SKY-GAZING SCIENTIST EDITH FARKAS

as a meteorologist – a scientist who studies the weather.
up, up all the way through the sky to the **ozone layer**,
art of the atmosphere that **protects life on Earth** from the
rays. Edith's work was very important because it helped
see that Earth could be facing an **environmental disaster**.

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Start here.

I used a special instrument called a DOBSON SPECTROPHOTOMETER to get PRECISE measurements.

ANTARCTICA

WEATHER WATCH

In 1953, Edith was one of the only female meteorologists working in New Zealand. Her job was to track changes to the thickness of the ozone layer. At the time, this was used to predict patterns and changes in the Earth's weather and temperature.

STORM CLOUDS GATHER ...

In the 1980s the observations Edith had made for almost 30 years helped other scientists to see how much the ozone layer had changed over time. Due to pollution from man-made *CFC gases it was dramatically ~~thickening~~ thinning over Antarctica. (This thinning was often referred to as the 'hole' in the ozone layer.)

Where the ozone layer is thinner, living things on Earth are more likely to be be exposed to the Sun's damaging UV rays and develop illness.

*CFC GASES were found in aerosol sprays and refrigerators.

A FROZEN FIELD TRIP

In 1975, Edith travelled to Antarctica to get a different look at the ozone layer. She was the first Hungarian woman and the first female meterologist from New Zealand to step foot on the continent.

A BRIGHTER OUTLOOK

To stop the ozone layer from becoming more damaged, countries all came together and took **drastic action**. The use of CFCs was **banned**. It showed that when countries work together to reduce pollution **incredible** things **can** happen ...

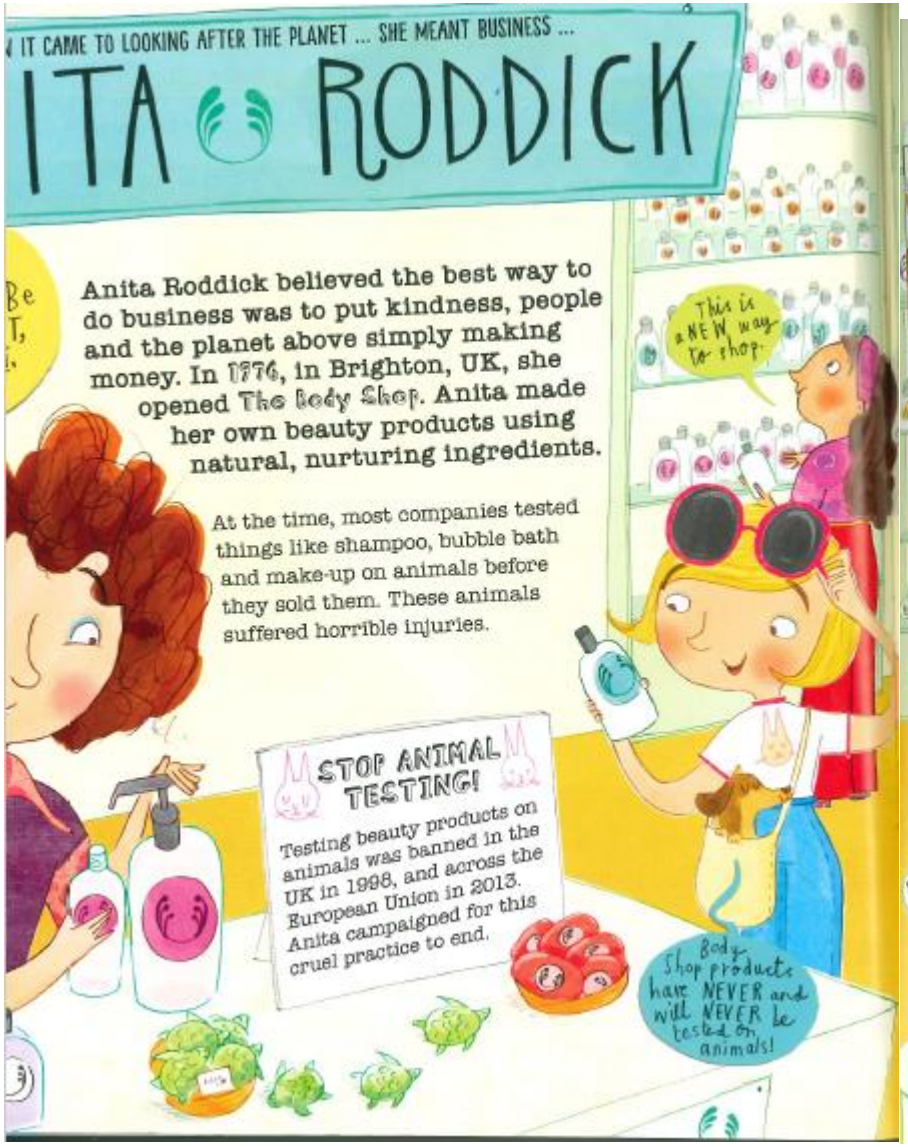
Edith's ozone research showed that watching changes to our planet over time is essential to protecting it for future generations.

