LCO Las Cumbres Observatory

Royal Astronomical Society 1820

Llywodraeth Cymru
Welsh Government

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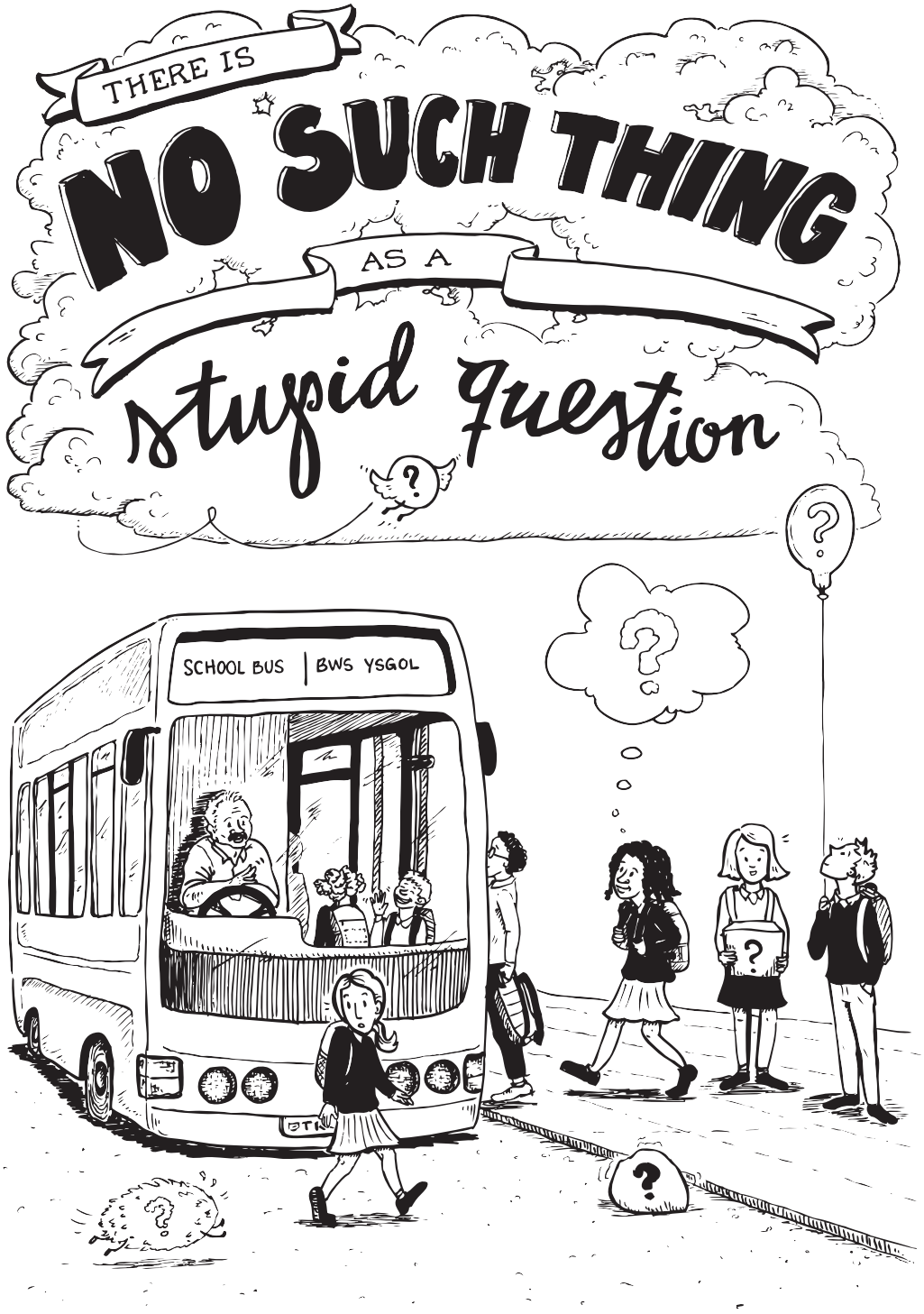
Ada's ADVENTURES IN SCIENCE

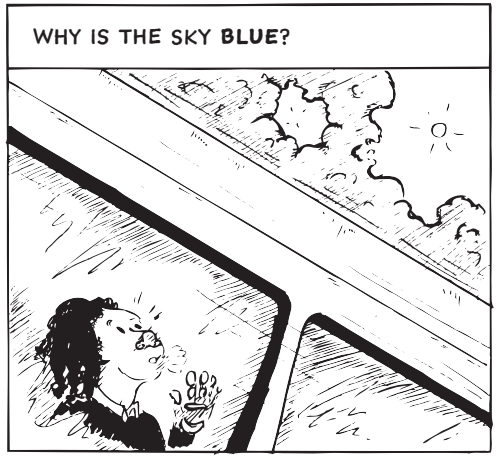
WHAT WILL YOUR NEXT BIG DISCOVERY BE? DRAW WHO YOU WANT TO MAKE THE DISCOVERY WITH.


THERE IS
NO SUCH THING
AS A
Stupid Question
SCHOOL BUS | BWS YSGOL

HI!
HI ADA!

HAVE YOU EVER WONDERED...

WHY ARE THE LEAVES **GREEN**?


WHY IS THE SKY **BLUE**?

ARE THERE OTHER COLOURS WE **CANNOT SEE**?
MYSTERY COLOUR?
HIDDEN COLOURS?

LATER...
...THAT'S HOW WE MADE THIS AMAZING DISCOVERY. NOW, MY STUDENT, ADA JENKINS, WOULD LIKE TO SAY A FEW WORDS.

IT WAS INCREDIBLE TO BE PART OF THIS DISCOVERY, WORKING WITH PEOPLE AROUND THE WORLD.

THIS WOULD NOT HAVE BEEN POSSIBLE WITHOUT EVERYONE SHARING IDEAS AND DATA.

WHEN IT COMES TO SCIENCE, EVERYONE IS ON THE SAME TEAM – TACKLING BIG QUESTIONS AND TRYING TO FIND THE TRUTH!

TWO NEUTRON STARS CRASHED TOGETHER...
...AND EXPLODED MAKING A TOTALLY NEW TYPE OF COSMIC OBJECT!
THEY PRODUCED A KILONOVA...
...WE HAVEN'T HAD DEFINITIVE PROOF THAT THEY EXIST, UNTIL NOW!
NOW WE HAVE BOTH LIGHT...
...AND GRAVITATIONAL WAVES FROM THE COLLISION!

