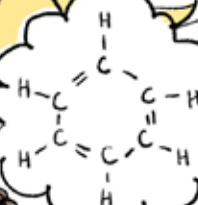
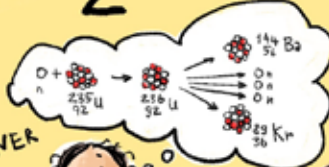


PIONEERS OF PROGRESS 2

ELIZABETH
GARRETT
ANDERSON

LISE
MEITNER

ROSA
BEDDINGTON



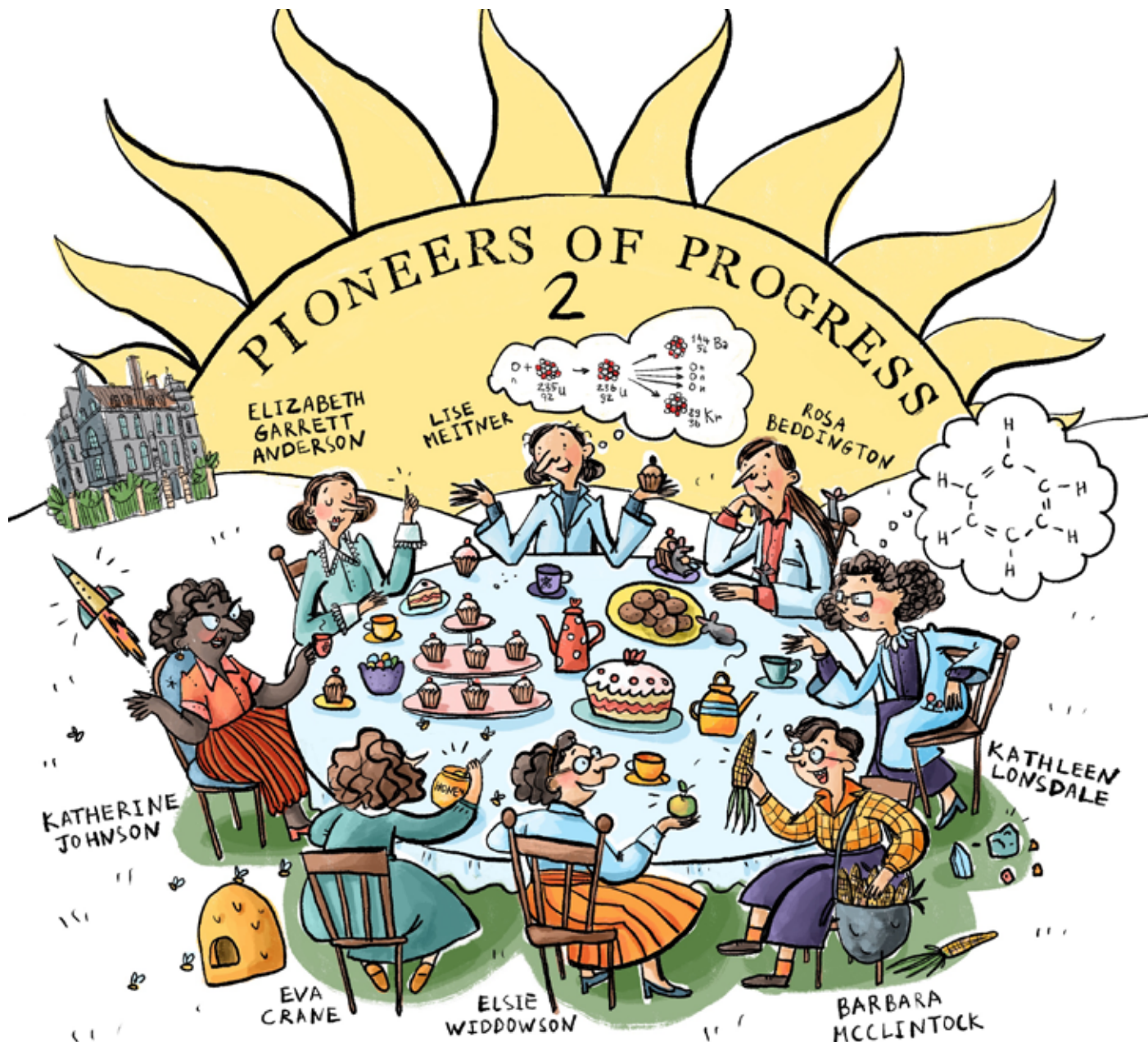
KATHERINE
JOHNSON

KATHLEEN
LONSDALE

EVA
CRANE

ELSIE
WIDDOWSON

BARBARA
MCLINTOCK





1908

WHAT DO
THEY WANT NEXT?
HALF OF THE
WORLD?



