plants. He invented more than 300 products from peanuts, including: plastics, paints, dyes, cosmetics, medicines, oils, soap, ink and wood stains and 118 from sweet potatoes, including: postage-stamp glue, flour, vinegar and synthetic rubber. He even invented a plant-based petrol.

Did You Know...?

During the Victorian era, women were seen as less intelligent than men; many people did not believe that Margaret was capable of inventing useful things.

Name: William Henry Fox Talbot

Most Famous Invention: Light-sensitive paper

William Henry Fox Talbot was born on 11th February, 1800 in Melbury, Dorset, and went on to become a Member of Parliament (MP), scientist, inventor and a pioneer of photography.

William's father died when he was less than a year old and he and his mother lived in many different homes until she remarried in 1804. After receiving his early education at home with a governess, William went to Harrow School and then to Cambridge University in 1817.

In 1832, he married Constance Mundy and was elected as MP for Chippenham in the same year. In 1833, he visited Lake Como in Italy where he wanted to record the beauty around him but his sketching skills were limited; he dreamed up a machine which would automatically make the sketch for him.

He was interested in studying light and chemicals and used this knowledge to go on to invent his 'art of photogenic drawing', which used light-sensitive paper. He went on to further develop photography with the use of chemicals which 'fixed' the image onto the paper.



During the Victorian era, many African-Americans were sold as slaves and they were not treated as equals; they were often not allowed to receive an education.

Did You Know...?

Glossary

botanist: An expert in or a student of the scientific study of plants.

governess: A woman employed to teach children in a private household.

mechanical loom: A machine for making fabric by weaving yarn or thread.

Member of Parliament (MP): A person formally elected to the UK government.

patent: A government licence excluding others from making, using or selling an invention.

Questions

1. How old was Margaret when she witnessed an accident at the mill? Tick one.

11

13

12

14

2. Order the following statements from 1-5 to show the order they happened in William's life.

	William married Constance Mundy and became an MP.
	William invented light-sensitive paper.
	William's father died.
	William visited Lake Como.
	William dreamed of a machine that could sketch for him.

3. Name two of the jobs that William did?

- _____
- _____

4. Fill in the missing words: During the Victorian era, many _____ were sold as _____ and they were not treated as _____.

5. Find and copy a phrase which shows that **George's exact birthdate is not known**.

6. Summarise William's first invention, and his reasons for making it, in 30 words or less.

7. Why do you think that Charles Annan stole Margaret's design?

8. Why do you think that George became a botanist?

9. Describe an invention that you would like to make.

Answers

1. How old was Margaret when she witnessed an accident at the mill? Tick one.

11

13

12

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2. Order the following statements from 1-5 to show the order they happened in William's life.

2	William married Constance Mundy and became an MP.
5	William invented light-sensitive paper.
1	William's father died.
3	William visited Lake Como.
4	William dreamed of a machine that could sketch for him.

3. Name two of the jobs that William did?

Accept any two of the following: Member of Parliament (MP); scientist; inventor

4. Fill in the missing words: During the Victorian era, many **Africans** were sold as **slaves** and they were not treated as **equals**.

5. Find and copy a phrase which shows that **George's exact birthdate is not known**.

sometime in the early 1860s

6. Summarise William's first invention, and his reasons for making it, in 30 words or less.

Pupils' own responses, such as: Because his sketching skills were limited, William dreamed up a machine to sketch for him. Due to his interest in light and chemicals, he went on to invent light-sensitive paper

7. Why do you think that Charles Annan stole Margaret's design?

Pupils' own responses, such as: Charles did not think that a woman was capable of inventing something so useful and wanted to receive the credit for Margaret's invention.

8. Why do you think that George became a botanist?

Pupils' own responses, such as: As a child, George was interested in both science and the arts and by becoming a botanist, he was able to combine his two passions: studying plants and then recording his findings.

9. Describe an invention that you would like to make.

Pupils' own description of an invention.

Victorian Inventors

Discover more about three great 19th-century inventors whose creations continue to shape our lives today, when you delve into the history files.

Name: Margaret E. Knight

Most Famous Invention: Paper Bags

Born in York, Maine, USA, on 14th February 1838, Margaret E. Knight was nicknamed 'the lady Edison' due to the amount of inventions she made. She was the daughter of James Knight and Hannah Teal but sadly her father passed away when she was young. This meant that Margaret received only a basic education and went to work in a cotton mill when she was still a child.

At 12, Margaret witnessed an accident at the mill, which prompted her to invent a safety device for the mechanical loom (a machine for making fabric by weaving yarn or thread). It is thought to have stopped the loom if something got caught in it. Her invention became popular in other factories but Margaret was not recognised for her work because, at the time, she was not aware of the patent process, which means obtaining a government licence that excludes others from making, using or selling an invention.

In 1867, Margaret was employed by the Columbia Paper Bag Company and, in 1868, she invented a machine that folded and glued paper to form flat-bottomed paper bags meaning that this job no longer needed to be done by hand. Charles Annan stole her design and argued that a woman could not invent something so useful. Margaret understood about patents so she took him to court and won the right to patent her design when she proved that she had written detailed notes about her invention.

