FREE
#7

UNIVERSITY OF LINCOLN,
AND TEESSIDE UNIVERSITY PRESENT

UK Atomic Energy Authority

GREENKID

SPARKS FLY! A WHODUNNIT AT THE CUTTING EDGE OF GREEN ENERGY!

GLOSSARY

ASTROPHYSICS – USING PHYSICS WE'VE DISCOVERED ON EARTH (E.G. GRAVITY AND WHY THINGS FALL) TO TRY TO EXPLAIN HOW BLACK HOLES, STARS, PLANETS AND OTHER THINGS IN SPACE WORK.

ATOM – WHAT ALL MATTER IS MADE OF. ALL ATOMS HAVE A SMALL NUCLEUS IN THE CENTRE WITH ELECTRONS ORBITING AROUND IT. THE NUCLEUS IS WHERE AN ATOM'S WEIGHT COMES FROM. IT IS MADE OF PROTONS (POSITIVE CHARGE) AND NEUTRONS (NO CHARGE).

BTEC – BUSINESS AND TECHNOLOGY EDUCATION COUNCIL QUALIFICATION WHERE YOU'RE LEARNING SKILLS FOR A SPECIFIC JOB E.G. ELECTRICAL ENGINEERING, SPORT, HEALTH AND BEAUTY ETC.

CLEAN ENERGY – ENERGY, FOR EXAMPLE ELECTRICAL ENERGY, GENERATED IN AN ENVIRONMENTALLY FRIENDLY WAY FROM SOURCES SUCH AS THE SUN, WIND AND FUSION, SO THAT WE CAN HAVE POWER IN OUR HOMES, SCHOOLS, TRANSPORT AND MORE, WITHOUT HARMING THE PLANET.

CODING – WRITING SETS OF INSTRUCTIONS CALLED PROGRAMS THAT COMPUTERS FOLLOW TO DO TASKS. IF YOU PLAY ANY GAMES ON A SCREEN, THEY WILL HAVE BEEN CODED. SO HAVE CALCULATORS AND MOBILE APPS.

DEUTERIUM – AN ISOTOPE OF HYDROGEN, HAS 1 PROTON AND 1 NEUTRON IN ITS NUCLEUS.

ELECTRON – THE NEGATIVELY CHARGED BIT OF AN ATOM THAT IS USUALLY MOVING AROUND OUTSIDE THE NUCLEUS, IT IS THE ELECTRONS THAT DETERMINE HOW BIG AN ATOM IS. IT FLOWS THROUGH WIRES IN ELECTRICITY. THEY DON'T WEIGH VERY MUCH AT ALL.

ELEMENT – THERE ARE 118 KNOWN ELEMENTS, THE NUMBER OF PROTONS DETERMINES THE ELEMENT. YOU ARE MADE MAINLY OF HYDROGEN (1 PROTON), CARBON (6 PROTONS), NITROGEN (7 PROTONS) AND OXYGEN (8 PROTONS).

FUSION – COMBINING LIGHTER ELEMENTS TO MAKE HEAVIER ONES – THE SUN CAN MAKE ELEMENTS ALL THE WAY UP TO IRON (26 PROTONS). JET AND STEP WILL MAKE HELIUM (2 PROTONS) FROM ISOTOPES OF HYDROGEN (1 PROTON).

HELIUM – HAS 2 PROTONS AND 2 NEUTRONS IN ITS NUCLEUS.

HYDROGEN – HAS 1 PROTON IN ITS NUCLEUS.

ISOTOPE – ELEMENTS THAT HAVE THE SAME NUMBER OF PROTONS BUT DIFFERENT NUMBER OF NEUTRONS.

JET – JOINT EUROPEAN TORUS– EXPERIMENTAL DOUGHNUT SHAPED FUSION MACHINE BASED IN OXFORD UK OPERATED FROM 1983 TO 2023.

MASCOT – THE ROBOT CREATED TO GO INSIDE JET TO DO MAINTENANCE, REPLACE TILES AND TIDY UP, OPERATED BY A HUMAN.

PLASMA – WE ARE USED TO THREE STATES OF MATTER – SOLID, LIQUID AND GAS. PLASMA IS ANOTHER STATE! IT HAPPENS WHEN THE ELECTRONS (NEGATIVE CHARGE) HAVE SEPARATED FROM THE NUCLEUS (POSITIVE CHARGE) OF AN ATOM. THIS MEANS THEY CAN BE MOVED BY MAGNETS. THE SUN AND LIGHTNING ARE EXAMPLES OF PLASMA.

PLASMA EXHAUSTS – HOT HELIUM PRODUCED FROM FUSION OF HYDROGEN ISOTOPES.

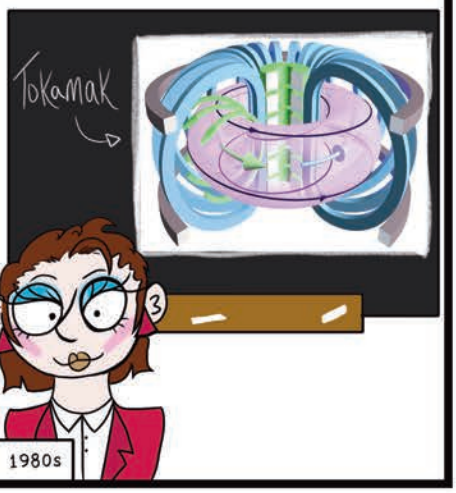
SIMULATIONS – TESTS RUN ON A COMPUTER THAT LET YOU KNOW WHAT IS LIKELY TO HAPPEN IF YOU DO AN EXPERIMENT BASED ON WHAT SETTINGS YOU ARE USING.

STEP – SPHERICAL TOKAMAK FOR ENERGY PRODUCTION – LARGE APPLE SHAPED FUSION MACHINE. THE UK'S FIRST TIME BUILDING A FUSION MACHINE ATTACHED TO A POWER STATION TO PRODUCE ELECTRICITY FROM FUSION. THE ENERGY WILL GO TO THE NATIONAL GRID WHERE IT CAN THEN BE SENT TO HOUSES, SCHOOLS AND ANYWHERE ELSE THAT NEEDS IT.

TOKAMAK – A MACHINE THAT USES MAGNETS TO CONTAIN PLASMA IN A DOUGHNUT SHAPE TO ALLOW FUSION TO HAPPEN – FIRST INVENTED IN RUSSIA IN 1954

TRITIUM – AN ISOTOPE OF HYDROGEN, HAS 1 PROTON AND 2 NEUTRONS IN ITS NUCLEUS.

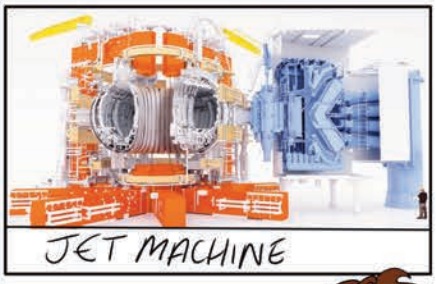
Invented in 1951 and first built in 1954, a tokamak is a torus (doughnut) shaped chamber that uses magnetic fields to contain plasma that can be made very hot and allow fusion of hydrogen into helium.



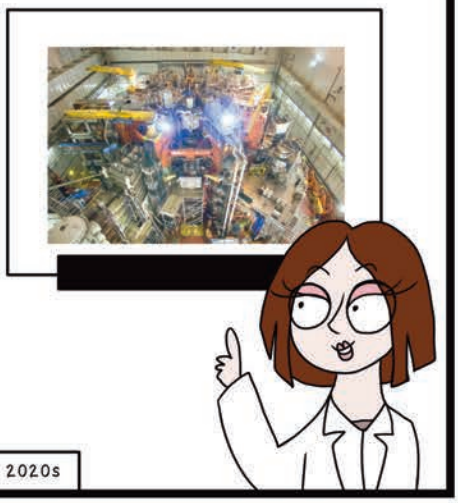
1980s

To really be able to understand fusion better, we knew we needed to build a bigger fusion machine. The Joint European Torus (JET) was designed in 1977 and building started the year after in Oxfordshire, UK. She made her first plasma in 1983.

JET was the biggest fusion machine ever built and scientists and engineers from all over Europe came to work here to help turn fusion into a reality.



