Northern Ireland Curriculum

NORN IRON'S ORDINARY HEROES!



INTRODUCTION

This comic celebrates some of the ordinary people in Northern Ireland who have achieved extraordinary success in the areas of STEM (Science, Technology, Engineering and Mathematics). As you read about them, can you identify the skills and capabilities demonstrated by our ordinary heroes? Developing these skills along with a love of STEM subjects could provide you with exciting opportunities just like the people in this comic! Northern Ireland is waiting to see who its next ordinary STEM heroes are…. It's possible it might be you!

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Rewarding Learning

TEACHERS

STEM stands for Science, Technology, Engineering and Mathematics. There is increasing interest in promoting STEM subjects among young people for a variety of reasons, including the need to promote sustained economic growth.

In 2009 the Department of Education (DE) and the Department of Employment and Learning (DEL) published the STEM Review and a draft STEM Strategy. The vision outlined in the STEM Report (2009) is defined as:

Empowering future generations through science, technology, engineering and mathematics to grow a dynamic, innovative economy.

Norn Iron's Ordinary Heroes aims to bring STEM learning beyond the traditional STEM subjects. The comic genre was carefully selected so as to capture the attention of young people and allows pupils to access, in an appropriate way, an introduction to some complex scientific phenomena. It is not intended that pupils understand the science in its entirety but rather, they appreciate and become inspired by the lives of those ordinary men and women who have contributed to our society and our economy in extraordinary ways. As such it may inspire pupils' curiosity to ask questions about the science and technology. Moreover, it may allow them to realise that they too can contribute to the future of a STEM-related economy.

The comic has been developed to support learning and teaching in both Key Stages 2 and 3, providing a stimulus for STEM-related learning across the curriculum. It supports the Department of Education's Every School A Good School (ESAGS) policy for school improvement, specifically relating to the indicator that places an emphasis on literacy across the curriculum.

There are endless ways in which the facilitation and application of the comic can be used innovatively to promote learning across the curriculum. Indeed the comic could be used as a tool for collaborative projects between primary and post primary schools.

Other ideas have been provided below.

KEY STAGE 2	KEY STAGE 3
■ Pupils find out about local STEM heroes and use ICT to create mini biographies and/or fact-files. ■ Use ICT software, such as Movie Maker and Comic Life to create an animation and comic to celebrate the achievements of local STEM heroes; ■ Pupils go on a scavenger hunt through magazines to find words that describe the STEM ordinary heroes and create a collage; ■ Choose an object from a STEM ordinary hero story and invite pupils to write newspaper headlines and/or articles about it; ■ Pupils imagine they were one of the first people saved by Frank Pantridge's invention. Pupils write a letter to him: Explain who they are and why they are writing; How they feel about the invention; What they think Pantridge should do now.	■ Pupils take on the role of one of the ordinary heroes and write a speech outlining their invention/discovery; ■ Pupils select adjectives to describe a STEM hero, provide evidence and explain their choices; ■ Pupils research articles about related current discoveries or inventions and create a poster to illustrate and explain; ■ Pupils research articles about related current discoveries or inventions and create a presentation for use in the Dragon's Den; ■ Organise a debate. Provide pupils with a 'for' or 'against' position and invite them to debate a given proposition. An example might be, **'Pesticide residues on our food is not a cause for concern for consumers'**. This could also be used in a Walking Debate activity. Alternatively, it could form the stimulus for an online discussion. ■ Call a related topical press conference. Pupils take notes and ask questions relating to the announcement. They could then create a radio news report and record it as a podcast using ICT software such as, Audacity.

CCEA have produced a range of resources in response to the STEM Review and to support learning and teaching. At primary, a number of STEM Thematic units have been developed and at post primary the STEMWorks website offers a range of support and resources. All of this material can be found at **www.nicurriculum.org.uk**.

FRANK PANTRIDGE

THE MAN WHO SAVED THE LIVES OF MILLIONS

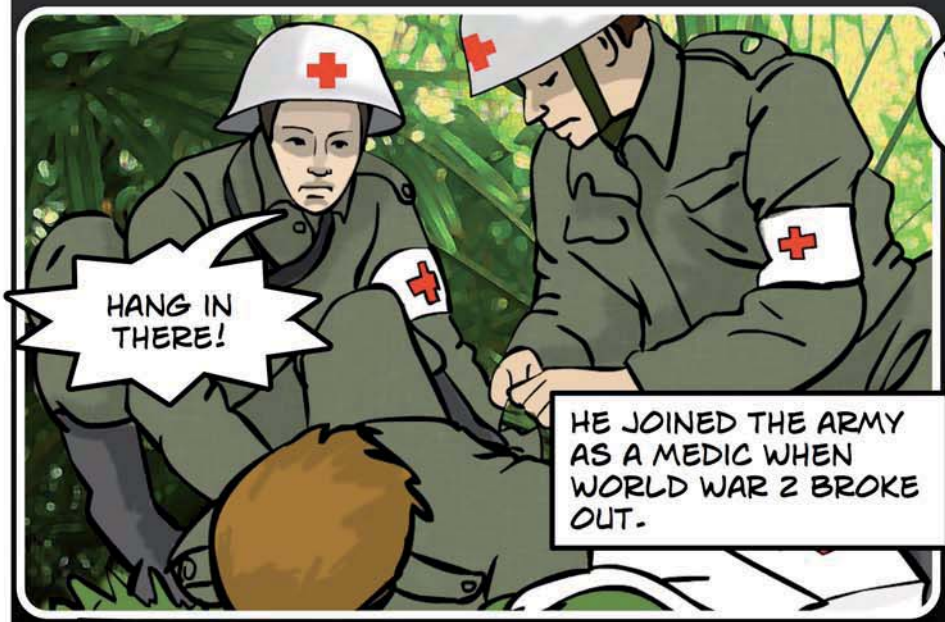


THE SLEEPY TOWN OF HILLSBOROUGH 1916...



FRANK STOOD OUT FROM THE CROWD AT FRIENDS' SCHOOL, LISBURN.





HE JOINED THE ARMY AS A MEDIC WHEN WORLD WAR 2 BROKE OUT.

