Books by
Kate Pankhurst

Fantastically Great Women Who Saved the World

Fantastically Great Women Who Made History

Fantastically Great Women Who Worked Wonders

Fantastically Great Women Who Saved the Planet



Kate Pankhurst

FANTASTICALLY GREAT WOMEN

SCIENTISTS and their STORIES

BLOOMSBURY
CHILDREN'S BOOKS
LONDON OXFORD NEW YORK NEW DELHI SYDNEY

First published 2020 by Bloomsbury Publishing Plc
50 Bedford Square, London, WC1B 3DP
29 Earlsfort Terrace, Dublin 2
www.bloomsbury.com

Bloomsbury is a registered trademark of
Bloomsbury Publishing Plc

978 1 5266 1533 6

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Printed and bound by CPI Group (UK) Ltd, Croydon CRO 4YY

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For Simon and Otto,
my fantastically great boys.



Contents

Women in Science 1

MAE JEMISON **5**

Marie Curie 25

Elizabeth Blackwell 46

Janaki Ammal 64

Katia Krafft 80

Caroline Herschel 104

TU YOUYOU 123

Rosalind Franklin 147

Stupendously super scientists! 170

Other fantastically great people 172

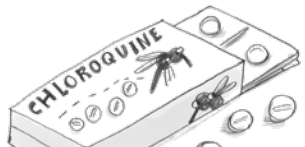
Glossary 174

FURTHER READING 180

Thank yous 182

ABOUT THE AUTHOR: 183





Women in Science

Women have been responsible for many of the world's most groundbreaking scientific discoveries and adventures. They've worked tirelessly in laboratories, in the field, in the back of trucks during the war and even in spaceships – all because they wanted to find out more about the world we live in, and beyond.



Yet, lots of female scientists' stories don't get told. Most people have heard of MARIE CURIE, who discovered two new **elements**, leading to a treatment for **cancer**, and won two Nobel Prizes. But they probably haven't heard of **Katia Krafft**, the fearless scientist who dedicated her whole life to studying volcanoes and even camped inside one! Or **TU YOUYOU**, the determined chemist who spent months on a remote island away from her family trying to invent a medicine for the life-threatening disease malaria – and succeeded.

Their achievements were extraordinary – so, why doesn't everyone know their names?

In the past, many people believed that science was a job for men. They didn't think that women could be physicists or chemists, doctors or astronauts, and they definitely didn't think women should be hanging around active volcanoes! They thought women just weren't as smart, and that it would be better if they stayed at home to look after their husbands and children.





Because of this, women were not always given the same education as men. Many schools and universities did not accept female students. And even when they did, some families still forbade their daughters from going. As a child, CAROLINE HERSCHEL, who was the first professional female astronomer, wasn't allowed to go to school because her parents wanted her to be a servant instead. Women also faced **prejudice** because of where they came from, how much money they had and the colour of their skin.



Many women fought against these stereotypes and proved them wrong. Botanist **Janaki Ammal** called off her arranged marriage – she wanted to do a **Master's degree** instead. **Elizabeth Blackwell** showed the world exactly why we need female doctors. And **MAE JEMISON** made history when she became the first African-American woman to soar into space.



But it wasn't always easy. Even once women were allowed to study and work at universities, often they weren't given proper laboratories to work in, weren't paid the same as male scientists and weren't always given the credit for their work. It was Rosalind Franklin who first discovered the double helix structure of **DNA**, but most people think it was James Watson and Francis Crick.

This book tells the stories of just some of the most incredible female scientists the world has ever seen and the work they did. They lived at different times and came from many different countries and backgrounds. But they have a few things in common ...

They were smart, inquisitive and persistent.

They NEVER GAVE UP on their DREAMS.

And, not only did they change the world's understanding of science, they transformed people's ideas of what women can do.

Prepare to be inspired!



When **MAE JEMISON** watched the first **SPACE MISSIONS** on TV as a little girl, she knew that she'd become an astronaut one day.



Mae was born in Alabama, USA, in **1956**, just as the **Civil Rights Movement** was taking off. Black Americans had been treated badly for many years, particularly in the southern states. There were strict laws that kept white and black people separate. Black people often had to go to different schools and weren't allowed to work in certain jobs. This was called **segregation**. But now people like **ROSA PARKS** and **MARTIN LUTHER KING** were demanding equal rights for everyone. There were protests, arguments and fighting.

When Mae was eight, the US government finally passed laws saying that all Americans should have **EQUAL RIGHTS** – this meant women and people of colour should be treated the same way as white men. Now they could vote and get the same jobs. But even though the law had changed, lots of people **DIDN'T CHANGE THEIR MINDS**, and still thought black people were inferior.