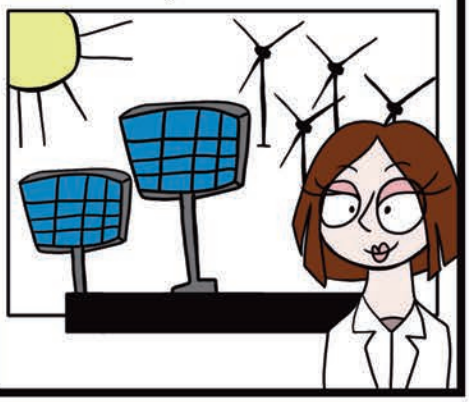
JET ran fusion experiments for over 40 years, although lots of new kit was added over time. By 2023 the outside looked very different, but JET was still the biggest tokamak fusion machine in the world.



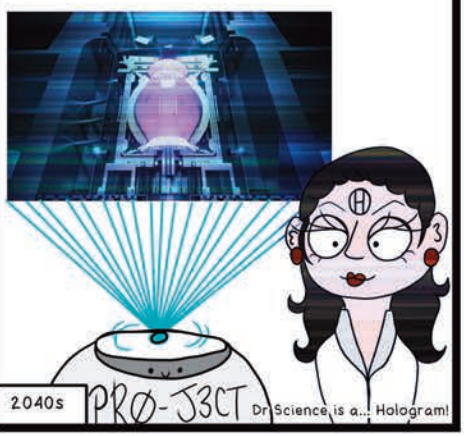
2020s

JET broke lots of records including being the first fusion machine to use tritium and deuterium as fuel. Over 4,500 people worked at JET, producing plasma over 100,000 times and in 2023 she set a world record for fusion energy production. The plasma was 10 times hotter than the sun!

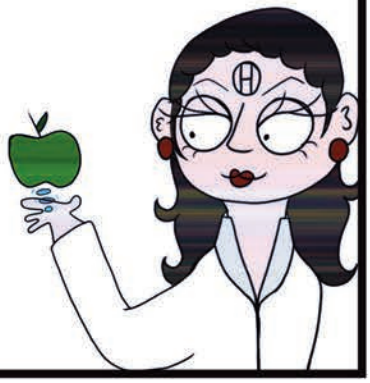
Using what we've learnt from JET, we're planning an even bigger machine that will hopefully be the first time fusion is used to generate electricity. Fusion uses hydrogen as fuel and makes helium, a safe, inert gas.There is no carbon dioxide (CO_2) produced. We need fusion to make low-carbon electricity as it's not always sunny or windy so you need other ways of generation.



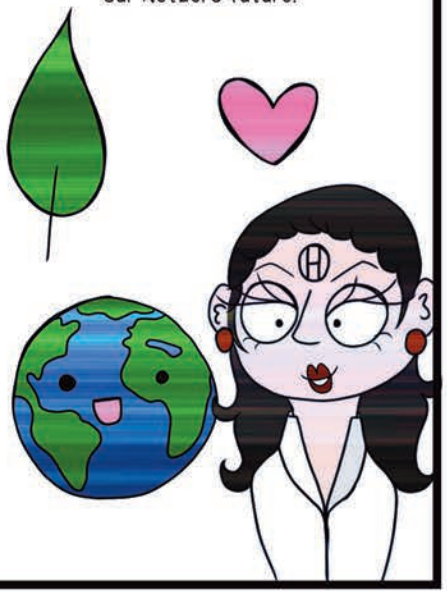
Spherical Tokamak for Energy Production (STEP) has been built on the site of an old coal fired power station in West Burton - on the Nottinghamshire and Lincolnshire border. It has created thousands of jobs in clean energy, and has paved the way for future fusion powerplants around the world - a fossil fuel to fusion story!



STEP is a spherical shaped tokamak so more like a cored apple than a doughnut. This brings the plasma closer to the wall of the machine, and allows for a more compact tokamak, with smaller magnets. It produces more energy than it uses to run so we can generate electricity.