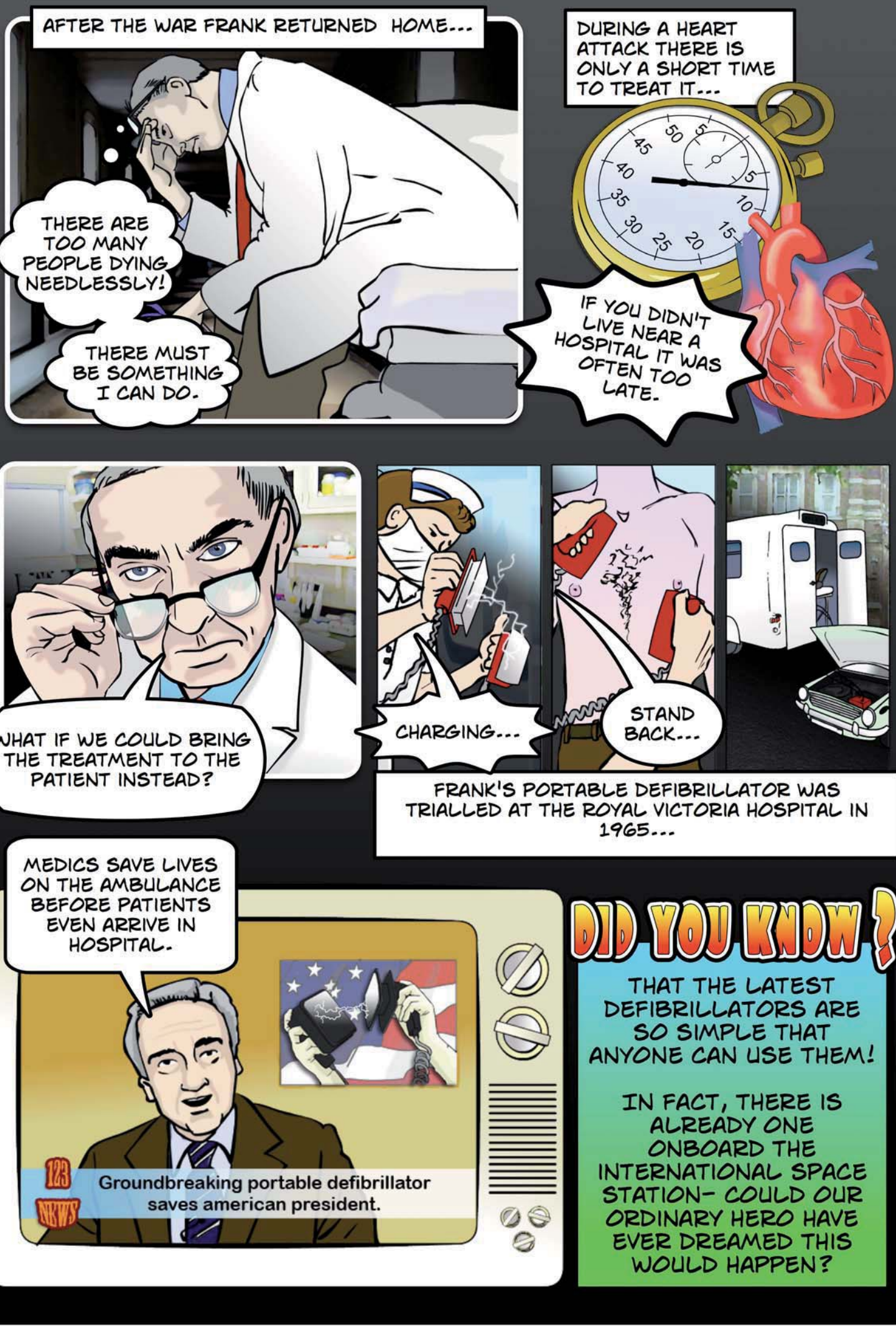


HE WAS TAKEN PRISONER AND WATCHED MANY MEN DIE.

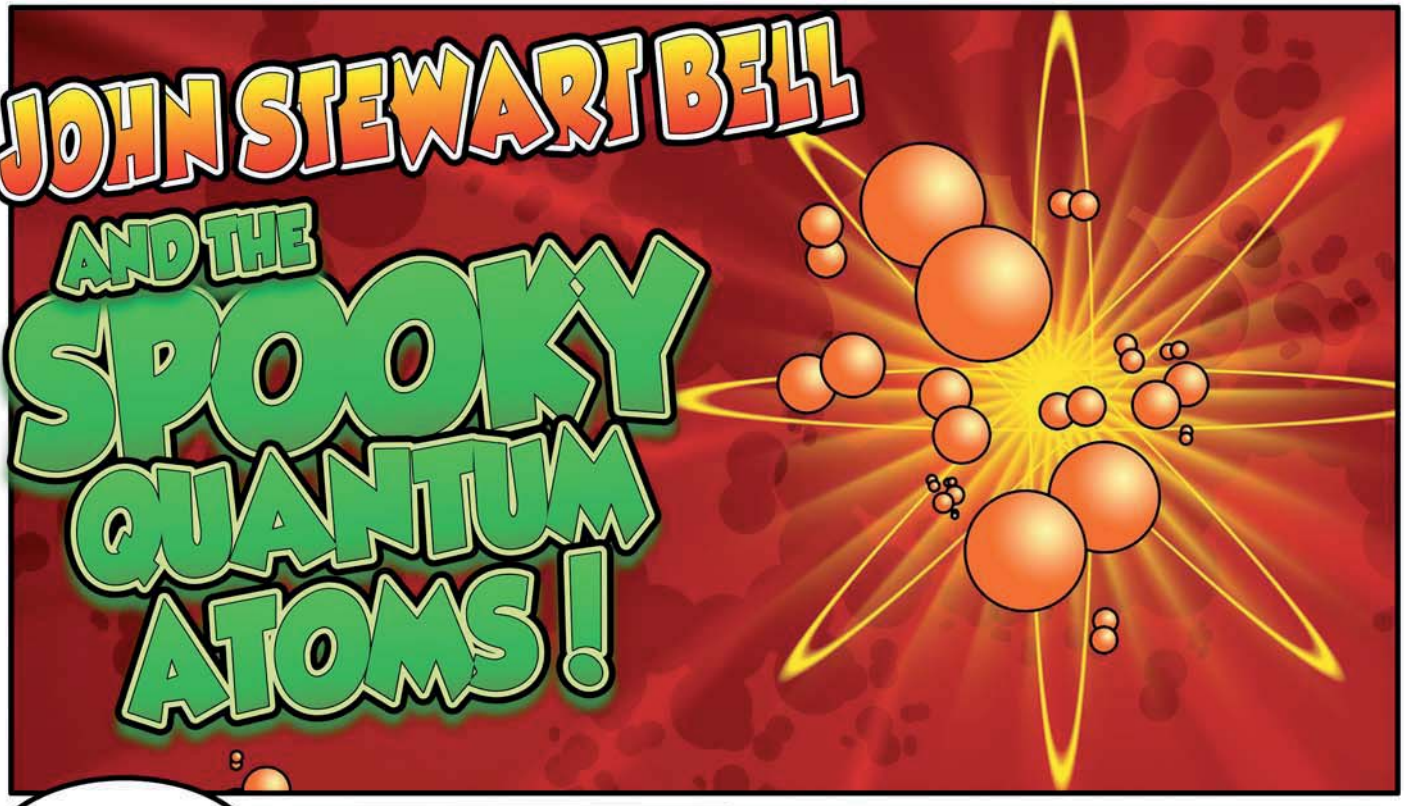
EVEN WITHOUT MEDICINE...FRANK PERSEVERED... IT WAS HIS MISSION TO SAVE LIVES.