Hardly anyone in the **1960s** imagined that a black woman could be a scientist. Mae's favourite TV programme, *Star Trek*, had a black female officer called Uhuru on board the Starship Enterprise, but that was science fiction. When **NASA** sent real astronauts into space, they were mainly all white men.



Some black women worked at NASA during the **Space Race**, like **KATHERINE JOHNSON**, **DOROTHY VAUGHAN** and **MARY JACKSON**, but it took years before they became famous for their amazing work.



Mae was cross that there weren't any female astronauts – and **VERY** cross that nobody could give her a good reason why not.



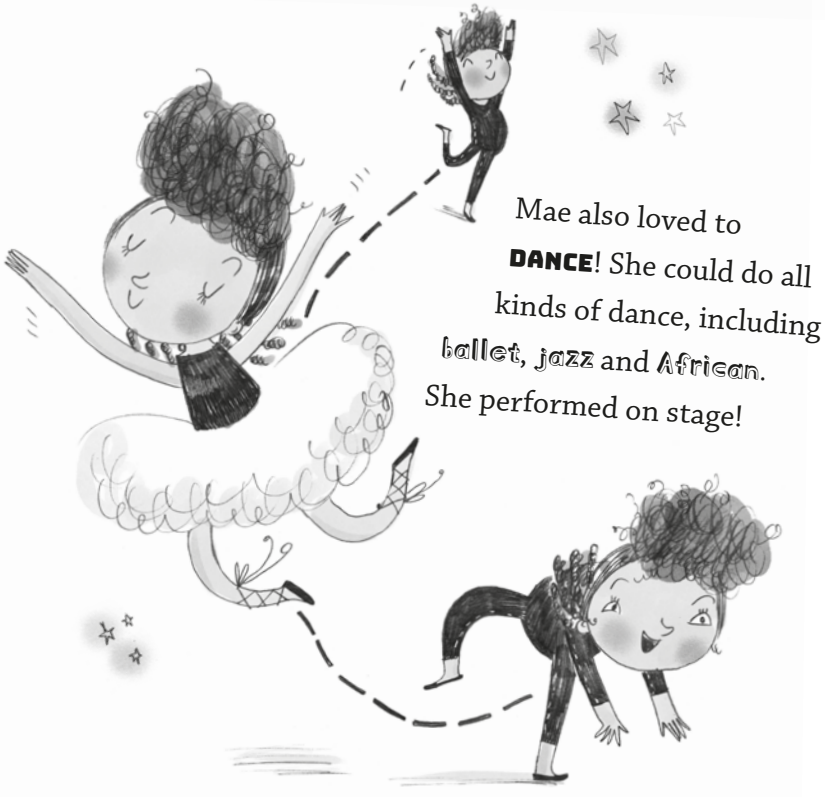
She spent ages in libraries, reading about **SCIENCE** and **astronomy**, and learning about black American scientists and doctors. She studied the world around her – not just the stars, but animals, flowers, plants and the human body. She was **curious** about all the amazing things our bodies do, even the things that some people thought were **DISGUSTING**.



Mae learned a lot of other **SKILLS** too.

She learned to **SEW** and to design clothes for her dolls and then for herself ...





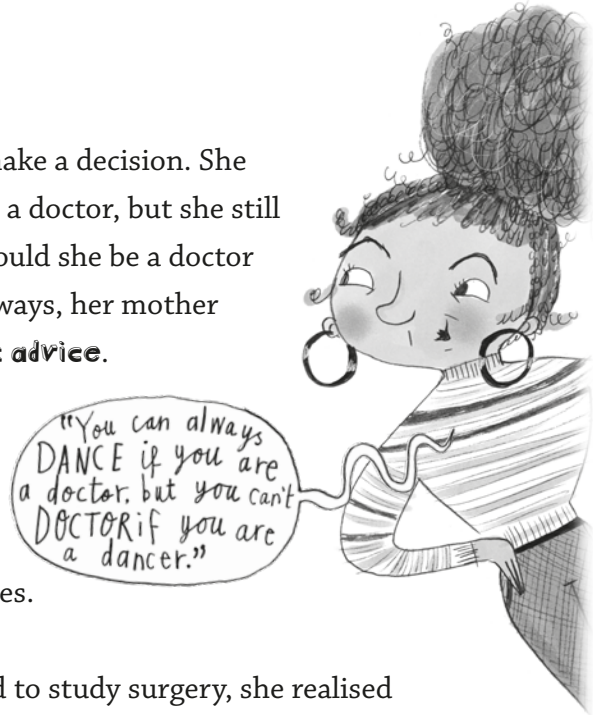
Mae also loved to **DANCE**! She could do all kinds of dance, including ballet, jazz and African. She performed on stage!