MAYBE YOU HAVE REALLY BIG QUESTIONS...
HOW BIG IS THE UNIVERSE?
WHERE DID IT COME FROM?
...AND SIMPLE ONES...
WHAT DOES A SCIENTIST LOOK LIKE?
...AND SILLY ONES!
HOW DO YOU GO TO THE TOILET IN SPACE?
HE HE!
ALL OF THESE QUESTIONS ARE IMPORTANT! LET ME TELL YOU WHY...

BEFORE 1965, ONE OF THE BEST ASTRONOMICAL OBSERVATORIES DIDN'T ALLOW WOMEN TO USE ITS **SCIENTIFIC INSTRUMENTS.** THAT ALL CHANGED WITH **VERA RUBIN.**

SHE WAS STUDYING **SPIRAL GALAXIES** AND FOUND OUT THEY **SPIN SO FAST,** THEY SHOULD BE FLINGING THEMSELVES APART.

THAT'S WEIRD...

My measurements are correct.

SCRATCH SCRATCH

Why don't they spin apart... WHAT AM I NOT SEEING?

That's it!

Something we cannot see.

SHE FOUND SOMETHING THAT DIDN'T SHINE ANY **LIGHT** BUT HAD **MASS,** HOLDING GALAXIES TOGETHER. NOW WE HAVE A NAME FOR THIS:

DARK MATTER

THEO, CAN YOU LOOK AT THE OPTICAL DATA?

I'M ON IT!

ALEX, COULD Y--

YEP!

...RUN THE SPECTRUM THROUGH THE ANALYSIS PIPELINE!

WE NEED MORE DATA...

TAP TAP

ANYTHING AT YOUR END?

RADIO TELESCOPE

SPACE TELESCOPE

OH YEAH!

HERE TOO!

RIGHT, IT'S DONE!

NOW WE KNOW WHAT HAPPENED!

PIZZA TIME! -- HUH?

?

CHECK THIS OUT!

THAT SPECTRUM...!

I KNOW, LOOKS WEIRD!

I'D BETTER PUT THE KETTLE ON, THEN...

OH YEAH, TEA PLEASE!

THEO, PING THE PROFESSOR, TOO!

WILL DO!

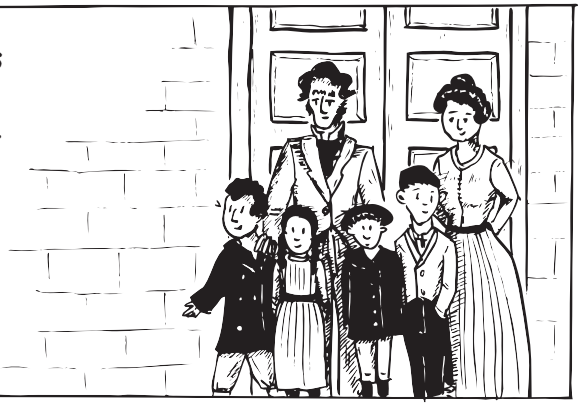
FIVE MINUTES LATER...

HEY, PROF!

I GOT THE EMAIL TOO, I CAN HELP!

OK THEN, LET'S DO THIS!

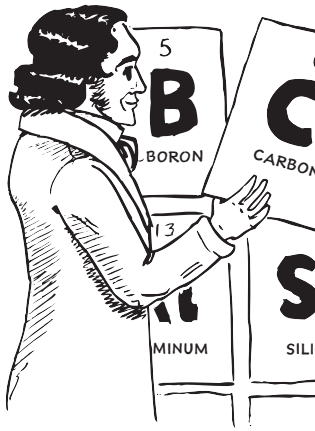
THEN THERE WAS A **CURIOUS** BOY WHO DIDN'T GO TO SCHOOL BECAUSE HIS FAMILY WERE POOR. HIS NAME WAS **MICHAEL FARADAY.**



HE GOT AN APPRENTICESHIP WITH A **BOOKBINDER** AND STARTED TO READ ALL ABOUT **SCIENCE.**

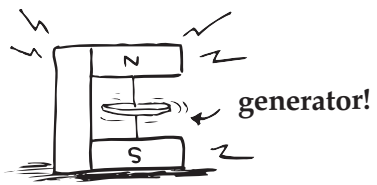
What would happen if...?