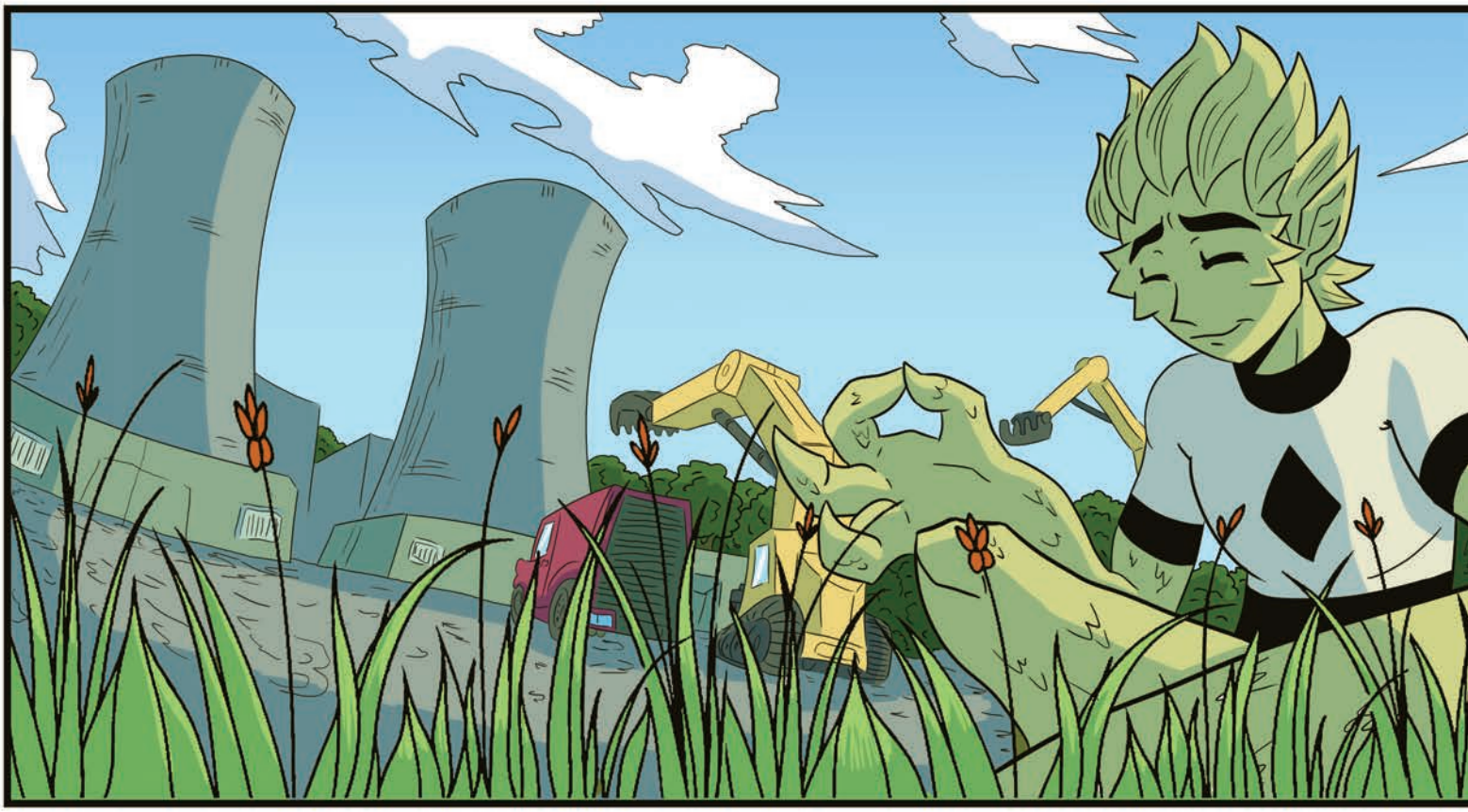


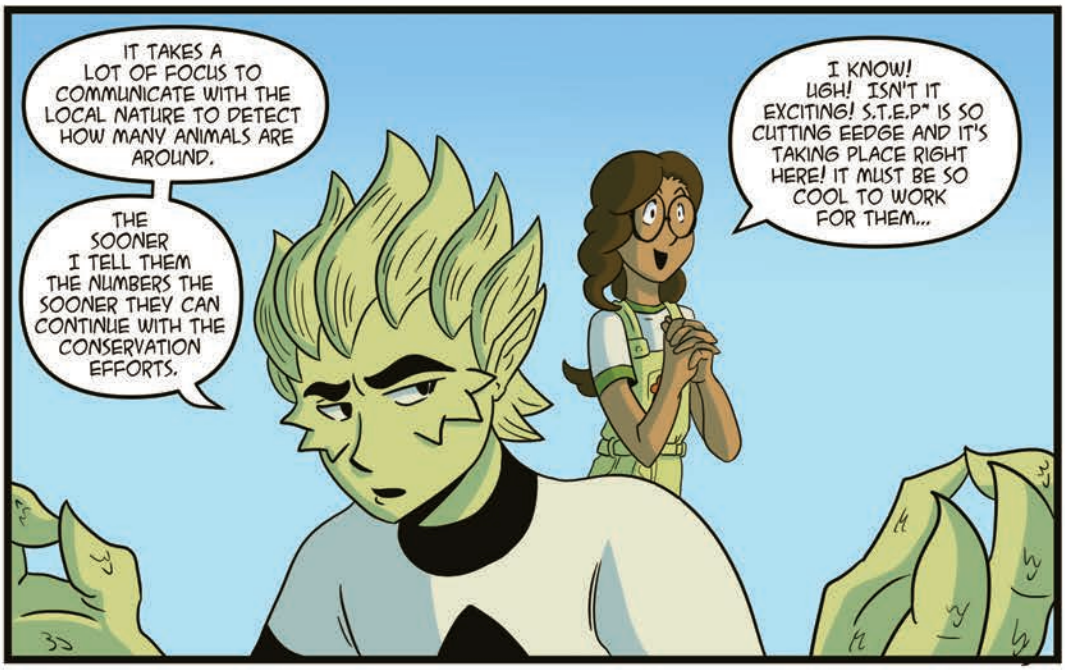
STEP has shown what is possible and will be used to help design a wave of newer, bigger fusion machines that will help power us into our NetZero future.



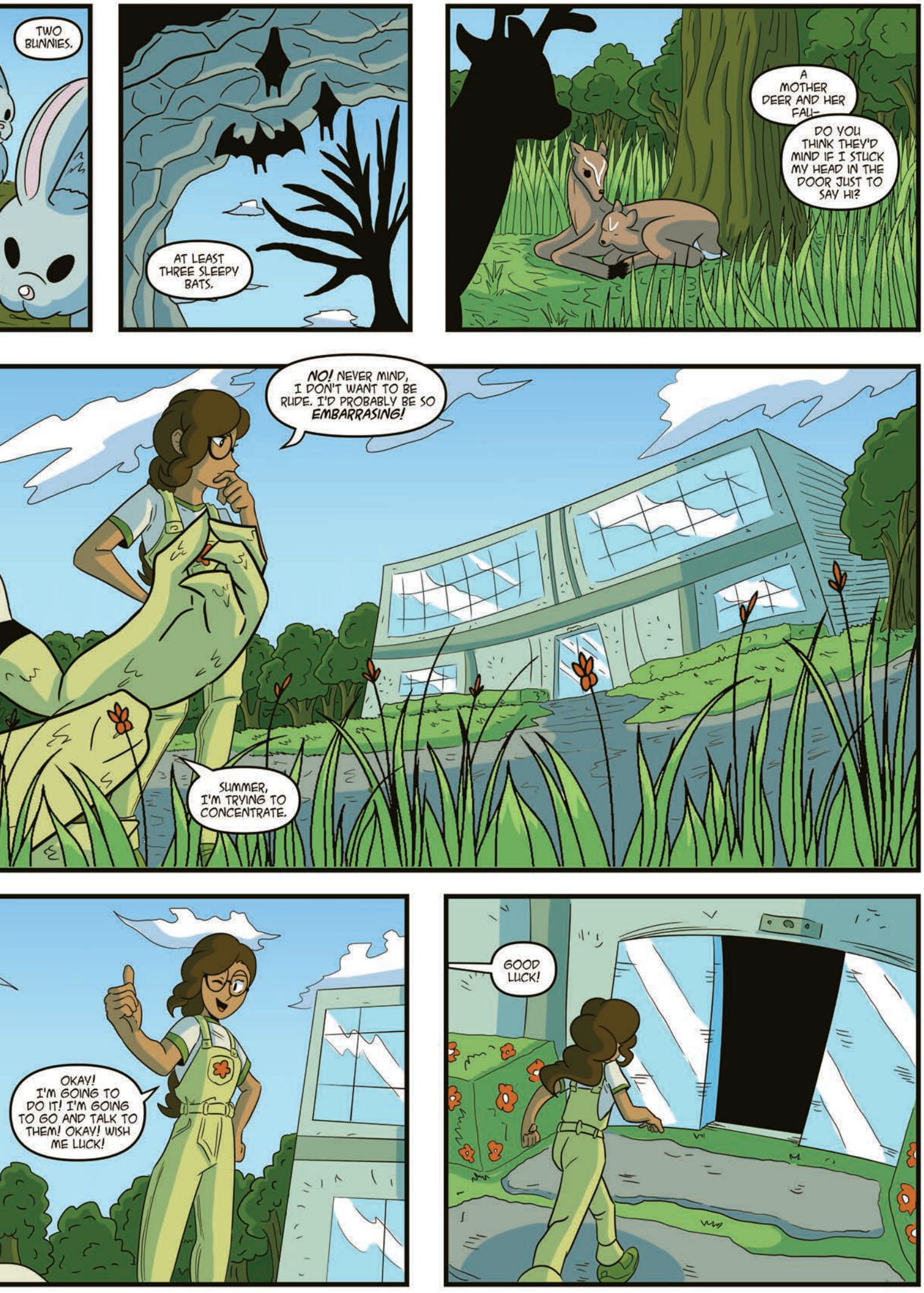

ANOTHER BADGER.

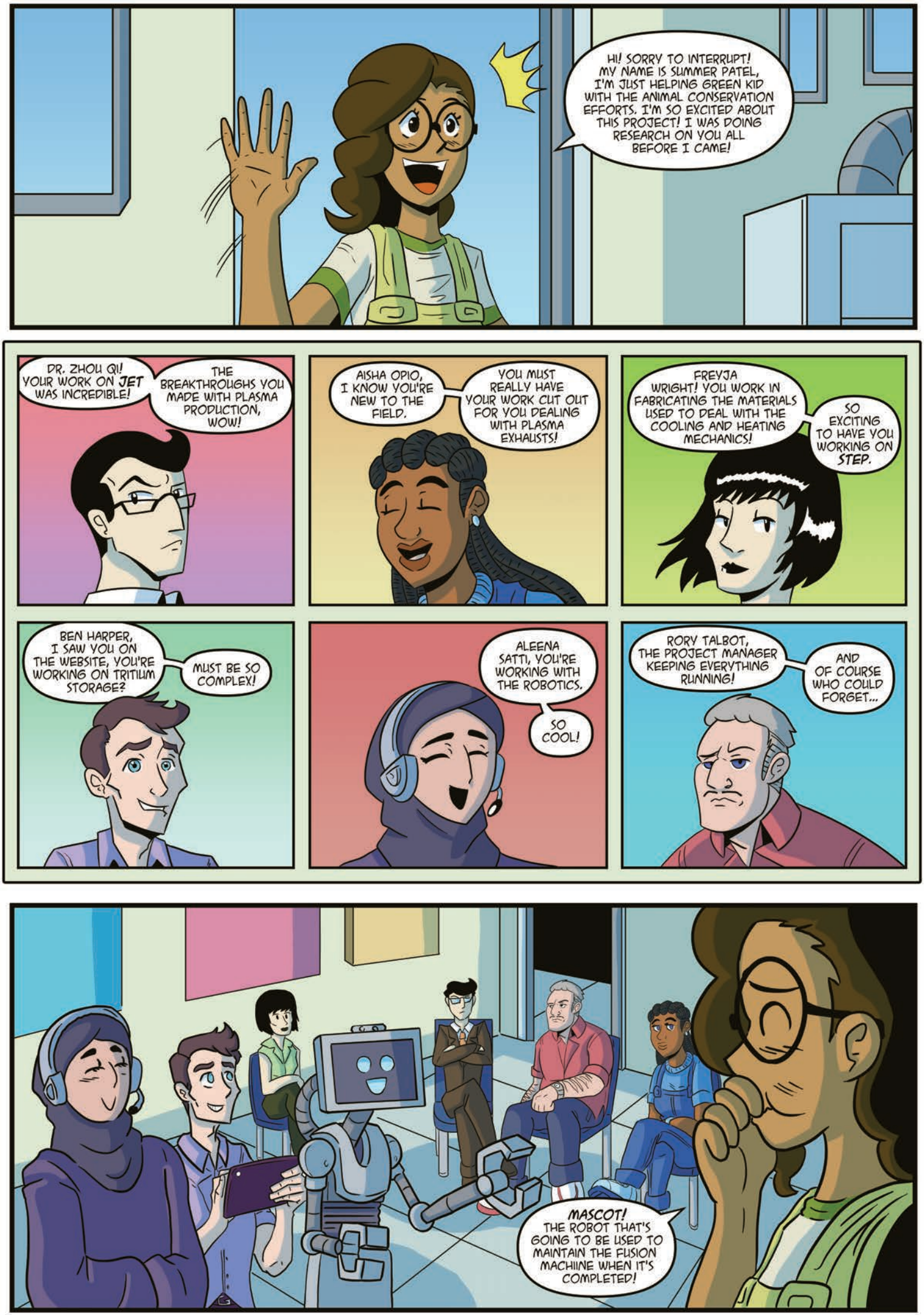

ANOTHER OWL, PLUS THREE CHICKS WAITING TO HATCH..