Mae was a **brilliant student**. Aged **SIXTEEN**, she went to Stanford University, one of the top colleges in America, to study **ENGINEERING**. At the time, very few white or black women did engineering. Some of the teachers treated Mae worse than white men in the same class.



Mae didn't let unfair teachers put her off. She got her engineering degree and studied African and Afro-American history too.

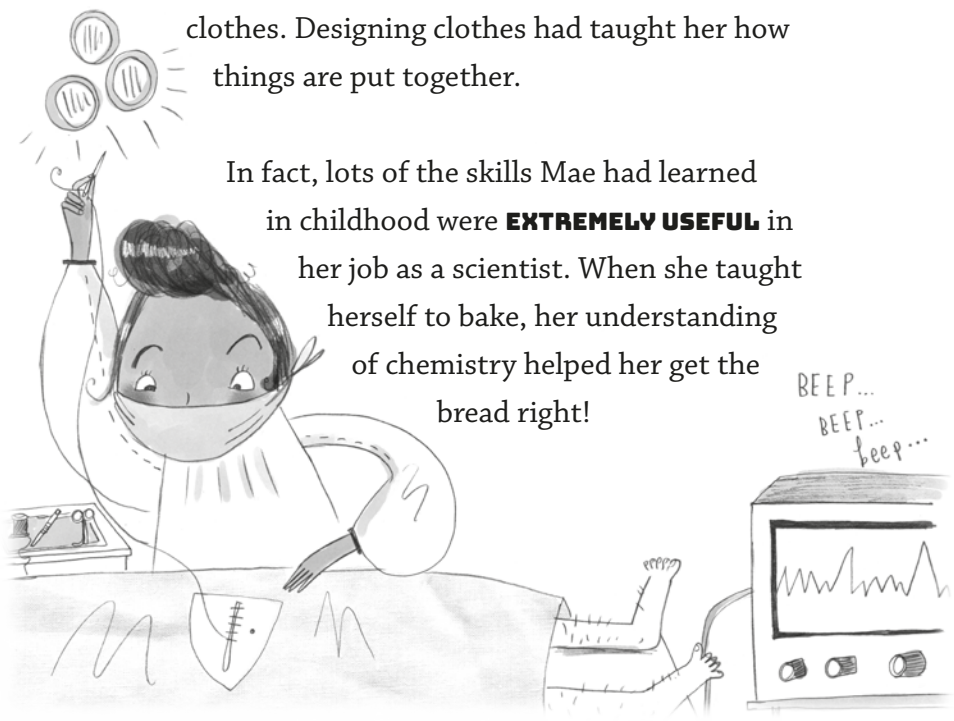
Then she had to make a decision. She wanted to train as a doctor, but she still loved dancing. Should she be a doctor or a dancer? As always, her mother had some **brilliant advice**.



Mae went to medical school – but she kept taking dance classes.

When Mae started to study surgery, she realised she could apply the **SKILLS** she'd learned from making clothes. Designing clothes had taught her how things are put together.

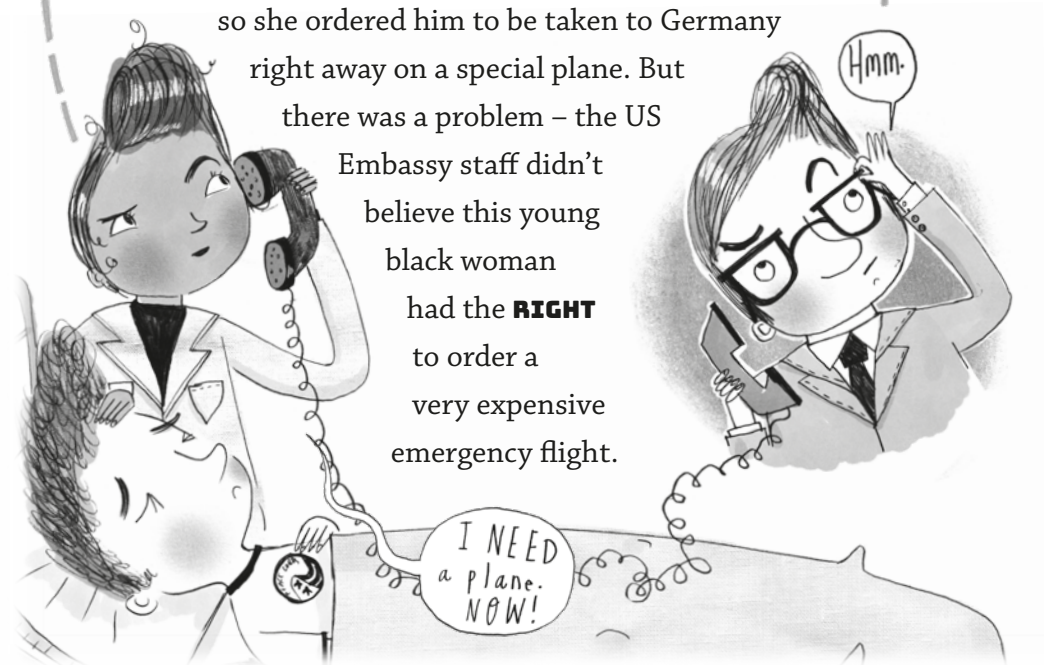
In fact, lots of the skills Mae had learned in childhood were **EXTREMELY USEFUL** in her job as a scientist. When she taught herself to bake, her understanding of chemistry helped her get the bread right!