THAT MADE HIM **ASK QUESTIONS.**



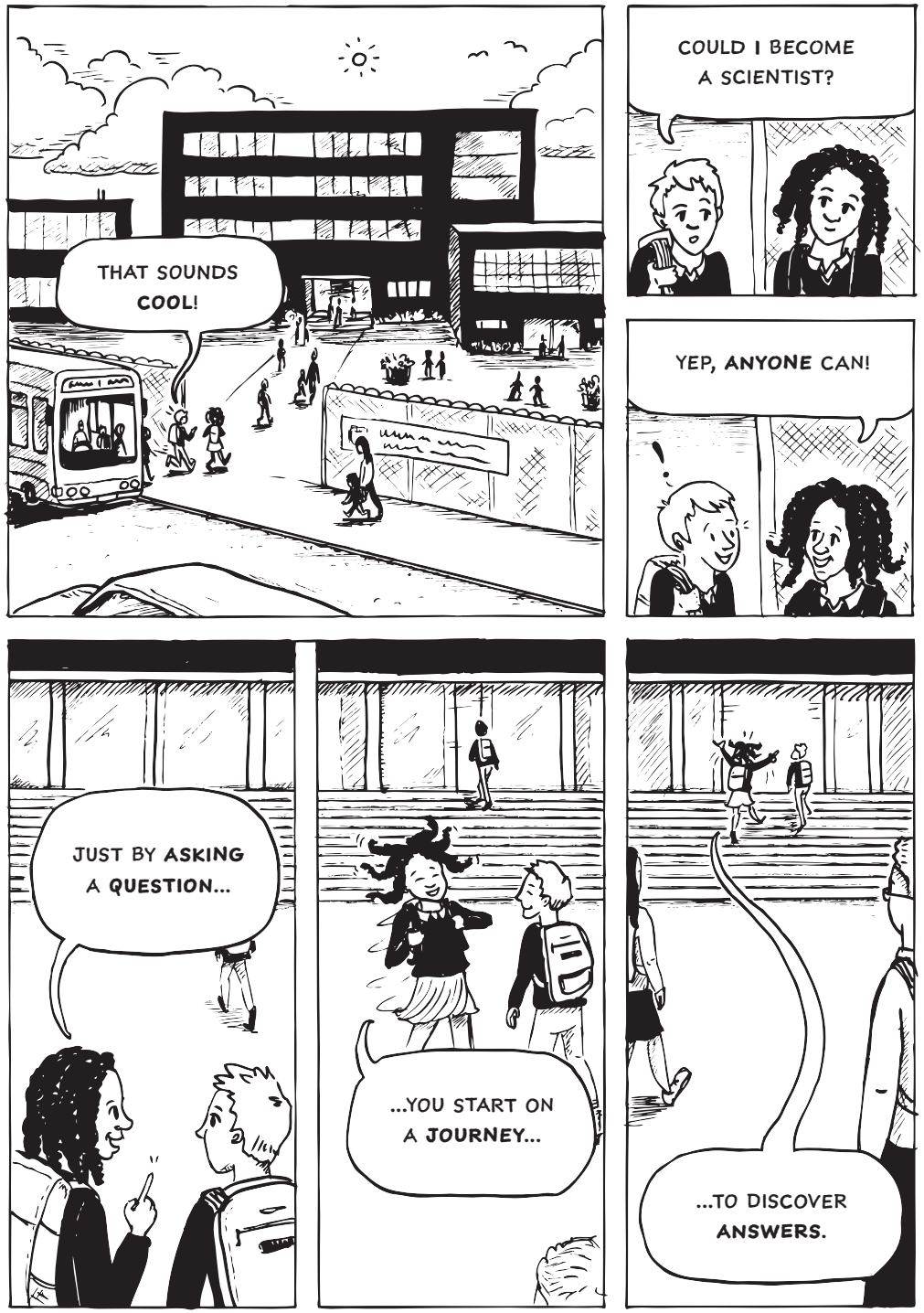
AND FROM THERE HE DISCOVERED **CHEMICAL COMPOUNDS...**

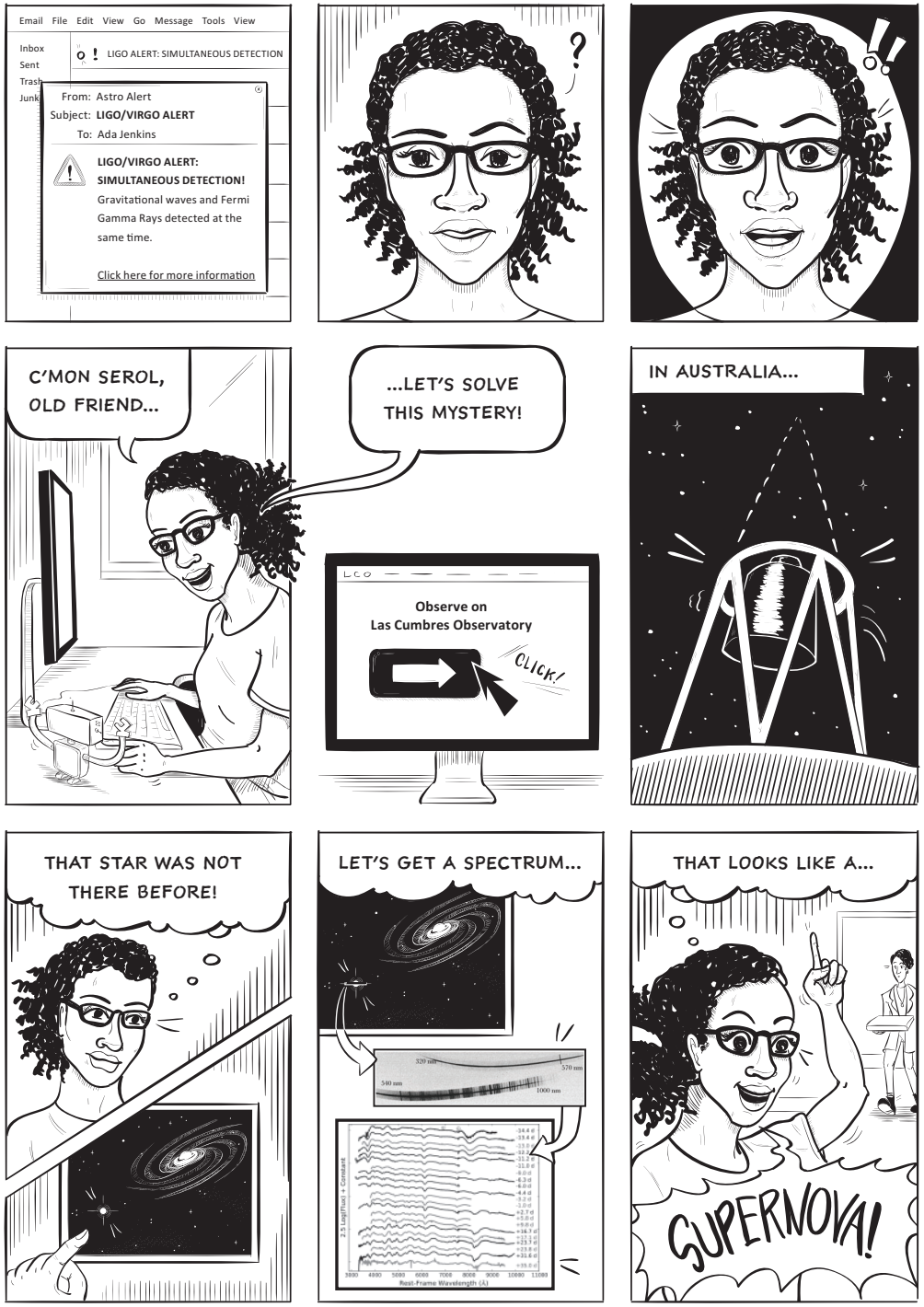
clear glass!



generator!

...AND INVENTED THINGS WE STILL USE TODAY.


THAT SOUNDS COOL!
COULD I BECOME A SCIENTIST?
YEP, ANYONE CAN!
JUST BY ASKING A QUESTION...
...YOU START ON A JOURNEY...
...TO DISCOVER ANSWERS.