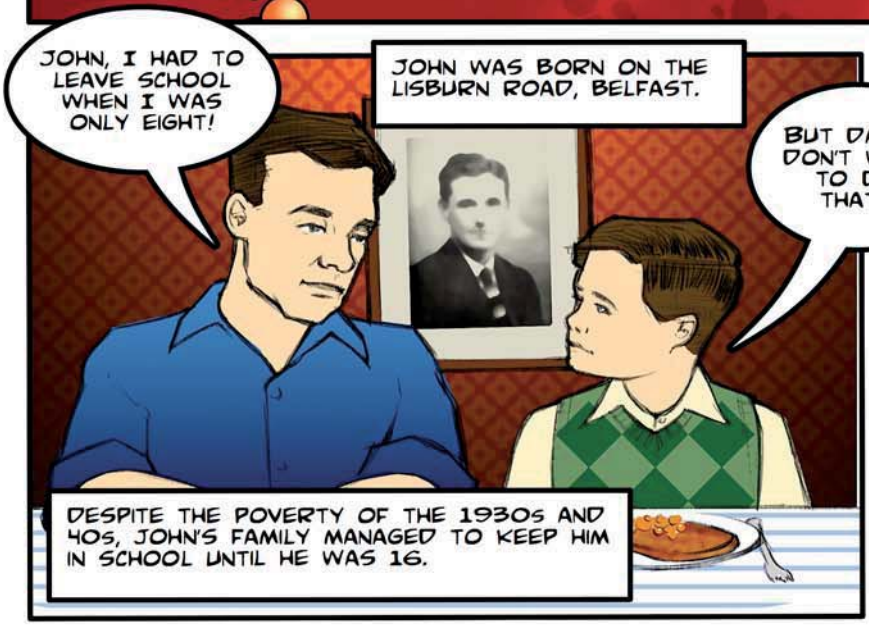


HE NEVER FORGOT THE CRUELTY HE SAW.

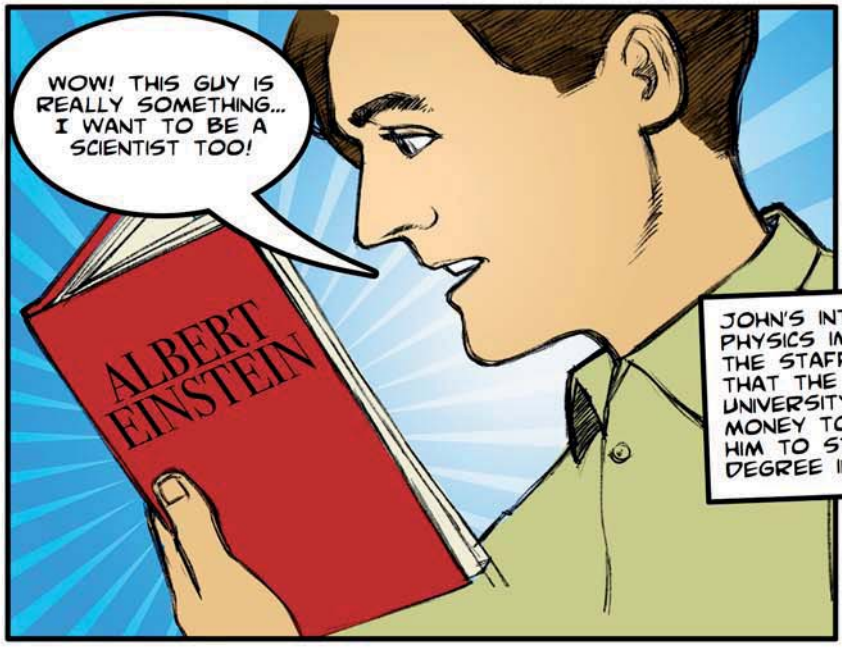

AFTER THE WAR FRANK RETURNED HOME...
THERE ARE TOO MANY PEOPLE DYING NEEDLESSLY!
THERE MUST BE SOMETHING I CAN DO.
DURING A HEART ATTACK THERE IS ONLY A SHORT TIME TO TREAT IT...
IF YOU DIDN'T LIVE NEAR A HOSPITAL IT WAS OFTEN TOO LATE.
WHAT IF WE COULD BRING THE TREATMENT TO THE PATIENT INSTEAD?
CHARGING...
STAND BACK...
FRANK'S PORTABLE DEFIBRILLATOR WAS TRIALLED AT THE ROYAL VICTORIA HOSPITAL IN 1965...
MEDICS SAVE LIVES ON THE AMBULANCE BEFORE PATIENTS EVEN ARRIVE IN HOSPITAL.
123 NEWS
Groundbreaking portable defibrillator saves american president.
DID YOU KNOW?
THAT THE LATEST DEFIBRILLATORS ARE SO SIMPLE THAT ANYONE CAN USE THEM!
IN FACT, THERE IS ALREADY ONE ONBOARD THE INTERNATIONAL SPACE STATION- COULD OUR ORDINARY HERO HAVE EVER DREAMED THIS WOULD HAPPEN?