IT CAME TO LOOKING AFTER THE PLANET ... SHE MEANT BUSINESS ...

ITA RODDICK

Anita Roddick believed the best way to do business was to put kindness, people and the planet above simply making money. In 1976, in Brighton, UK, she opened The Body Shop. Anita made her own beauty products using natural, nurturing ingredients.

At the time, most companies tested things like shampoo, bubble bath and make-up on animals before they sold them. These animals suffered horrible injuries.



STOP ANIMAL TESTING!

Testing beauty products on animals was banned in the UK in 1998, and across the European Union in 2013. Anita campaigned for this cruel practice to end.

The Body Shop was also one of the first companies to ...

BUY FAIR TRADE!

Anita used ingredients from around the world, including shea butter and Brazil nut oil. She ensured that farmers in poor communities could earn a decent living by paying them a fair price.

RECYCLE!

At the time, few people knew how important it is to reduce waste by recycling plastics. Anita gave customers the choice to refill their containers, rather than buying a new one each time. Now, The Body Shop recycle customers' empty pots and bottles instead.

HELP SAVE THE ENVIRONMENT!

Anita raised awareness of serious environmental issues. She encouraged customers to think differently. Posters and packaging around the shop displayed strong messages about things like ...

DEFORESTATION and ...

ENDANGERED ANIMALS.

Sadly, Anita died in 2007, but the way she did business has continued to inspire many other companies to work in ways that protect people and the planet.

INGEBORG BEING

In Germany in the late 1920s, Ingeborg Being helped to reveal the secret of what keeps all life on Earth ticking.

Ingeborg joined a team of scientists who noticed that bees did some **extraordinary things**. At the time some people mistakenly assumed bees were just chaotic insects, whose main ability was to make honey from nectar. However, Ingeborg proved that these **hard-working** little insects had another **astonishing** ability ...

We Can TELL the TIME!

INGEBORG'S EXPERIMENT:

Ingeborg wanted to see if she could train a hive of bees to expect food. She left food out for the bees between 4 p.m. and 6 p.m. Then she watched and waited ...

BEES!

4:00 p.m.
Tick, tock.

1:00 p.m.
Tick, tock.

Tick, tock.
6:30 a.m.

NO BEES.

Turn TEA Turn

Ingeborg's sugared water smelt like lavender.

This tasted just like the NECTAR we collect from FLOWERS.

The bees kept coming to the same place, at exactly the same time each day.

How do the bees know what time to come? Do they get clues from the outside world?

Ingeborg moved the bees inside to her laboratory. There, she was able to control time 'clues' that might be helping the bees to tell the time.

Inside the lab the BEES could not tell:
1. Changes in temperature
2. Changes in daylight
3. Position of the sun
4. Electrical charge of the atmosphere

Un-BEE-lievable! Do the bees have some sort of amazing INTERNAL NATURAL CLOCK?

It didn't make any difference. The bees were still **right on time!**

THE RHYTHM OF LIFE

Thanks to Ingeborg's work, we now know that animals and plants have an internal clock that is finely tuned to the length of a day on Earth (24 hours).

Don't BEE late!

I am so tired from my research. My clock tells me when to rest.

My clock tells me when to relegate my pollen.

My clock tells me the BEST time to visit flowers.

The **rhythm** of this clock is essential for **survival**. It tells all living things when to eat, sleep and be active. It is called a **circadian rhythm**.

Ingeborg showed that all creatures, including one as small as the bee, have the potential to reveal **awe-inspiring** secrets about nature.

The more **time** we dedicate to protecting the many species on Earth, the more we can **learn** about incredible **living things** and ourselves.