Pioneers of Progress II

Pioneers of Progress II continues to tell the tales of women whose contributions to scientific discovery made a huge impact on the world. Their work and scientific legacies have often gone unrecognised.

These eight women were pioneers in the truest sense of the word, and not only because of their scientific breakthroughs. Many were advocates for the education of women. All championed the proper recognition of the role of women in society, by acting as role models for those who have followed them.

These stories appear in chronological order. We begin with **Elizabeth Garrett Anderson**, who became the first woman to qualify as a physician in Britain, co-founded the first hospital staffed by women, and opened the medical profession to women. Physicist **Lise Meitner** contributed to the discovery of the element protactinium and of nuclear fission. She declined an offer to work on the Manhattan Project, and was described by her nephew as “a physicist who never lost her humanity”. American geneticist **Barbara McClintock** was awarded the 1983 Nobel Prize in Physiology and Medicine. Her research focused on developing ways to visualise and characterise maize chromosomes. She discovered transposons and understood their role in evolution and genome change well before others. The crystallographer and prison reformer **Kathleen Lonsdale** was one of the first two women elected to the Royal Society (along with Marjory Stephenson). Lonsdaleite, an allotrope of carbon and a rare form of diamond formed when meteorites strike the Earth, was named after her. The nutritionist **Elsie Widdowson**, older sister to Eva Crane, studied chemistry at Imperial College. She oversaw the addition of vitamins to food during rationing in Britain in World War II. **Eva Crane**, born Ethel Eva Widdowson and younger sister of Elsie, became one of the greatest writers on bees and beekeeping of the 20th century, though her original subjects were mathematics and quantum mechanics. **Katherine Johnson** was an American mathematician whose calculations of the mechanics of orbits as a NASA scientist were key to the success of crewed spaceflights. She earned a reputation for complex manual calculations and helped to pioneer the use of computers. She was one of the first African-American woman to work as a NASA scientist, and her life is the subject of the 2016 film *Hidden Figures*. The career of British biologist **Rosa Beddington** had a major impact on developmental biology and the understanding of the fate of cells in the early embryo.

Pioneers of Progress Book II is the second in a series that follows **Heroes of Health**, a comic book that describes how the Medical Research Council began, more than 100 years ago. It tells the stories of some of the ground-breaking discoveries that have transformed the way we all live. We hope you enjoy this book.

For more information contact:

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EVA CRANE

QUEEN OF BEES

THIS CURIOUS PASSION
FOR A SMALL INSECT CAN
TRANSCEND BARRIERS OF
POLITICS, RACE AND LANGUAGE
AND BRING STRANGERS
TOGETHER AS FRIENDS.



SYDENHAM COUNTY SCHOOL

WELL DONE
EVA WIDDOWSON,
YOU SEEM TO HAVE
THE SAME APTITUDE
FOR SCIENCE AS
YOUR SISTER ELSIE.