Mae worked for a little while as a doctor, but she wanted to do more. She joined the **Peace Corps**, a US government programme that sends **VOLUNTEERS** to work with governments, charities and businesses. She spent a couple of years working as a doctor in Liberia and Sierra Leone, which are very poor countries in West Africa.

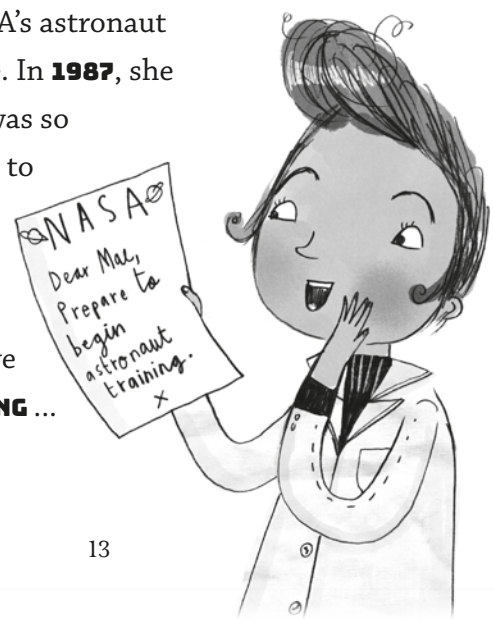
Just after Mae arrived in Sierra Leone, a volunteer fell ill. Mae quickly realised he had **MENINGITIS** with **DANGEROUS** complications. There were no local hospitals that could give him the treatment he needed, so she ordered him to be taken to Germany right away on a special plane. But there was a problem – the US Embassy staff didn't believe this young black woman had the **RIGHT** to order a very expensive emergency flight.





Mae was an **EXPERIENCED DOCTOR** by now. She told the Embassy staff the flight was vital, and she didn't need anyone's permission to order it! She got her plane and stayed awake looking after her patient for ~~fifty-six~~ **hours** until they reached the German hospital. The patient survived.

Mae loved being a doctor, but she'd never forgotten her dream of **REACHING THE STARS**. In **1983**, **SALLY RIDE** became the first American woman to go into space. Now, at last, it seemed possible. Mae applied to NASA's astronaut training programme. In **1987**, she was accepted. Mae was so excited! But she had to wait several years before she was sent on **A MISSION**. First, she had to have **ASTRONAUT TRAINING** ...



ASTRONAUT TRAINING

WELCOME TO ASTRONAUT SCHOOL. YOU WILL BE BUSY!

FIG 1: LEARN HOW THE SPACE SHUTTLE WORKS

Practise using space technology inside this life-size model shuttle.