Margaret continued inventing useful objects, including some pliers to remove lids, a numbering machine and various engines, obtaining patents for 87 of her inventions.



Name: George Washington Carver

Most Famous Invention: Peanut products

George Washington Carver was an African-American teacher, who went on to become one of the most prominent scientists and inventors of his time. He became known as 'the peanut man' due to his inventions that utilised peanuts in many different ways.



George was born into slavery in the early 1860s (his actual birthdate is unknown as records were not always kept) to Mary and Giles, an enslaved couple owned by Moses Carver. In 1865, slavery ended but Moses and his wife, Susan, decided to continue to look after and educate George and his brother, James, in their home, despite this being unusual at the time as slaves were not entitled to an education. George was interested in science and the arts, spending much time drawing plants. Later, he became a botanist (an expert in the scientific study of plants) after attending university.

In 1896, George became a teacher at Tuskegee University where he taught for 47 years. During this time, he also worked on his plant-based inventions; he invented more than 300 products from peanuts, including plastics, paints, dyes, cosmetics, medicines, oils, soap, ink and wood stains and 118 from sweet potatoes, including: postage stamp glue, flour, vinegar and synthetic rubber. He even invented a plant-based petrol, something that is being investigated more nowadays (now called biofuels) as we try to move away from the use of fossil fuels, such as oil and coal.

Name: William Henry Fox Talbot

Most Famous Invention: Light-sensitive paper

William Henry Fox Talbot was born on 11th February 1800 in Melbury, Dorset, into an aristocratic family. He went on to become a Member of Parliament (MP), scientist, inventor, mathematician, archaeologist and a pioneer of photography.

William's father died when he was less than a year old so he and his mother lived in a succession of different homes until she remarried in 1804. After receiving his early education at home with a governess (a woman employed to teach children in a private household), William went to Harrow School and then to Cambridge University in 1817.

In 1832, he married Constance Mundy and was elected as MP for Chippenham in the same year. The following year, William visited Lake Como in Italy where he was keen to record the beauty around him; his sketching skills were limited, which prompted him to dream up a machine which would automatically make a sketch for him.

William was interested in studying light and chemicals so he used this knowledge to go on to invent his 'art of photogenic drawing', which used light-sensitive paper to record real images. The downside of this technique was that it took a very long time for an image to be recorded so he went on to further develop photography with the use of chemicals which 'fixed' the image onto the paper. William patented this process in 1841, calling it the 'calotype' and was rewarded with a medal from the Royal Society the following year.



Margaret E. Knight



George Washington Carver



William Henry Fox Talbot

Questions

1. Who stole Margaret E. Knight's design? Tick one.

- George Washington Carver Charles Annan
 William Henry Fox Talbot Hannah Teal

2. Which of these did Margaret not invent? Tick one.

- lid-removing pliers synthetic rubber
 a numbering machine various engines

3. What does patent mean?

4. Find two things that George was interested in as a child.

- ---
- ---

5. What was the problem with William's 'art of photogenic drawing'?

6. Why is George's plant-based petrol so interesting to scientists now?

7. Summarise one of Margaret's inventions in 40 words or less.

8. How did Margaret's understanding of patents change over time?

9. Why do you think that George became a teacher? Give detailed reasons.

10. Which of the inventors do you see as having made the biggest achievement? Give evidence to support your answer

Answers

1. Who stole Margaret E. Knight's design? Tick one.

- George Washington Carver **Charles Annan**
 William Henry Fox Talbot Hannah Teal

2. Which of these did Margaret not invent? Tick one.

- lid-removing pliers **synthetic rubber**
 a numbering machine various engines

3. What does patent mean?

Patent means a government licence that excludes others from making, using or selling an invention.

4. Find two things that George was interested in as a child.

- **science**
- **the arts (drawing plants)**

5. What was the problem with William's 'art of photogenic drawing'?

The problem with William's 'art of photogenic drawing' was that it took a very long time for an image to be recorded.

6. Why is George's plant-based petrol so interesting to scientists now?

Pupils' own responses, such as: As we try to move away from using fossil fuels, such as oil and coal, scientists are investigating the use of plant-based fuels (biofuels) more.

7. Summarise one of Margaret's inventions in 40 words or less.

Pupils' own responses, such as: After witnessing an accident in the mill, Margaret designed a safety device for the loom to stop if something got caught in it. The invention was used in other factories; she received no recognition due to not obtaining a patent.

8. How did Margaret's understanding of patents change over time?

Pupils' own responses, such as: After receiving no recognition for her first invention due to having no knowledge of patents, Margaret found out about patents and obtained one for her second invention and 86 other inventions throughout her life.

9. Why do you think that George became a teacher? Give detailed reasons.

Pupils' own responses, such as: When George was a child, he was not entitled to an education (due to being the son of a slave) but, because slavery ended and he was looked after by the Carvers, he was educated and probably wanted to provide an education for others because of his gratitude.

10. Which of the inventors do you see as having made the biggest achievement? Give evidence to support your answer

Pupils' own responses, such as: During the Victorian era, African-Americans were not treated as equals (many of them were slaves in USA) so to go on to become one of the most important scientists and inventors in America was a major achievement for George Washington Carver.