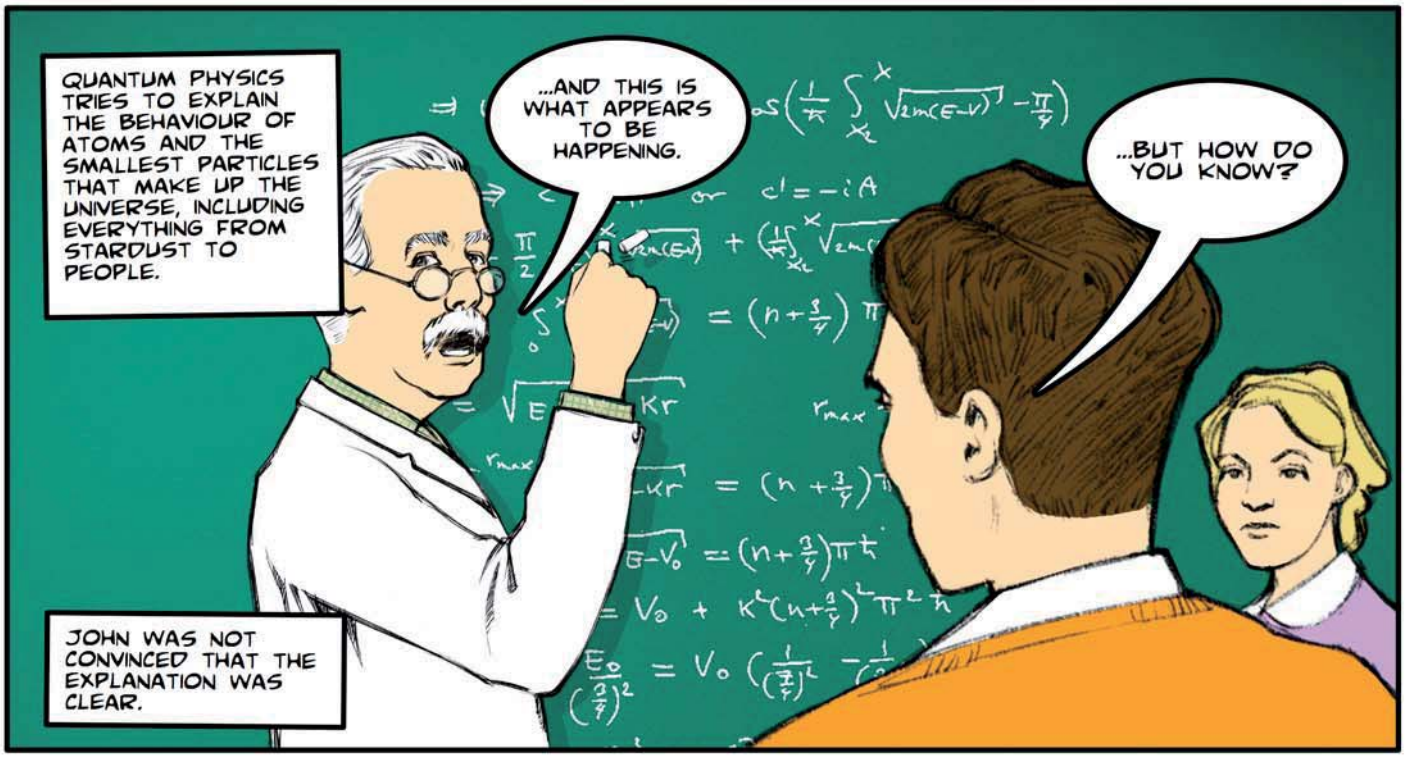
JOHN STEWART BELL AND THE SPOOKY QUANTUM ATOMS!



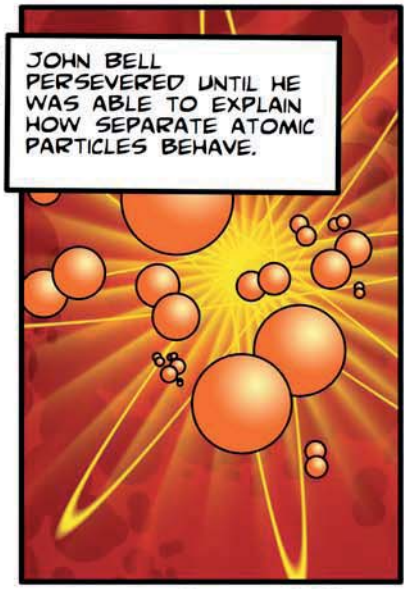


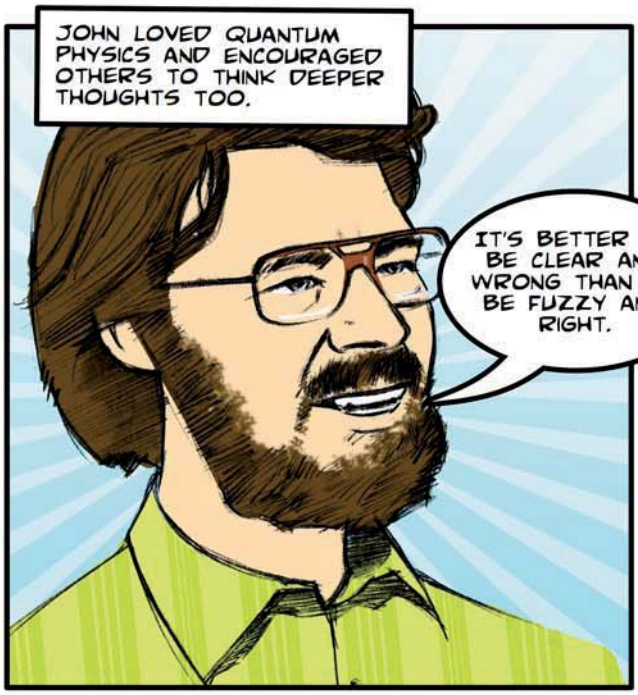


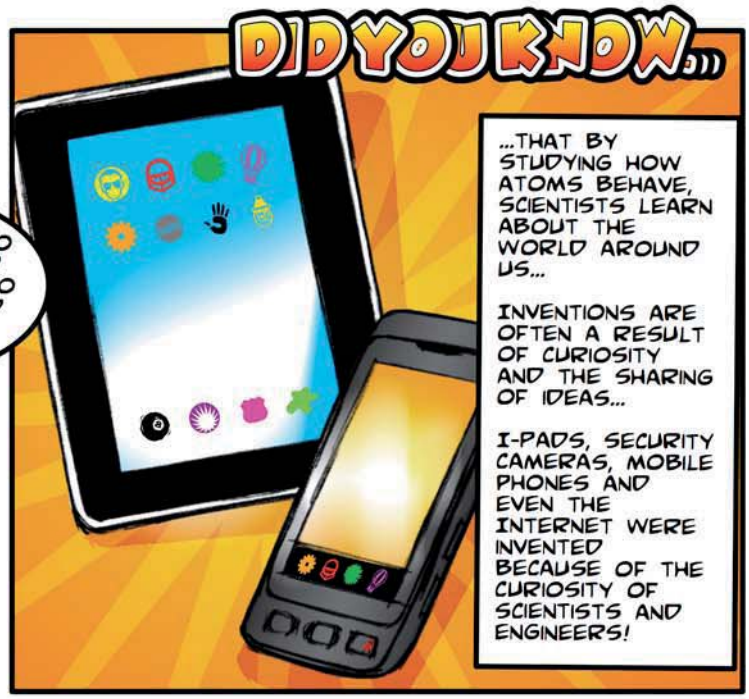



QUANTUM PHYSICS TRIES TO EXPLAIN THE BEHAVIOUR OF ATOMS AND THE SMALLEST PARTICLES THAT MAKE UP THE UNIVERSE, INCLUDING EVERYTHING FROM STARDUST TO PEOPLE.
...AND THIS IS WHAT APPEARS TO BE HAPPENING.
...BUT HOW DO YOU KNOW?
JOHN WAS NOT CONVINCED THAT THE EXPLANATION WAS CLEAR.