Email File Edit View Go Message Tools View
Inbox
Sent
Trash
Junk
LIGO ALERT: SIMULTANEOUS DETECTION
From: Astro Alert
Subject: LIGO/VIRGO ALERT
To: Ada Jenkins
LIGO/VIRGO ALERT: SIMULTANEOUS DETECTION!
Gravitational waves and Fermi Gamma Rays detected at the same time.
Click here for more information
?
!!
C'MON SEROL, OLD FRIEND...
...LET'S SOLVE THIS MYSTERY!
LCO
Observe on Las Cumbres Observatory
CLICK!
IN AUSTRALIA...
THAT STAR WAS NOT THERE BEFORE!
LET'S GET A SPECTRUM...
THAT LOOKS LIKE A...
SUPERNOVA!

AT THE UNIVERSITY...
HEY ADA, COMING FOR PIZZA?

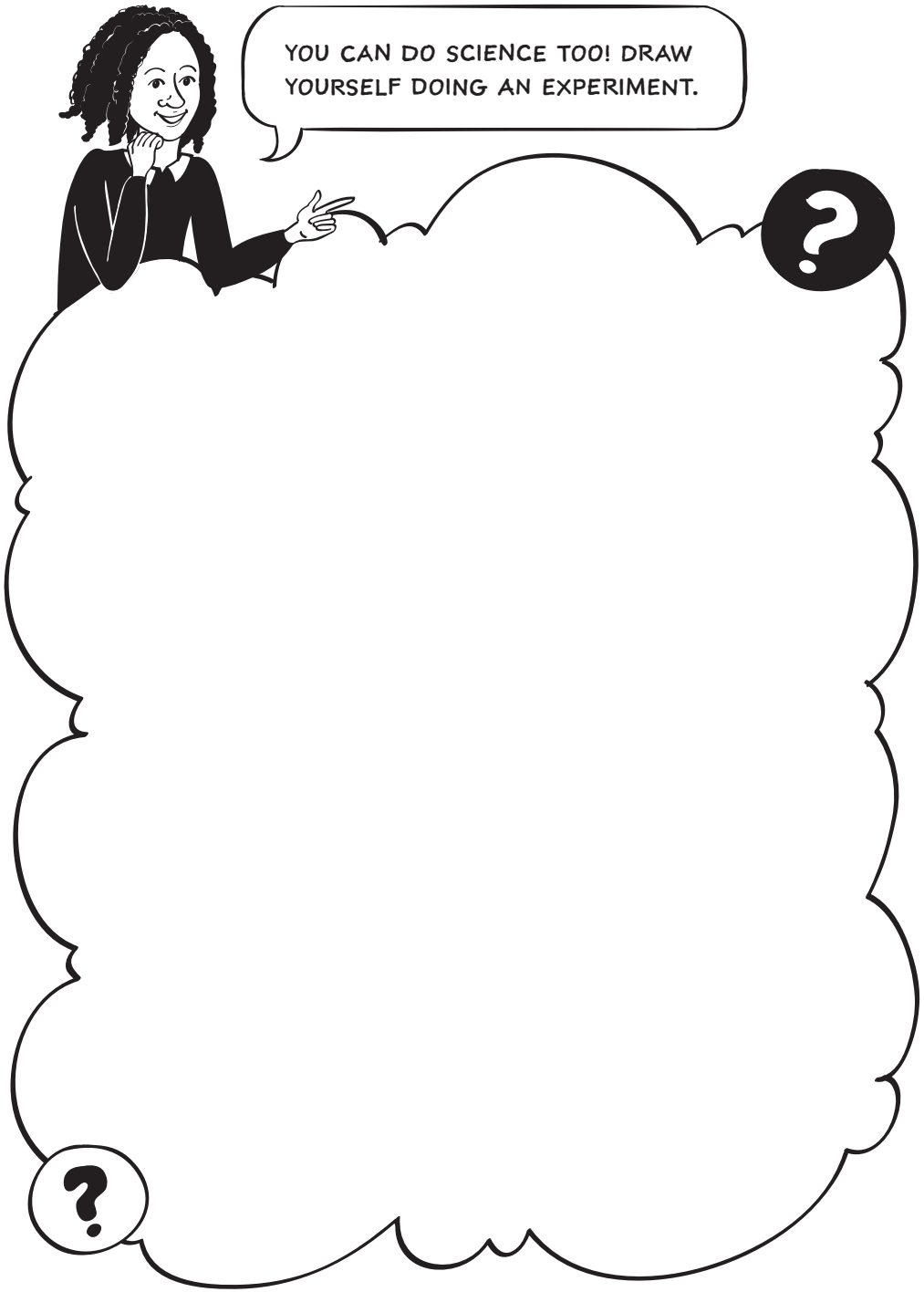
ACTUALLY, COULD YOU BRING SOME BACK FOR ME? I REALLY NEED TO FINISH WRITING THIS!
IMPORTANT WORK
VERA RUBIN

SURE! HAM AND MUSHROOM?

ALEX, MY FRIEND! YOU KNOW ME SO WELL.

?
PING!

ADA LOVELACE
NEIL dEGRASSE TYSON
MARIE SKŁODOWSKA CURIE
JANE GOODALL
AL-HASSAN IBN AL-HAYTHAM
WILBUR & ORVILLE WRIGHT
GRACE HOPPER
MARY ANNING
I LIKE COMPUTERS TOO!
MAYBE I COULD BE A SCIENTIST?
I WANT TO BE LIKE HER!