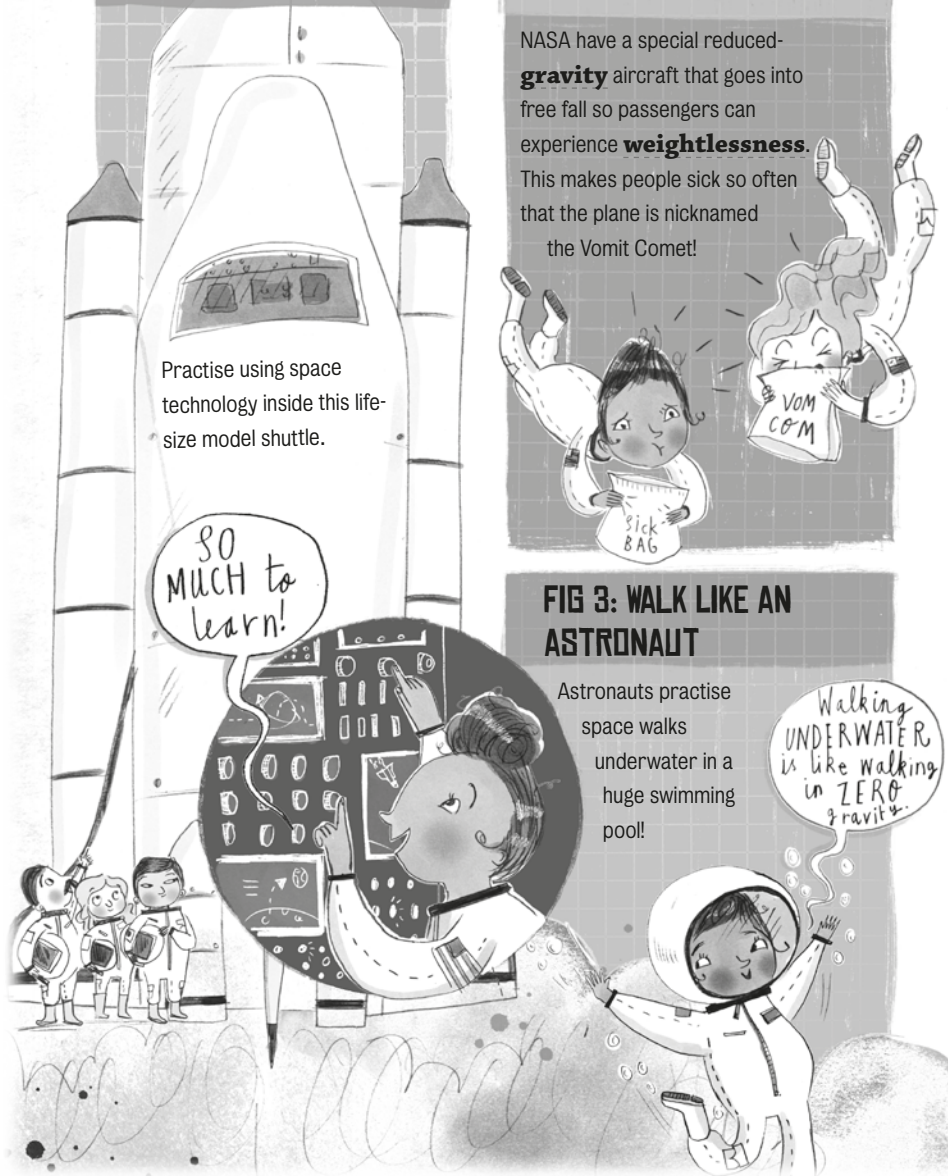


FIG 2: EXPERIENCE THE EFFECTS OF ZERO GRAVITY

NASA have a special reduced-**gravity** aircraft that goes into free fall so passengers can experience **weightlessness**. This makes people sick so often that the plane is nicknamed the Vomit Comet!

FIG 3: WALK LIKE AN ASTRONAUT

Astronauts practise space walks underwater in a huge swimming pool!

FIG 4: MASTER MOVING THINGS IN LOW GRAVITY

It's easy to start moving heavy things, but, because there is no friction, it's very hard to make them stop!

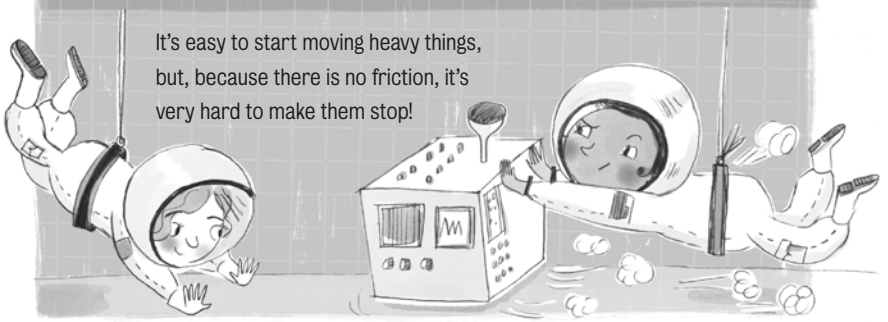


FIG 5: CALMLY DEAL WITH EMERGENCIES IN SPACE



FIG 6: KNOW WHAT TO DO IF A CREW MATE BECOMES SICK