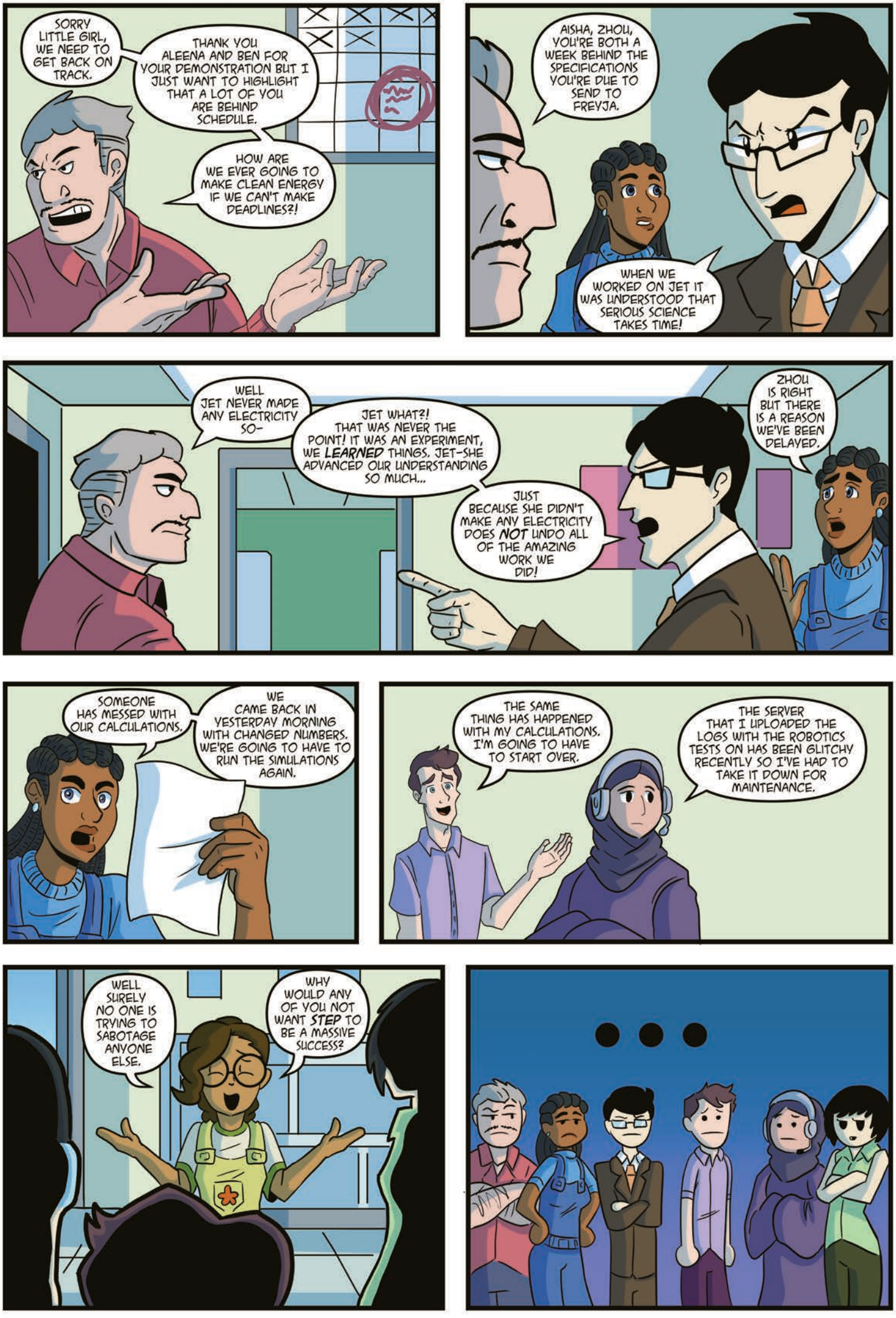


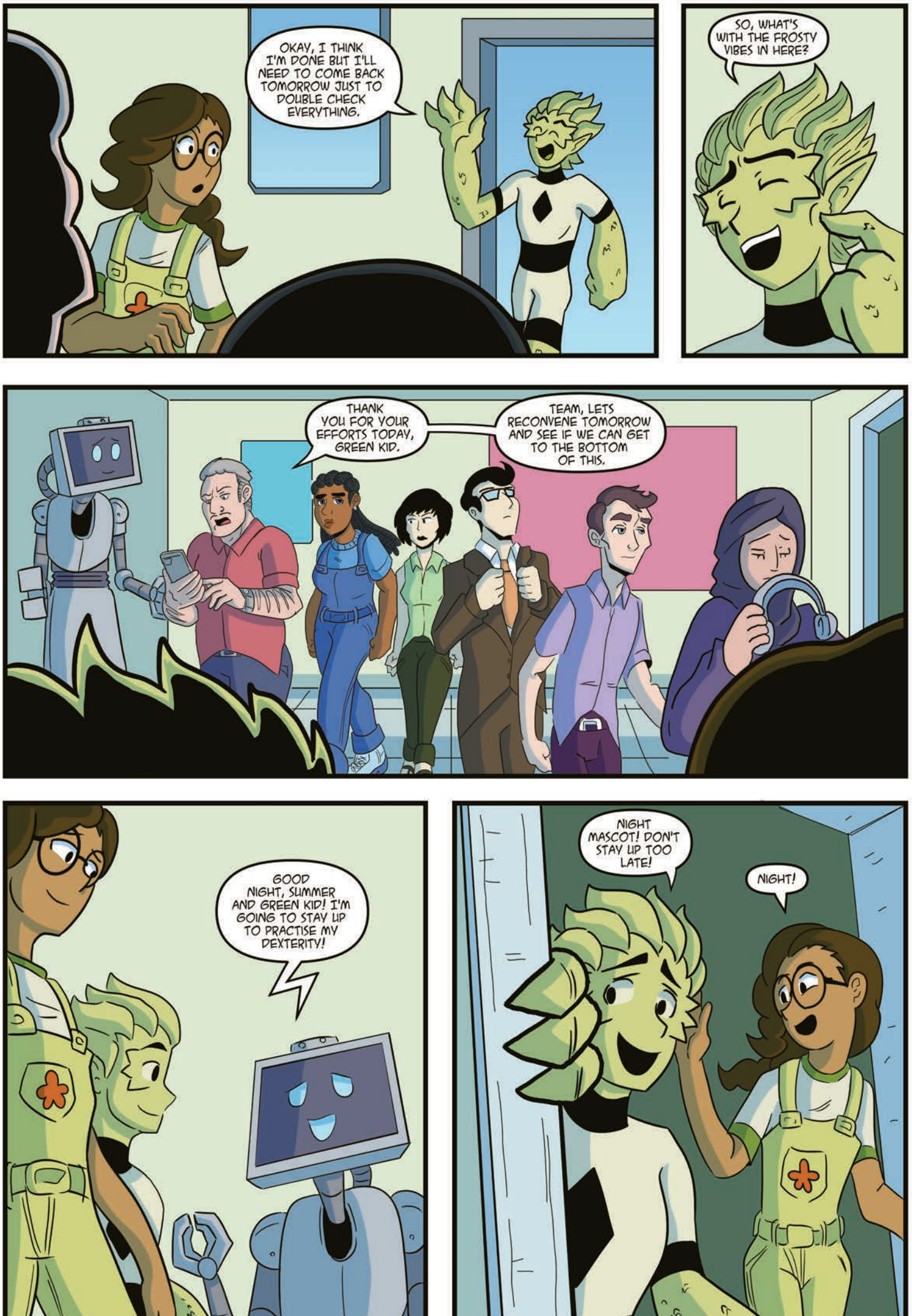

IT TAKES A LOT OF FOCUS TO COMMUNICATE WITH THE LOCAL NATURE TO DETECT HOW MANY ANIMALS ARE AROUND.
THE SOONER I TELL THEM THE NUMBERS THE SOONER THEY CAN CONTINUE WITH THE CONSERVATION EFFORTS.
I KNOW! UGH! ISN'T IT EXCITING! S.T.E.P™ IS SO CUTTING EEDGE AND IT'S TAKING PLACE RIGHT HERE! IT MUST BE SO COOL TO WORK FOR THEM...