THE ATOMS BEHAVE STRANGELY...
THE ONLY WORD TO EXPLAIN IT IS 'SPOOKY'!
IT LOOKS MORE LIKE MAGIC THAN SCIENCE!
I CANNOT EXPLAIN WHAT'S HAPPENING...


JOHN BELL PERSEVERED UNTIL HE WAS ABLE TO EXPLAIN HOW SEPARATE ATOMIC PARTICLES BEHAVE.

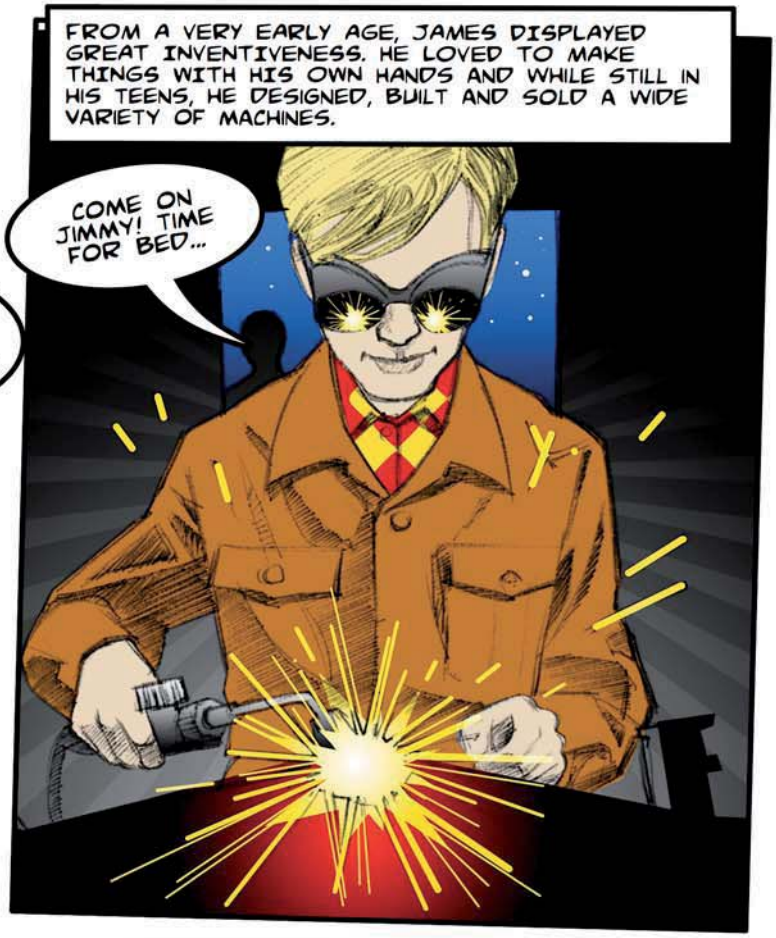

JOHN LOVED QUANTUM PHYSICS AND ENCOURAGED OTHERS TO THINK DEEPER THOUGHTS TOO.
IT'S BETTER TO BE CLEAR AND WRONG THAN TO BE FUZZY AND RIGHT.

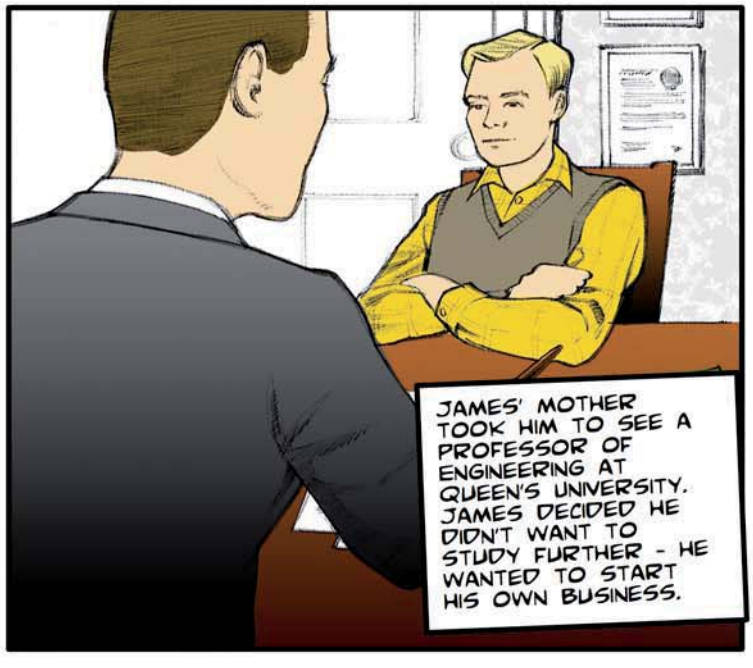

DID YOU KNOW...
...THAT BY STUDYING HOW ATOMS BEHAVE, SCIENTISTS LEARN ABOUT THE WORLD AROUND US...
INVENTIONS ARE OFTEN A RESULT OF CURIOSITY AND THE SHARING OF IDEAS...
I-PADS, SECURITY CAMERAS, MOBILE PHONES AND EVEN THE INTERNET WERE INVENTED BECAUSE OF THE CURIOSITY OF SCIENTISTS AND ENGINEERS!

SIR JAMES MARTIN AND THE EXPLODING SEAT THAT SAVED LIVES











FOR ONE CUSTOMER IN MANCHESTER, HE BUILT A SPECIALISED ROAD VEHICLE AND DROVE IT ALL THROUGH THE NIGHT IN ORDER TO SAVE THE EXPENSE OF HIRING A DELIVERY DRIVER.