$$\frac{x+2}{3x} =$$

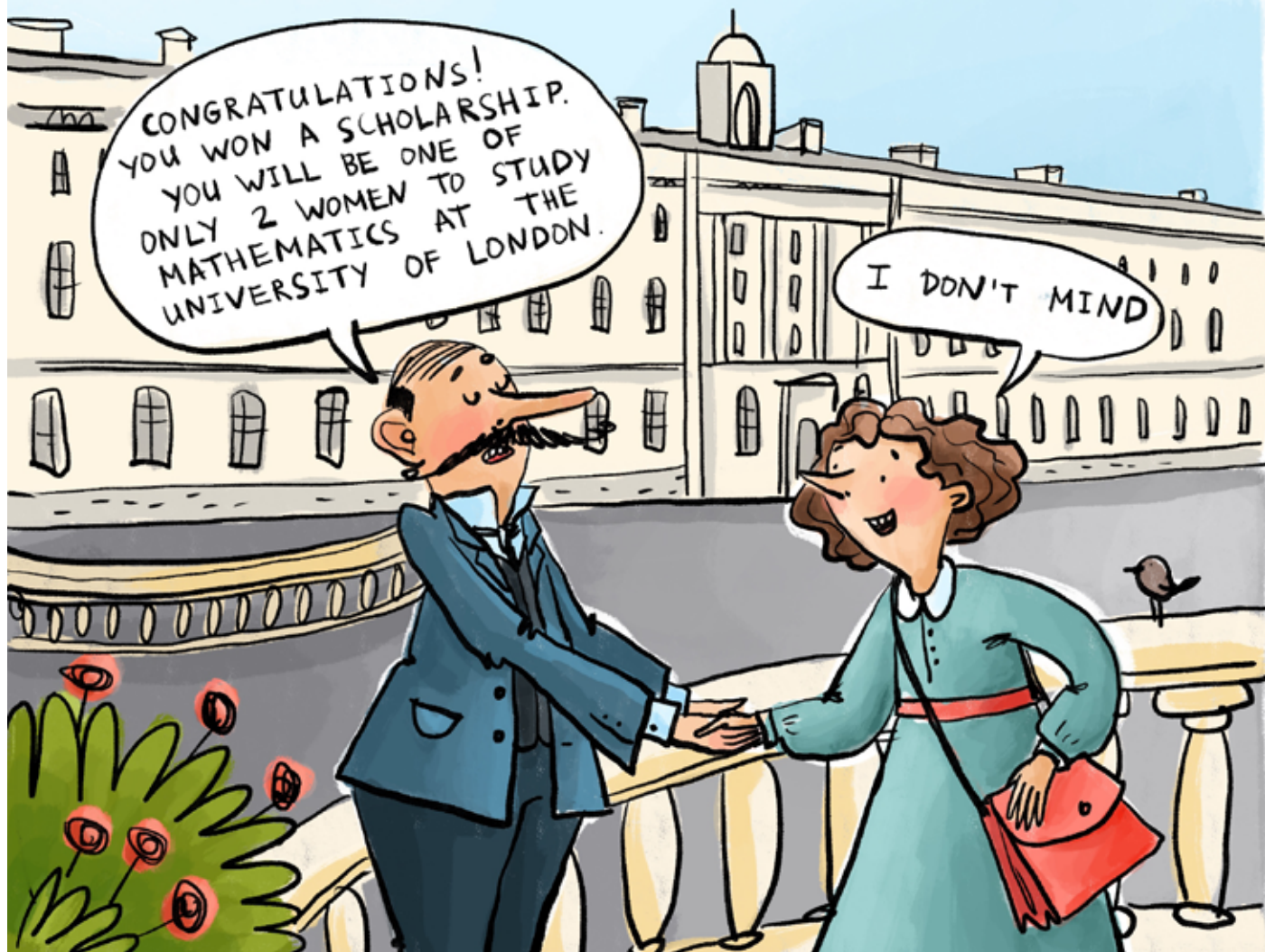
KNOW
IT ALL...



1933. KING'S COLLEGE, LONDON

CONGRATULATIONS!
YOU WON A SCHOLARSHIP.
YOU WILL BE ONE OF
ONLY 2 WOMEN TO STUDY
MATHEMATICS AT THE
UNIVERSITY OF LONDON.

I DON'T MIND



1941, SHEFFIELD UNIVERSITY.

YOUR RESUMÉ IS PRETTY
IMPRESSIONING. YOU HAVE A
BSc IN MATHS AND MSc IN
QUANTUM MECHANICS AND
A PhD IN NUCLEAR PHYSICS.
WE EXPECT GREAT THINGS
FROM YOU.









1950 - 1990

INTERESTING
PREHISTORIC HONEY
COLLECTION!

RESEARCHING BEE
KEEPING ON REMOTE
ISLANDS. WHAT DID
I THINK?

HMM... THE ANCIENT
BABYLONIANS USED
HONEY TO PRESERVE
THEIR CORPSES...

... AND THE VIETKONG
USED BEES AS A
MILITARY WEAPON.

2001

DR. CRANE, I'M FROM
THE UNITED STATES
DEPARTMENT OF AGRICULTURE
IN LOUISIANA.
UNFORTUNATELY ALL OUR
BEES ARE DYING BECAUSE
THEY HAVE MITES. DO YOU
KNOW OF ANY
MITE-RESISTANT VARIETY

THANK YOU VERY MUCH!
WE WILL DO THAT.



I THINK YOU
COULD IMPORT
RUSSIAN QUEENS,
WHICH ARE MITE
RESISTANT.





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These illustrated tales were researched and written by Kirstin von Glasow with assistance from Susan Watts.

The beautiful illustrations are by Elina Ellis.

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2020

WHAT ARE
THEY ON ABOUT?
THEY ALREADY
HAVE THE VOTE!