WELL WHY DON'T YOU GO OVER AND TALK TO THEM WHILE I CONTINUE THE COUNT?


TWO BUNNIES.
AT LEAST THREE SLEEPY BATS.
A MOTHER DEER AND HER FAU—
DO YOU THINK THEY'D MIND IF I STUCK MY HEAD IN THE DOOR JUST TO SAY HI?
NO! NEVER MIND, I DON'T WANT TO BE RUDE. I'D PROBABLY BE SO EMBARRASING!
SUMMER, I'M TRYING TO CONCENTRATE.
OKAY! I'M GOING TO DO IT! I'M GOING TO GO AND TALK TO THEM! OKAY! WISH ME LUCK!
GOOD LUCK!

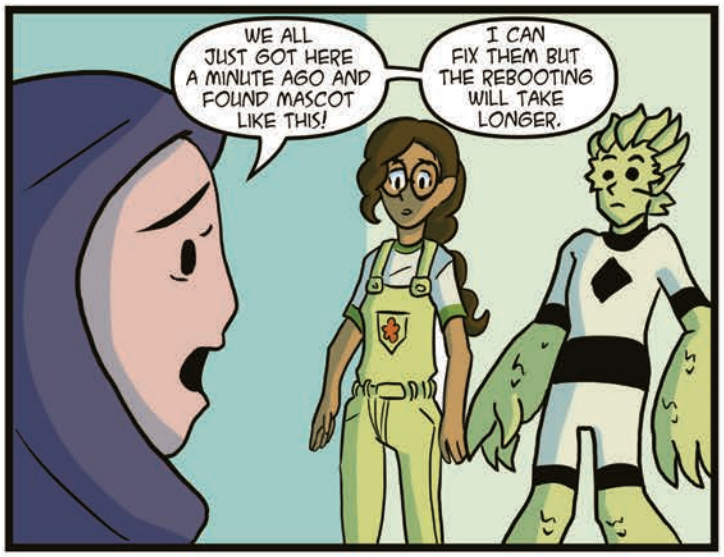

HI! SORRY TO INTERRUPT! MY NAME IS SUMMER PATEL, I'M JUST HELPING GREEN KID WITH THE ANIMAL CONSERVATION EFFORTS. I'M SO EXCITED ABOUT THIS PROJECT! I WAS DOING RESEARCH ON YOU ALL BEFORE I CAME!
DR. ZHOU QI! YOUR WORK ON JET WAS INCREDIBLE!
THE BREAKTHROUGHS YOU MADE WITH PLASMA PRODUCTION, WOW!
AISHA OPIO, I KNOW YOU'RE NEW TO THE FIELD.
YOU MUST REALLY HAVE YOUR WORK CUT OUT FOR YOU DEALING WITH PLASMA EXHAUSTS!
FREYJA WRIGHT! YOU WORK IN FABRICATING THE MATERIALS USED TO DEAL WITH THE COOLING AND HEATING MECHANICS!
SO EXCITING TO HAVE YOU WORKING ON STEP.
BEN HARPER, I SAW YOU ON THE WEBSITE, YOU'RE WORKING ON TRITIUM STORAGE?
MUST BE SO COMPLEX!
ALEENA SATTI, YOU'RE WORKING WITH THE ROBOTICS.
SO COOL!
RORY TALBOT, THE PROJECT MANAGER KEEPING EVERYTHING RUNNING!
AND OF COURSE WHO COULD FORGET...
MASCOT! THE ROBOT THAT'S GOING TO BE USED TO MAINTAIN THE FUSION MACHIINE WHEN IT'S COMPLETED!


SORRY LITTLE GIRL, WE NEED TO GET BACK ON TRACK.
THANK YOU ALEENA AND BEN FOR YOUR DEMONSTRATION BUT I JUST WANT TO HIGHLIGHT THAT A LOT OF YOU ARE BEHIND SCHEDULE.
HOW ARE WE EVER GOING TO MAKE CLEAN ENERGY IF WE CAN'T MAKE DEADLINES?!
AISHA, ZHOU, YOU'RE BOTH A WEEK BEHIND THE SPECIFICATIONS YOU'RE DUE TO SEND TO FREYJA.
WHEN WE WORKED ON JET IT WAS UNDERSTOOD THAT SERIOUS SCIENCE TAKES TIME!
WELL JET NEVER MADE ANY ELECTRICITY SO–
JET WHAT?! THAT WAS NEVER THE POINT! IT WAS AN EXPERIMENT, WE LEARNED THINGS. JET–SHE ADVANCED OUR UNDERSTANDING SO MUCH...
JUST BECAUSE SHE DIDN'T MAKE ANY ELECTRICITY DOES NOT UNDO ALL OF THE AMAZING WORK WE DID!
ZHOU IS RIGHT BUT THERE IS A REASON WE'VE BEEN DELAYED.
SOMEONE HAS MESSED WITH OUR CALCULATIONS.
WE CAME BACK IN YESTERDAY MORNING WITH CHANGED NUMBERS. WE'RE GOING TO HAVE TO RUN THE SIMULATIONS AGAIN.
THE SAME THING HAS HAPPENED WITH MY CALCULATIONS. I'M GOING TO HAVE TO START OVER.
THE SERVER THAT I UPLOADED THE LOGS WITH THE ROBOTICS TESTS ON HAS BEEN GLITCHY RECENTLY SO I'VE HAD TO TAKE IT DOWN FOR MAINTENANCE.
WELL SURELY NO ONE IS TRYING TO SABOTAGE ANYONE ELSE.
WHY WOULD ANY OF YOU NOT WANT STEP TO BE A MASSIVE SUCCESS?


OKAY, I THINK I'M DONE BUT I'LL NEED TO COME BACK TOMORROW JUST TO DOUBLE CHECK EVERYTHING.
SO, WHAT'S WITH THE FROSTY VIBES IN HERE?
THANK YOU FOR YOUR EFFORTS TODAY, GREEN KID.
TEAM, LETS RECONVENE TOMORROW AND SEE IF WE CAN GET TO THE BOTTOM OF THIS.
GOOD NIGHT, SUMMER AND GREEN KID! I'M GOING TO STAY UP TO PRACTISE MY DEXTERITY!
NIGHT MASCOT! DON'T STAY UP TOO LATE!
NIGHT!


LATER.
EASY...
DOES...
IT...
CLANG!
THE NEXT DAY.
QUICK CHECK IN AND THEN BACK TO IT?
SOUNDS GOOD.