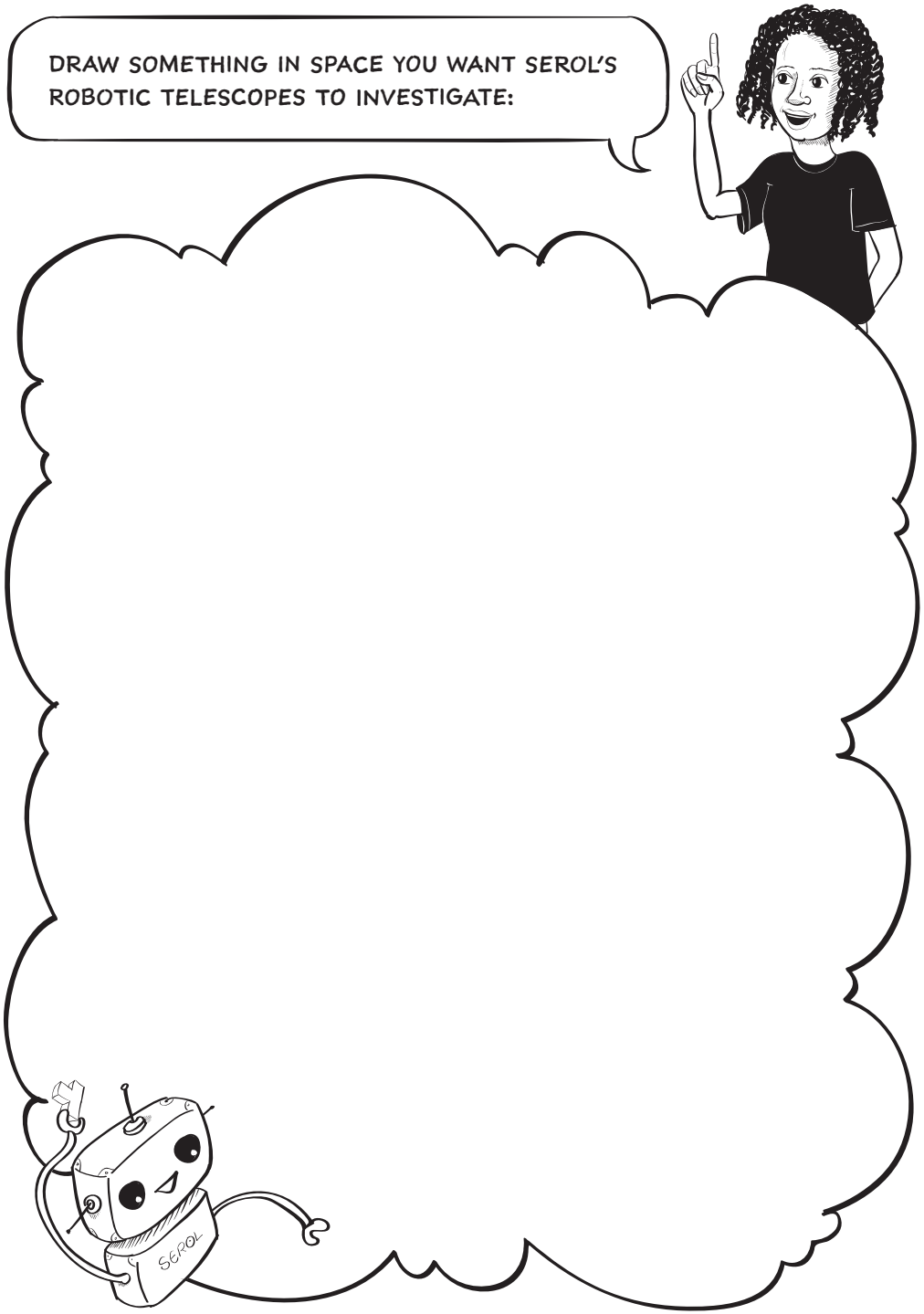


DISCOVERIES

ONLY HAPPEN BY

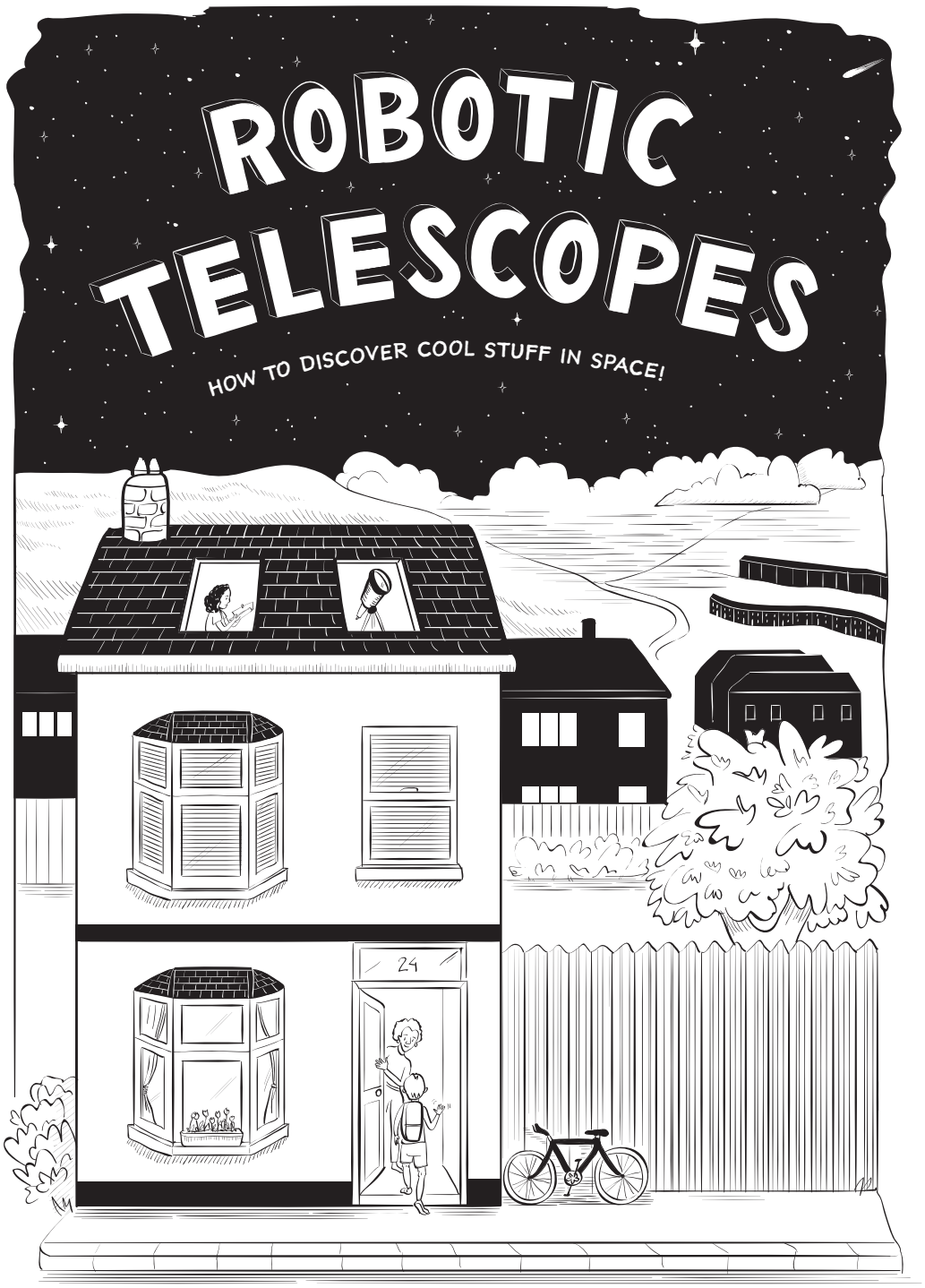
working together

DRAW SOMETHING IN SPACE YOU WANT SEROL'S ROBOTIC TELESCOPES TO INVESTIGATE:

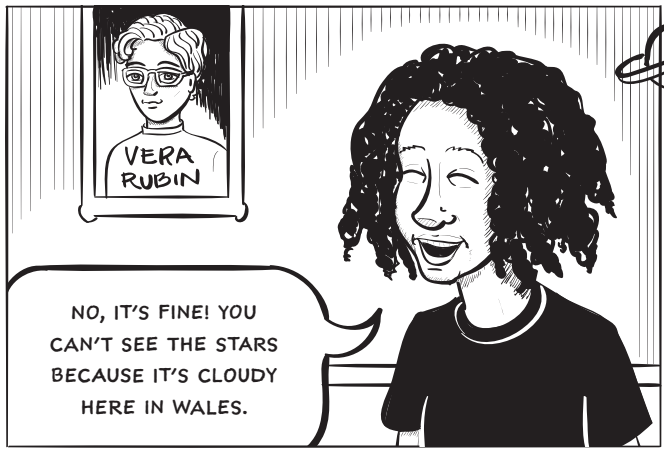


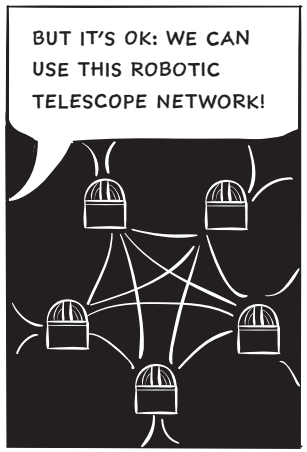
ROBOTIC TELESCOPES

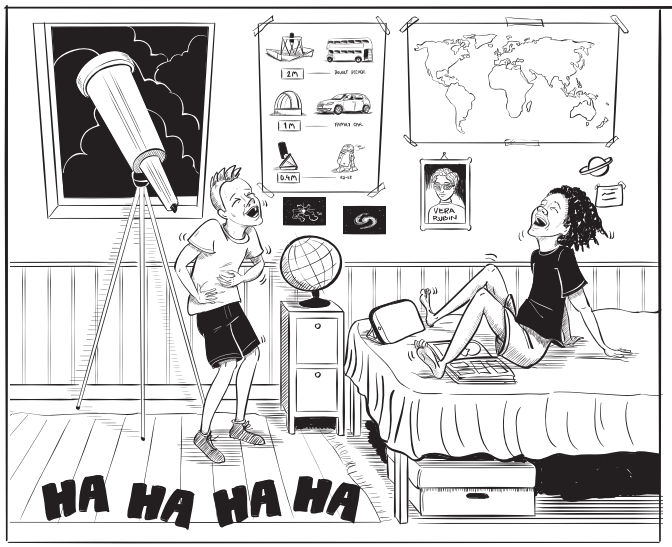
HOW TO DISCOVER COOL STUFF IN SPACE!



2m
DOUBLE DECKER
1m
FAMILY CAR
0.4m
R2-D2
VERA RUBIN
I CAN'T SEE ANYTHING! IS THIS TELESCOPE BROKEN?

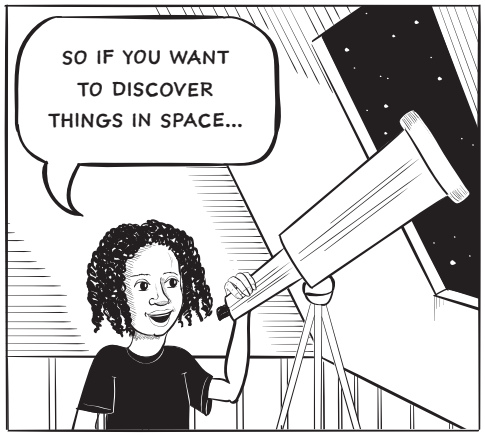

VERA RUBIN
NO, IT'S FINE! YOU CAN'T SEE THE STARS BECAUSE IT'S CLOUDY HERE IN WALES.

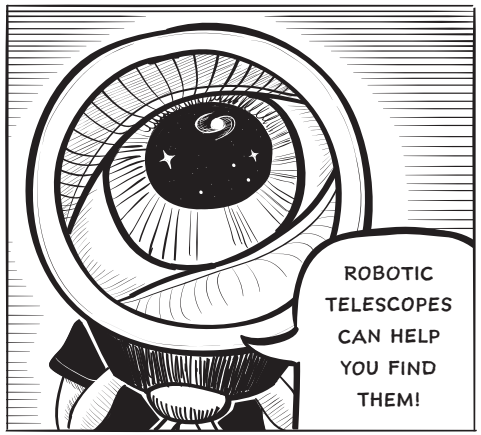

BUT IT'S OK: WE CAN USE THIS ROBOTIC TELESCOPE NETWORK!