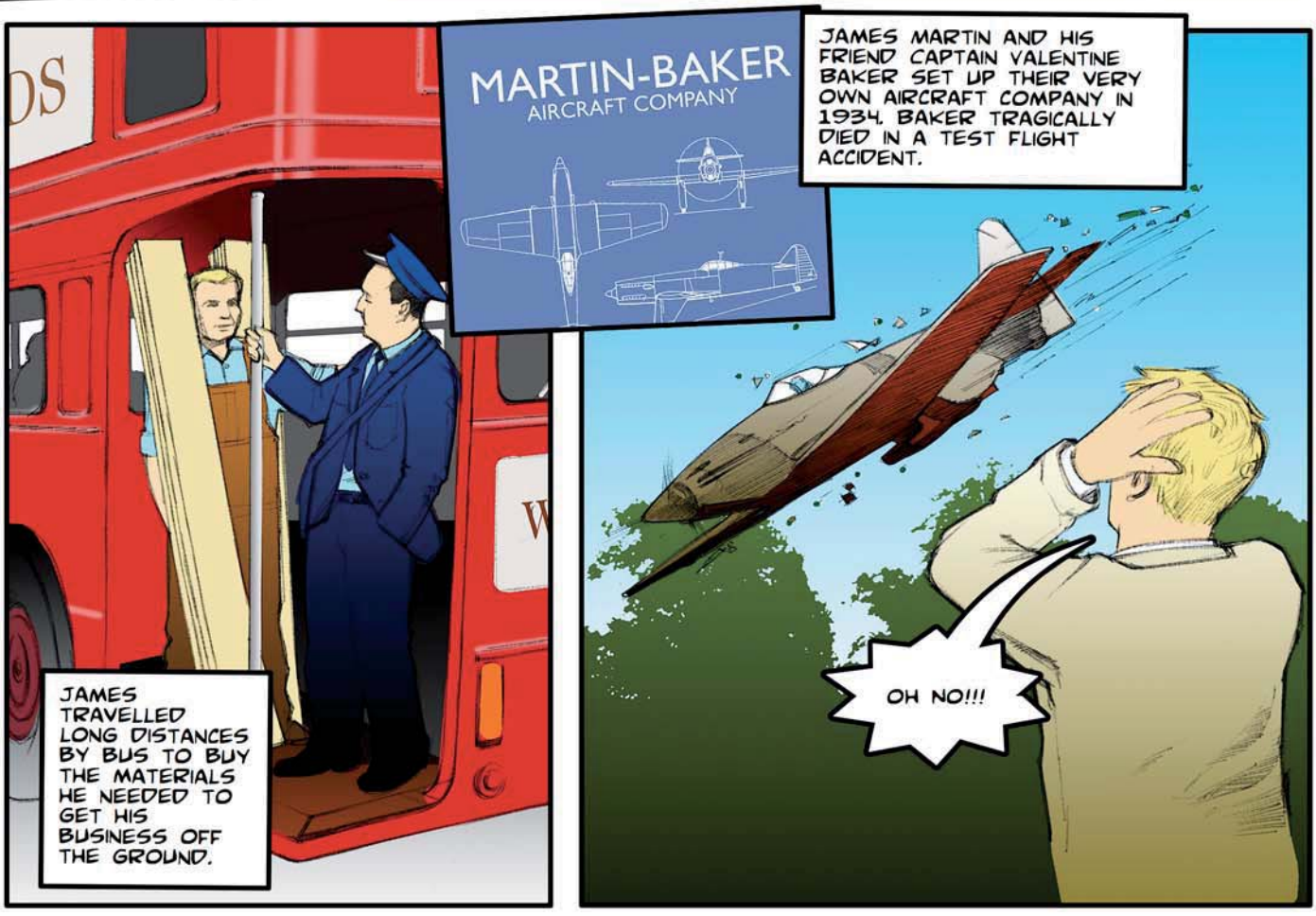
JAMES NEEDED SOMEWHERE CHEAP TO WORK FROM. HE FOUND A SMALL SHED IN ACTON, LONDON, AND THIS BECAME THE CENTRE OF HIS EARLY ACTIVITIES.

WHIRRRRR!!!

DO NOT DISTURB

BANG!

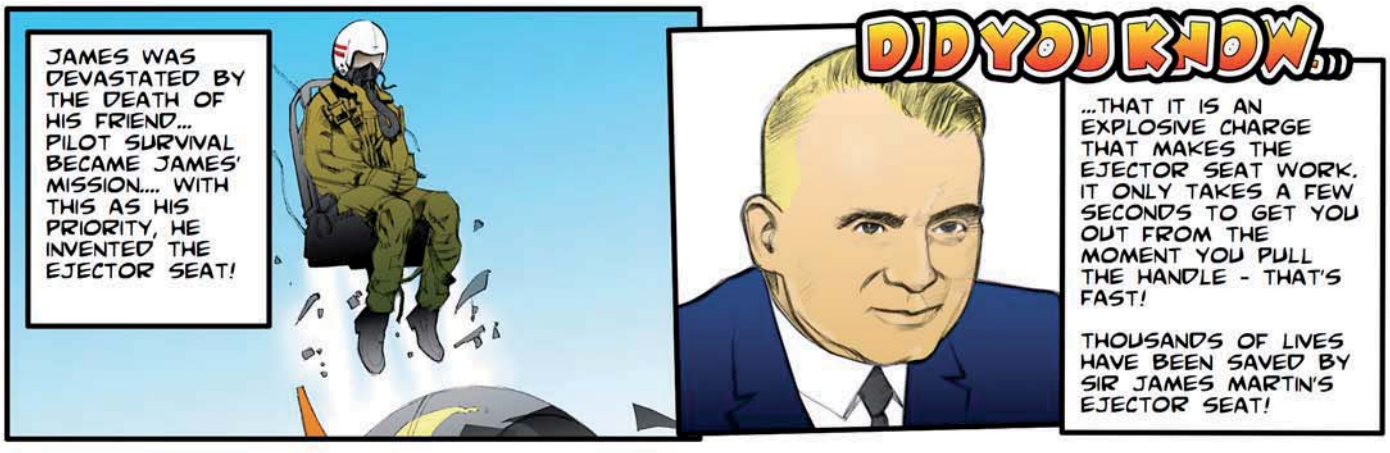
DRRRIIILLLLL!!!



JAMES MARTIN AND HIS FRIEND CAPTAIN VALENTINE BAKER SET UP THEIR VERY OWN AIRCRAFT COMPANY IN 1934. BAKER TRAGICALLY DIED IN A TEST FLIGHT ACCIDENT.

JAMES TRAVELLED LONG DISTANCES BY BUS TO BUY THE MATERIALS HE NEEDED TO GET HIS BUSINESS OFF THE GROUND.

OH NO!!!