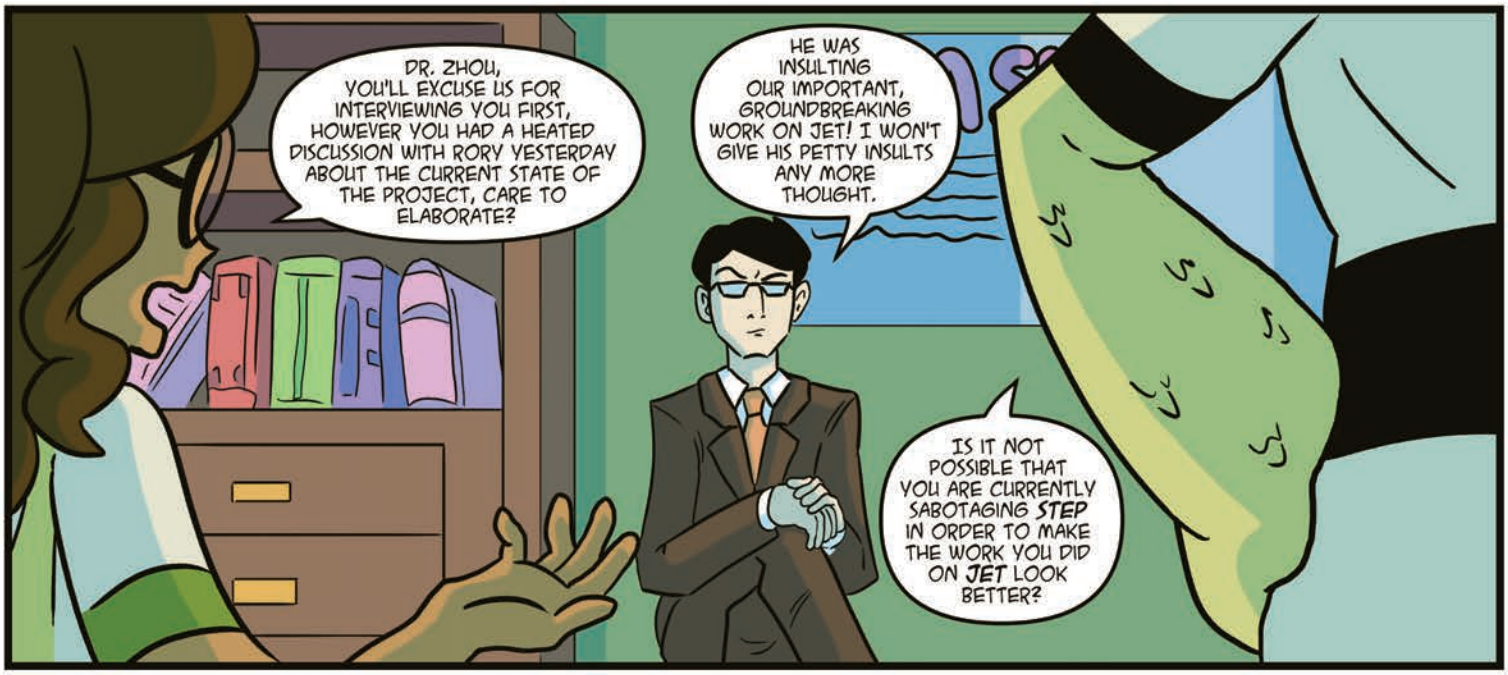

MASCOT! NO!


WE ALL JUST GOT HERE A MINUTE AGO AND FOUND MASCOT LIKE THIS!
I CAN FIX THEM BUT THE REBOOTING WILL TAKE LONGER.


THE ONLY PEOPLE WITH 24 HOUR ACCESS TO THESE OFFICES ARE...


YOU SIX! MEANING ONE OF YOU IS BEHIND THE SABOTAGE AND THE DESTRUCTION OF MASCOT!


NO ONE LEAVES UNTIL WE FIGURE OUT WHODUNNIT!


DR. ZHOU, YOU'LL EXCUSE US FOR INTERVIEWING YOU FIRST, HOWEVER YOU HAD A HEATED DISCUSSION WITH RORY YESTERDAY ABOUT THE CURRENT STATE OF THE PROJECT, CARE TO ELABORATE?
HE WAS INSULTING OUR IMPORTANT, GROUNDBREAKING WORK ON JET! I WON'T GIVE HIS PETTY INSULTS ANY MORE THOUGHT.
IS IT NOT POSSIBLE THAT YOU ARE CURRENTLY SABOTAGING STEP IN ORDER TO MAKE THE WORK YOU DID ON JET LOOK BETTER?

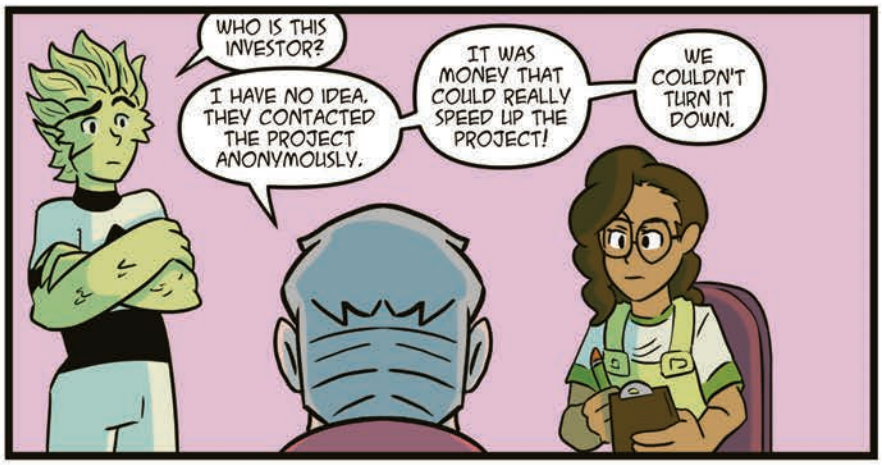

ABSURD! I WAS OFFERED A LOT OF OPPORTUNITIES WHEN I LEFT JET BUT I CHOSE TO GO INTO STEP.
WE LEARNED A LOT ON JET AND WE'RE GOING TO USE THAT KNOWLEDGE TO CREATE THE UK'S FIRST PROTOTYPE FUSION POWER STATION.
THERE'S NO QUESTION. OF COURSE I WANT STEP TO SUCCEED TOO.


FAIR ENOUGH, DO YOU HAVE ANY THOUGHTS ON WHO YOU THINK IT COULD BE?
RORY HAS BEEN SABOTAGING US WITH THESE DEADLINES ALREADY! HE'S THE ONLY ONE WHO'S ACROSS ALL THESE DIFFERENT DEPARTMENTS!


ZHOU SAID THAT ABOUT ME?! I HAVE TO KEEP EVERYONE ON TRACK! THIS KIND OF PROJECT DOESN'T RUN ITSELF!

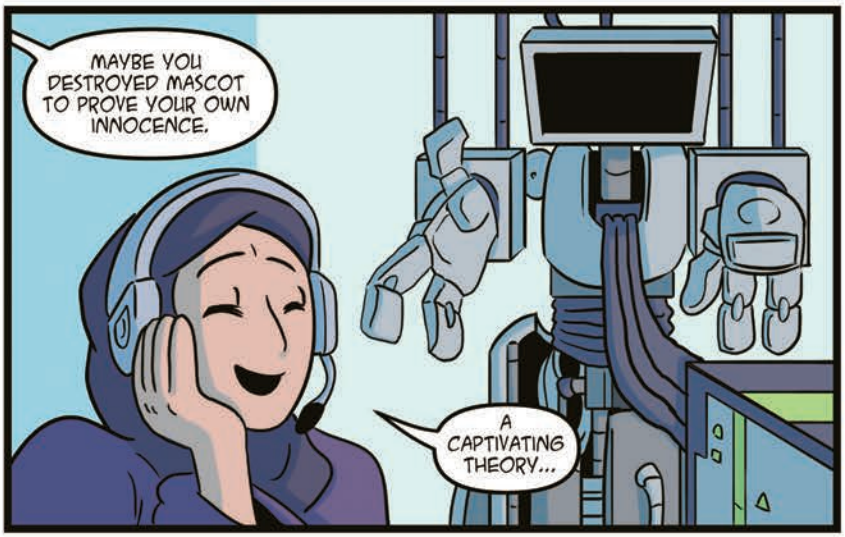

IN ALL FAIRNESS MR TALBOT, WHERE ARE THESE DEADLINES COMING FROM ALL OF A SUDDEN?

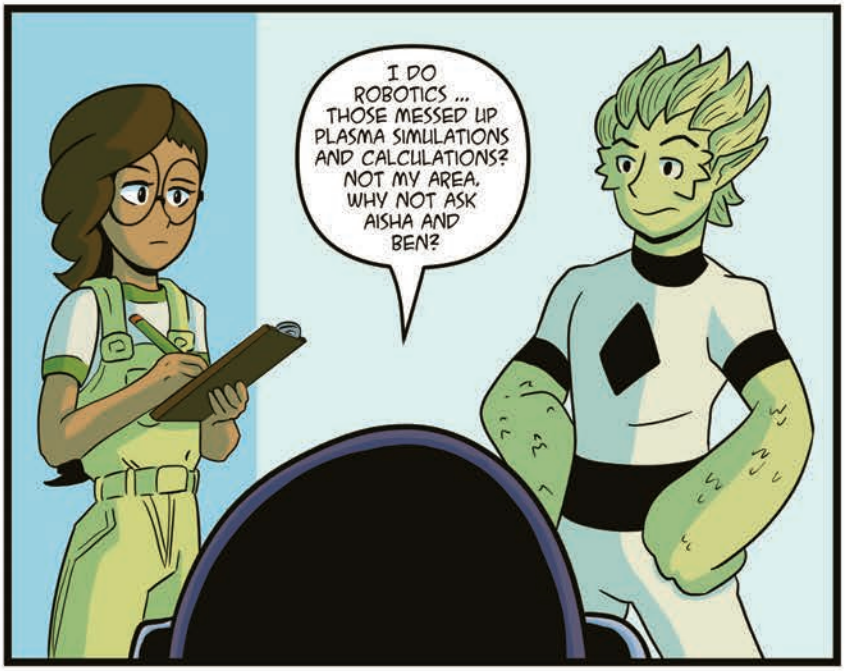

'SIGH'
IF YOU REALLY MUST KNOW WE'VE RECENTLY HAD AN INVESTOR COME ON BOARD.
THIS HAS COME WITH CERTAIN STIPULATIONS.