HA HA HA HA

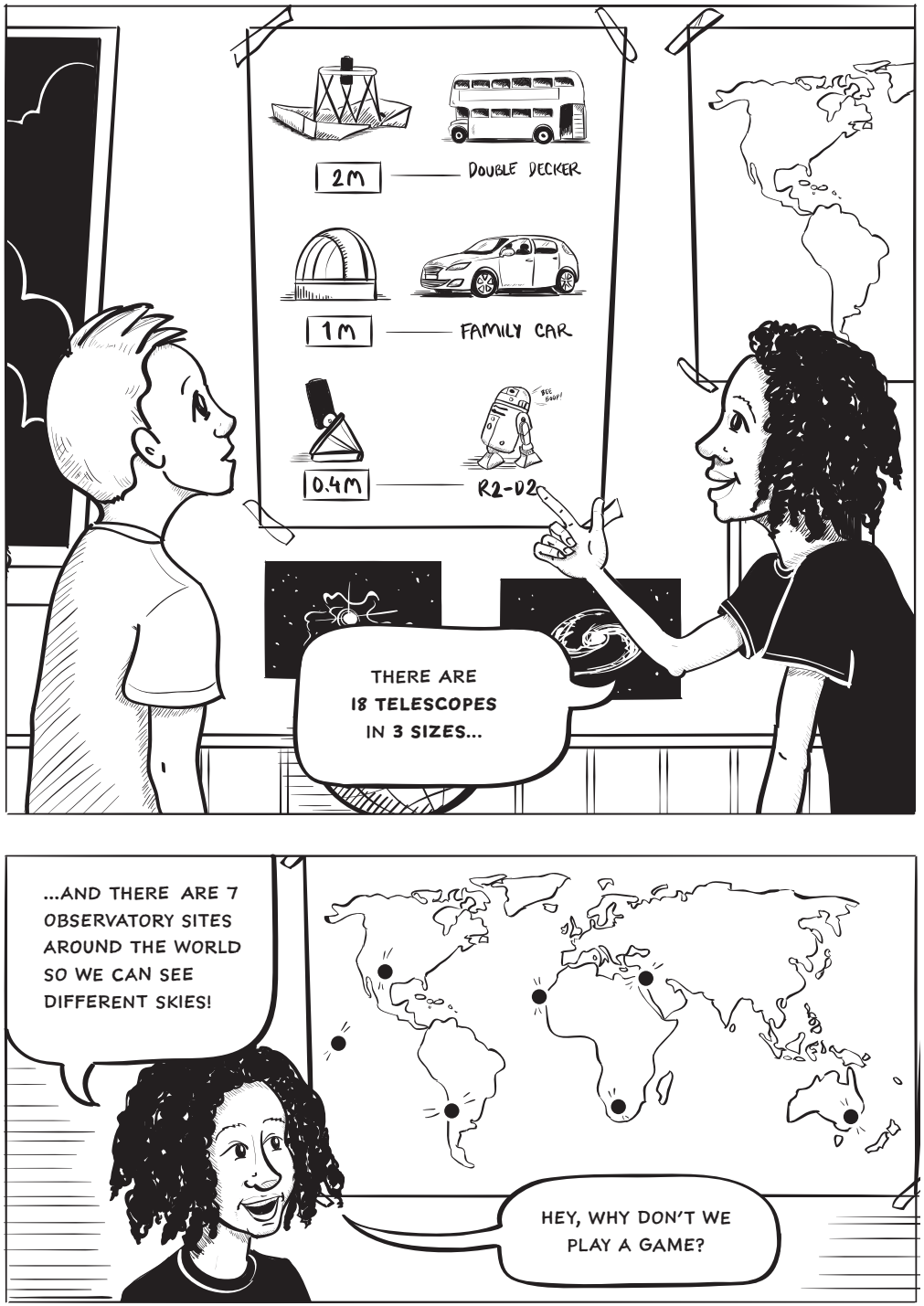
THAT'S SO COOL! CAN ANYONE ASK SEROL FOR PICTURES OF SPACE?

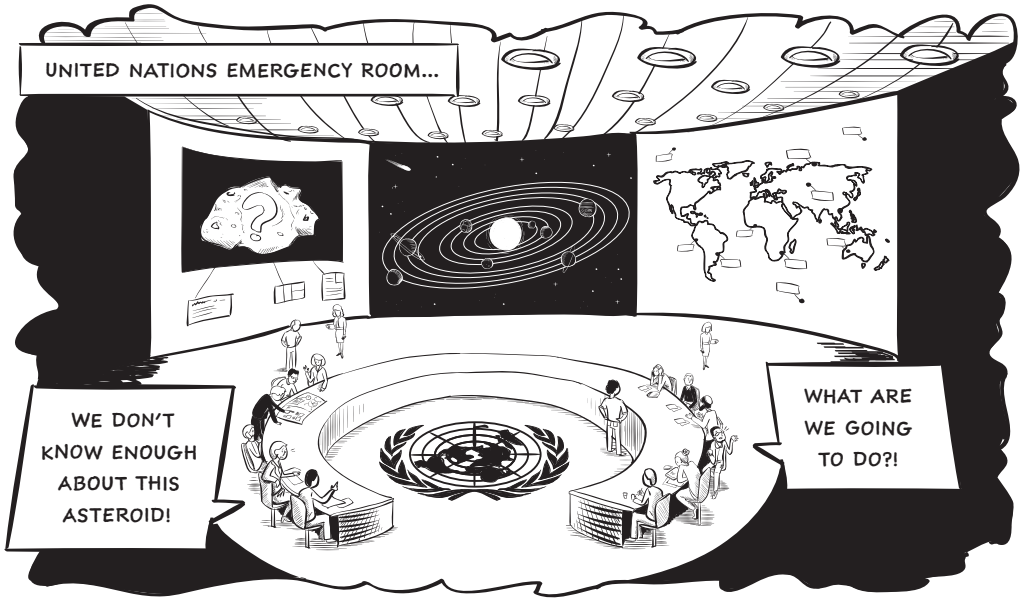
YES! YOU CAN TALK TO SEROL ANYWHERE THERE'S WIFI...
...AT SCHOOL, IN A PARK, OR EVEN IN A THEME PARK!


SO IF YOU WANT TO DISCOVER THINGS IN SPACE...


ROBOTIC TELESCOPES CAN HELP YOU FIND THEM!

PROFESSOR, I HAVE THE DATA.
DING!
LET'S ANALYSE THE PICTURES...
$\dot{B} = \frac{1}{2}\sqrt{GMI}$
I HAVE THE RESULTS!
GOOD NEWS: THE ASTEROID IS NOT ON A COLLISION COURSE! BUT WE NEED TO KEEP MONITORING IT.
LATER...
CLAP
CLAP
CLAP CLAP
HOORAY!
THANK YOU, PROFESSOR ADA AND THEO!