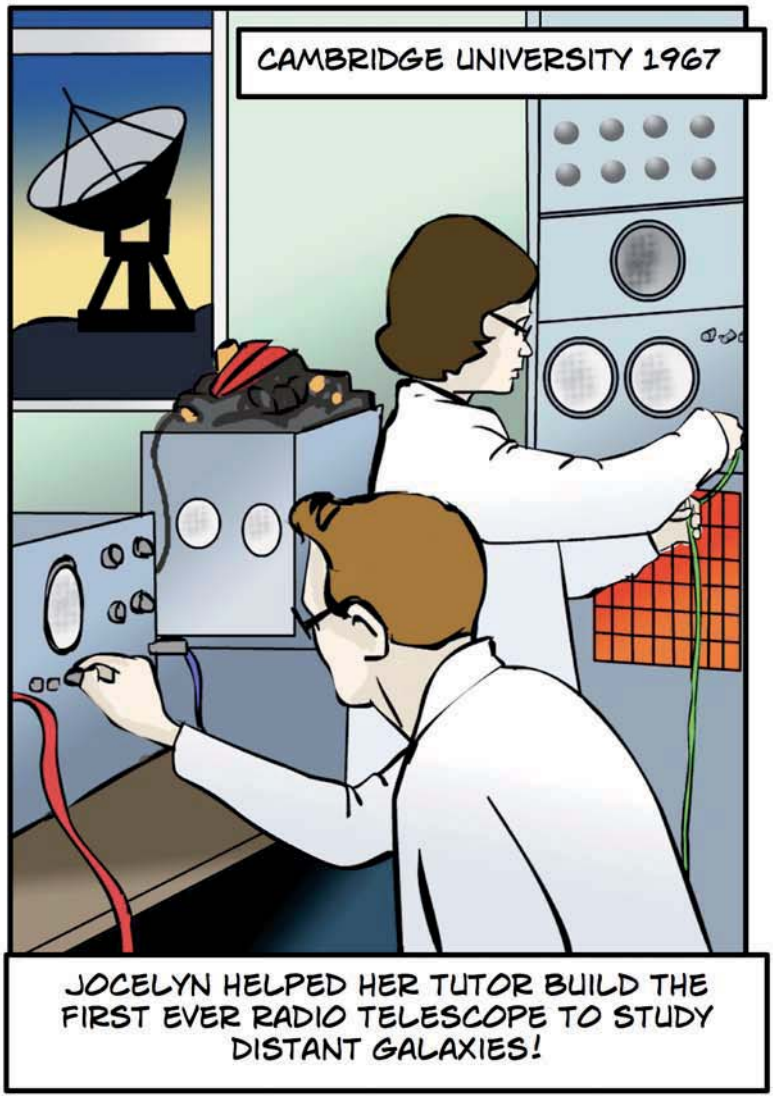
JAMES WAS DEVASTATED BY THE DEATH OF HIS FRIEND... PILOT SURVIVAL BECAME JAMES' MISSION.... WITH THIS AS HIS PRIORITY, HE INVENTED THE EJECTOR SEAT!

DID YOU KNOW...

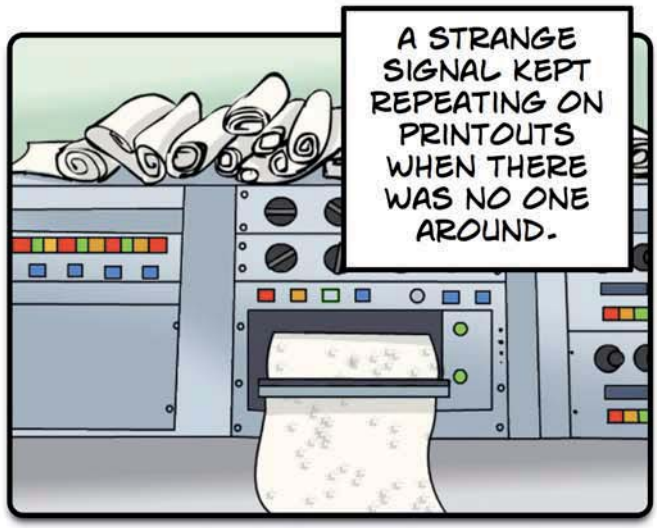
...THAT IT IS AN EXPLOSIVE CHARGE THAT MAKES THE EJECTOR SEAT WORK. IT ONLY TAKES A FEW SECONDS TO GET YOU OUT FROM THE MOMENT YOU PULL THE HANDLE - THAT'S FAST!

THOUSANDS OF LIVES HAVE BEEN SAVED BY SIR JAMES MARTIN'S EJECTOR SEAT!


THE COSMIC GIRL
---AND HOW THE LITTLE GREEN MAN ALMOST INTERRUPTED HER
JOCELYN BELL WAS BORN IN BELFAST IN 1943.
SHE FAILED THE TRANSFER TEST AND HER PARENTS SENT HER TO BOARDING SCHOOL IN YORK.
AS A CHILD SHE WENT TO LURGAN COLLEGE.
MR. TILLOT MAKES SCIENCE SO INTERESTING!
WELL DONE JOCELYN YOU CAME FIRST IN THE SCIENCE TEST.
THERE'S NO REASON WHY GIRLS CAN'T STUDY SCIENCE!
I'LL SPEAK TO THE PRINCIPAL ABOUT THIS JOCELYN...
THANKS TO HER PARENTS SHE WAS ALLOWED TO STUDY SCIENCE.
I WONDER WHAT'S REALLY OUT THERE IN SPACE??
THE RUSSIANS HAVE LAUNCHED SPUTNIK!
1957...
PHYSICS IS GOING TO HELP ME UNDERSTAND THE UNIVERSE.
THIS IS SO EXCITING!

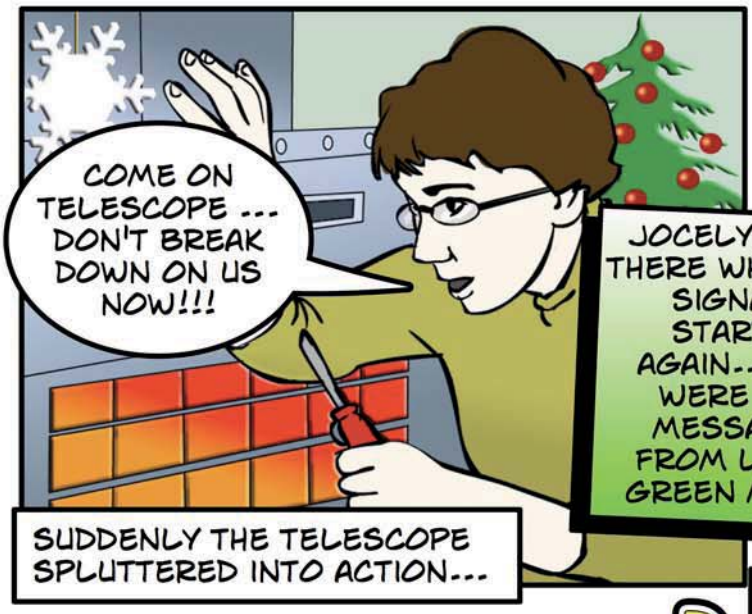


JOCELYN HELPED HER TUTOR BUILD THE FIRST EVER RADIO TELESCOPE TO STUDY DISTANT GALAXIES!