WHO IS THIS INVESTOR?
I HAVE NO IDEA. THEY CONTACTED THE PROJECT ANONYMOUSLY.
IT WAS MONEY THAT COULD REALLY SPEED UP THE PROJECT!
WE COULDN'T TURN IT DOWN.


SERIOUSLY THOUGH, I'M THE PROJECT MANAGER. I DON'T KNOW THE SCIENCE WELL ENOUGH TO EVEN KNOW WHERE TO BEGIN MESSING WITH THE NUMBERS.
WHY NOT INTERVIEW ALEENA? SHE'S THE ONE IN CHARGE OF MASCOT.

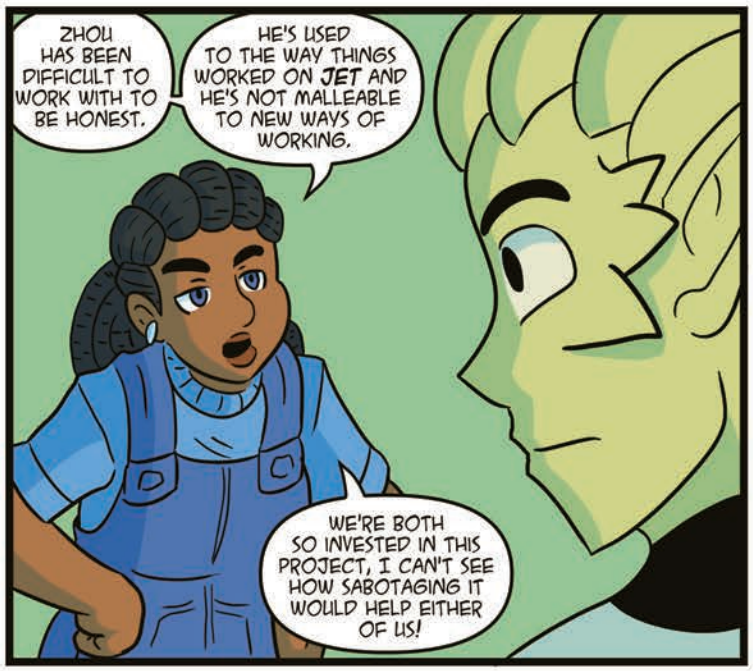

HAHAHA! SO RORY'S SAYING THAT I DESTROYED MASCOT, ONLY TO COME BACK THE NEXT DAY TO FIX THEM?
NICE ONE SHERLOCK!

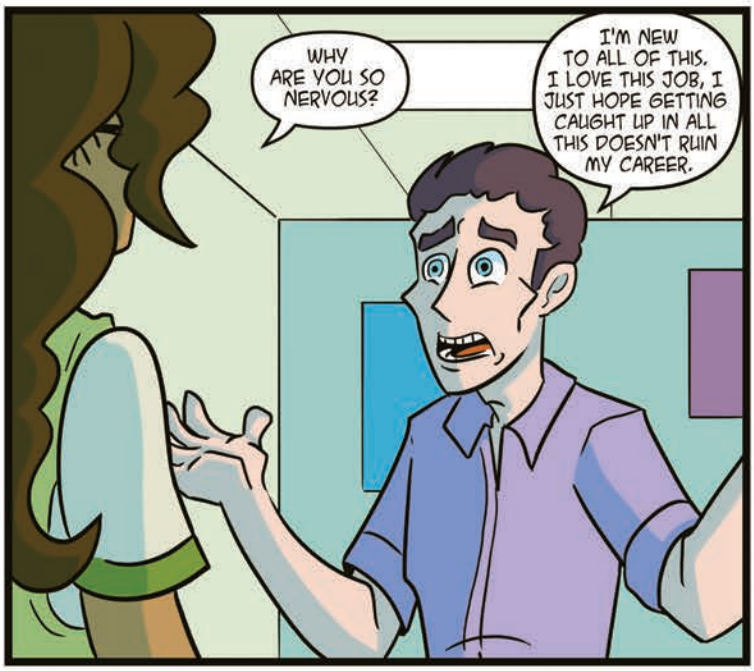

MAYBE YOU DESTROYED MASCOT TO PROVE YOUR OWN INNOCENCE.
A CAPTIVATING THEORY...


I DO ROBOTICS ... THOSE MESSED UP PLASMA SIMULATIONS AND CALCULATIONS? NOT MY AREA. WHY NOT ASK AISHA AND BEN?


AISHA, CAN YOU TELL ME ANYTHING ABOUT ZHOU? THE TWO OF YOU HAVE BEEN WORKING TOGETHER VERY CLOSELY.

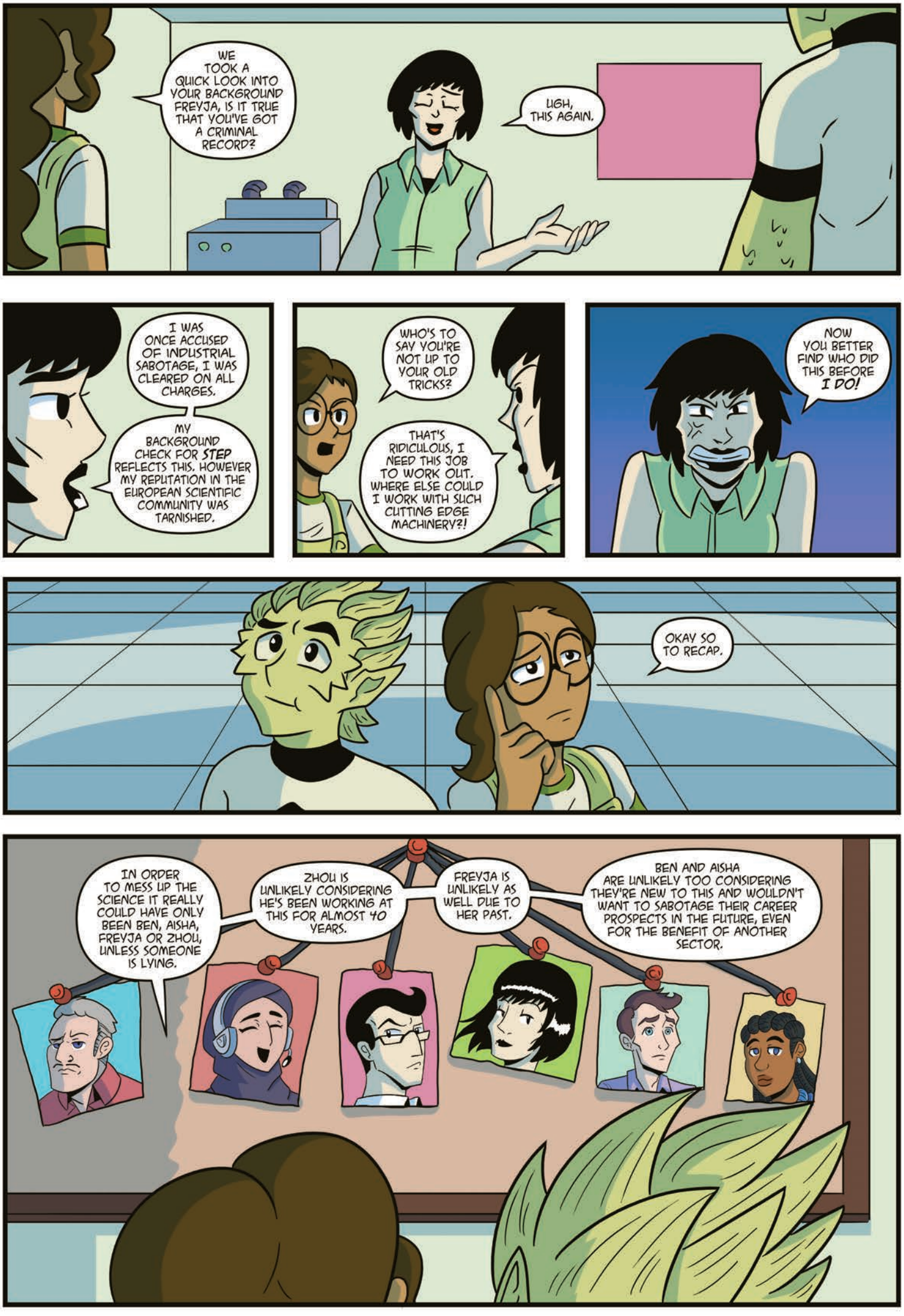

SO BEN, WE DON'T KNOW MUCH ABOUT HOW YOU GOT THIS JOB BUT YOU'VE GOT A STELLAR RESUME.
LISTEN, I CANNOT LOSE THIS JOB!