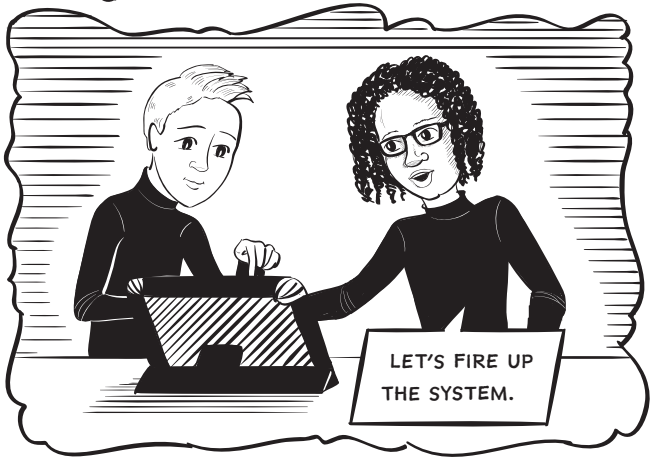

2M
DOUBLE DECKER
1M
FAMILY CAR
0.4M
R2-D2
THERE ARE 18 TELESCOPES IN 3 SIZES...
...AND THERE ARE 7 OBSERVATORY SITES AROUND THE WORLD SO WE CAN SEE DIFFERENT SKIES!
HEY, WHY DON'T WE PLAY A GAME?


UNITED NATIONS EMERGENCY ROOM...
WE DON'T KNOW ENOUGH ABOUT THIS ASTEROID!
WHAT ARE WE GOING TO DO?!

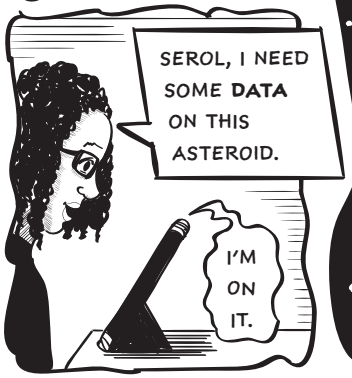
IT'S OK – WE GOT THIS.

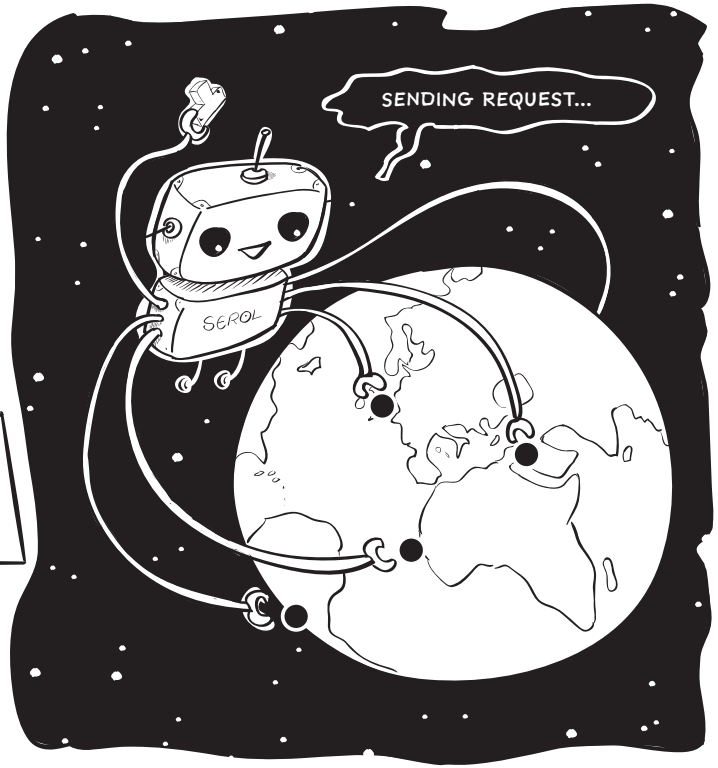
SEROL

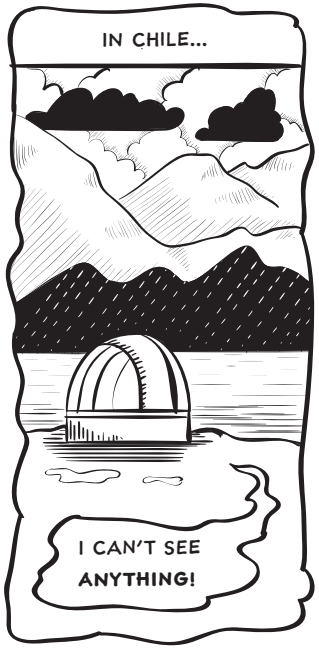
PROFESSOR ADA AND THEO!

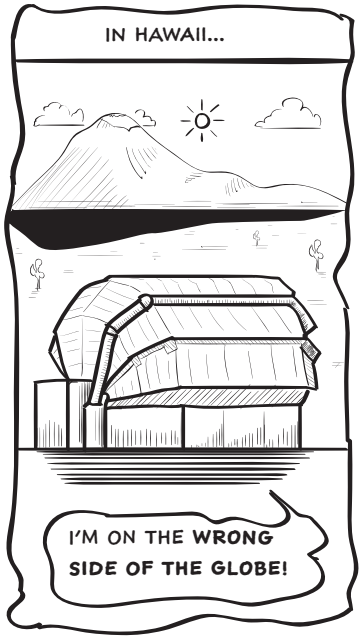

LET'S FIRE UP THE SYSTEM.

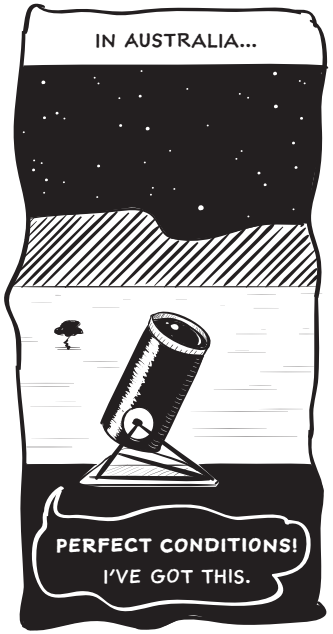
HELLO, SEROL.
HELLO, ADA.


SEROL, I NEED SOME DATA ON THIS ASTEROID.
I'M ON IT.


SENDING REQUEST...
SEROL


IN CHILE...
I CAN'T SEE ANYTHING!


IN HAWAII...
I'M ON THE WRONG SIDE OF THE GLOBE!


IN AUSTRALIA...
PERFECT CONDITIONS! I'VE GOT THIS.