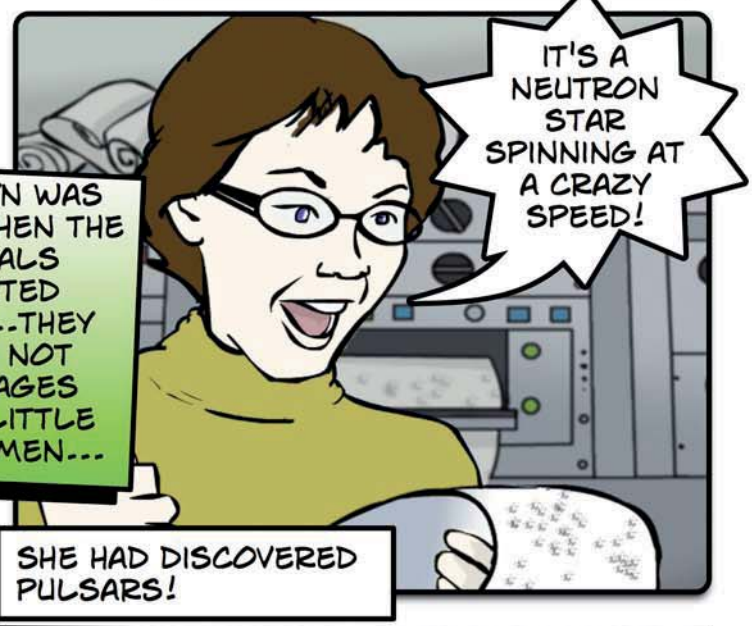


PEOPLE BEGAN TO THINK THE SIGNALS WERE MESSAGES FROM AN ALIEN SOURCE!



SUDDENLY THE TELESCOPE SPLUTTERED INTO ACTION...

JOCELYN WAS THERE WHEN THE SIGNALS STARTED AGAIN...THEY WERE NOT MESSAGES FROM LITTLE GREEN MEN...



SHE HAD DISCOVERED PULSARS!

DID YOU KNOW?

THAT HOW WE TELL THE TIME AND OUR CALENDAR CAME FROM THE STUDY OF STARS AND PLANETS. OF ALL THE COOL OBJECTS IN THE UNIVERSE, PULSARS HAVE TO BE ONE OF THE MOST MYSTERIOUS.

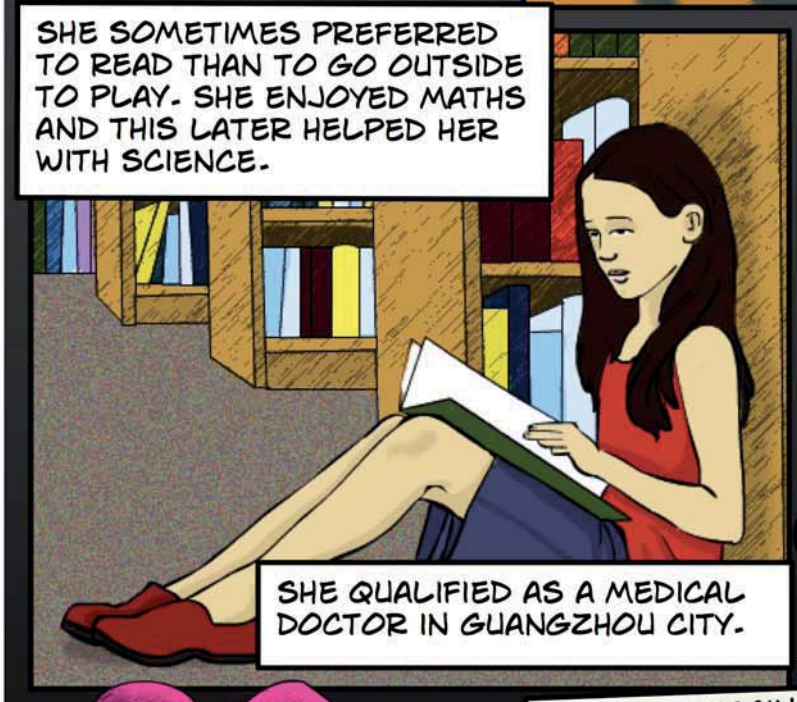
WHO KNOWS WHAT ELSE IS OUT THERE JUST WAITING FOR AN ORDINARY HERO TO DISCOVER?

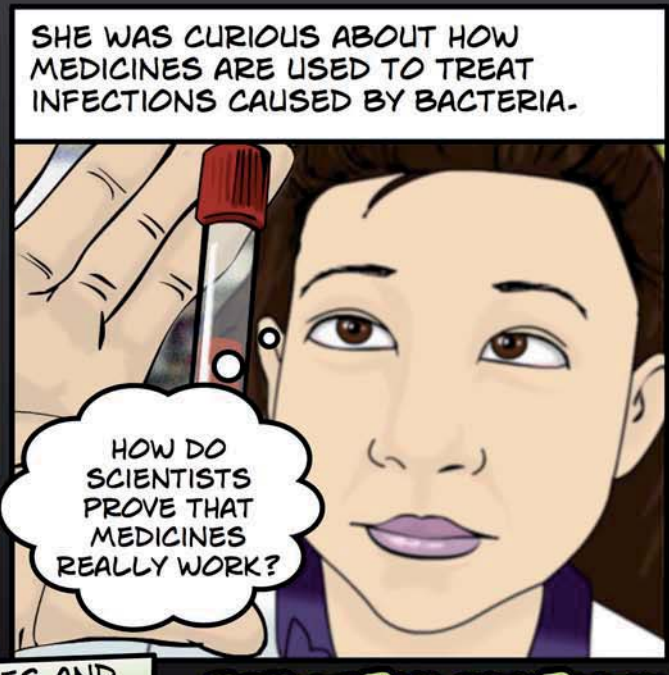
THE WOMAN WHO FIGHTS BACTERIA



DR. CHEN SITU WAS BORN IN SOUTHERN CHINA IN 1968.

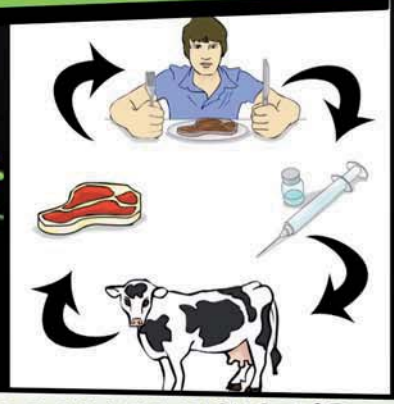






SHE STUDIED FOR A FURTHER PHD IN BELFAST AND IS NOW A LEADING EXPERT IN DANGEROUS SUBSTANCES AND BACTERIA LURKING IN THE HUMAN FOOD CHAIN.

BECAUSE VACCINES AND OTHER DRUGS ARE USED TO KEEP LIVESTOCK HEALTHY...



THERE CAN BE RISKS FOR HUMANS IF WE EAT FOOD THAT CONTAINS UNACCEPTABLE LEVELS OF THESE CHEMICALS.

DID YOU KNOW?

IF THE FOOD WE EAT IS CONTAMINATED IT CAN CAUSE INFECTION THAT COULD SPREAD FROM PERSON TO PERSON.

DR. SITU AND HER TEAM HELP MAKE SURE NORTHERN IRELAND IS ONE OF THE SAFEST PLACES IN THE WORLD FOR THE PRODUCTION OF FOOD.