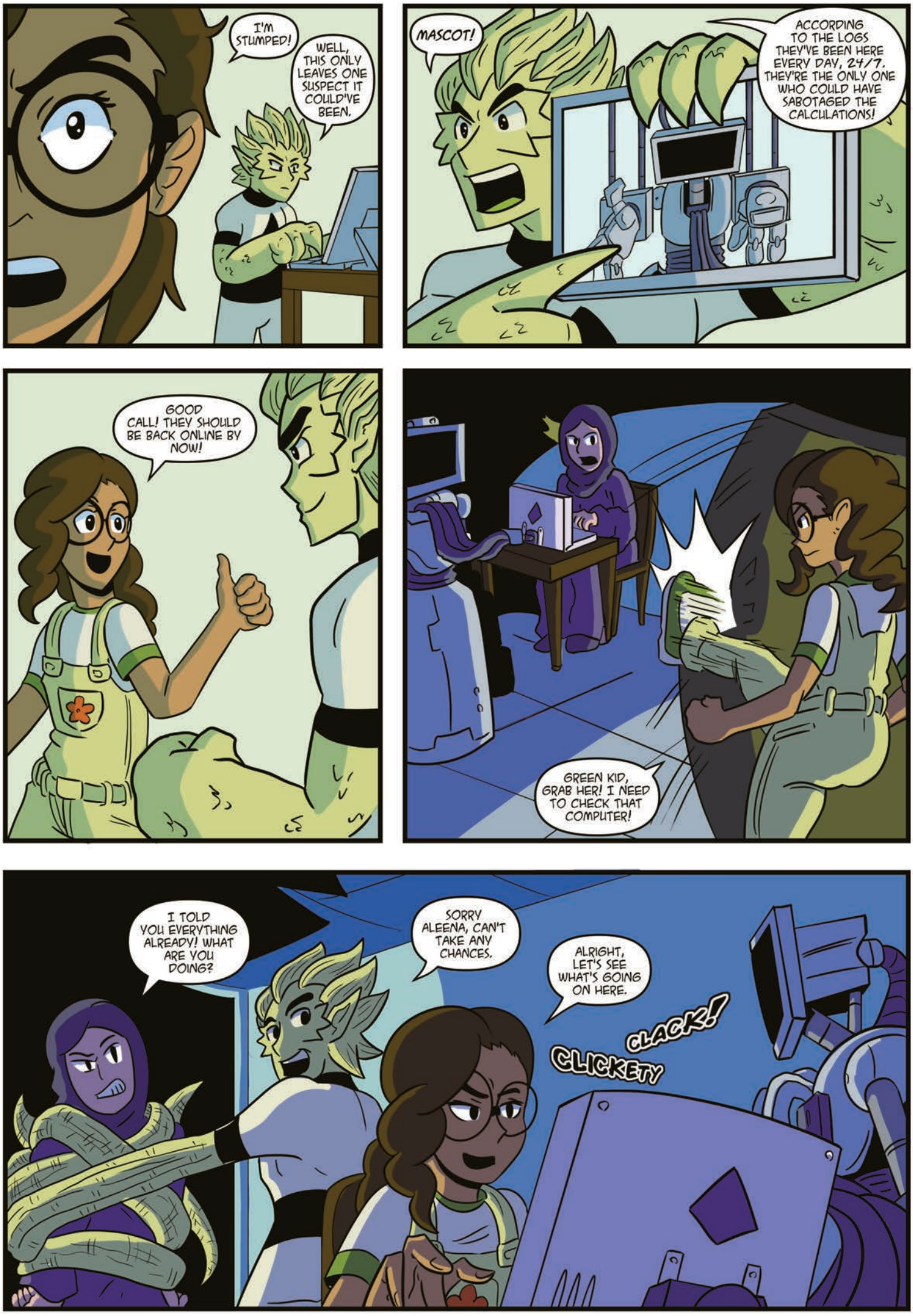

ZHOU HAS BEEN DIFFICULT TO WORK WITH TO BE HONEST.
HE'S USED TO THE WAY THINGS WORKED ON JET AND HE'S NOT MALLEABLE TO NEW WAYS OF WORKING.
WE'RE BOTH SO INVESTED IN THIS PROJECT, I CAN'T SEE HOW SABOTAGING IT WOULD HELP EITHER OF US!

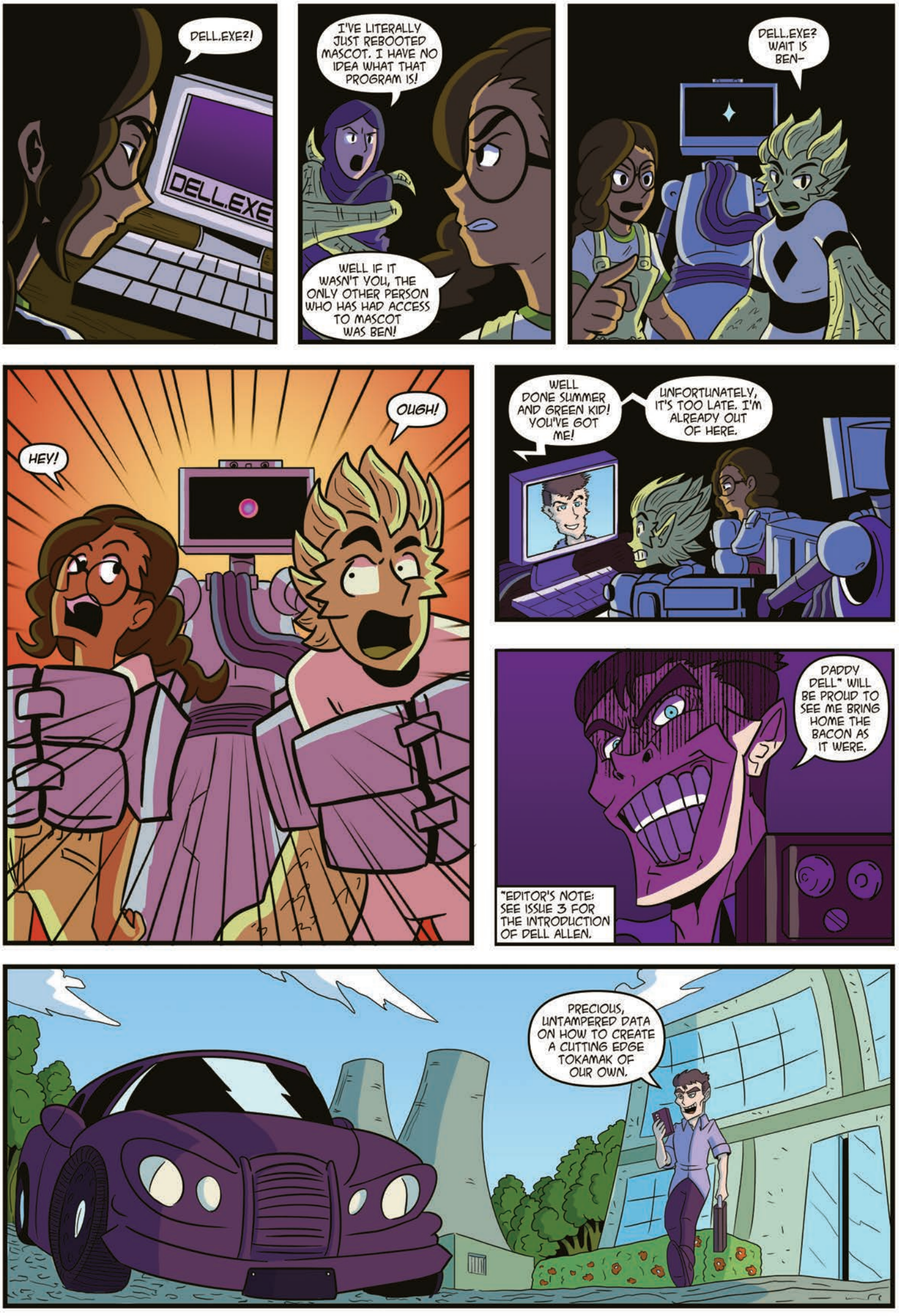

WHY ARE YOU SO NERVOUS?
I'M NEW TO ALL OF THIS. I LOVE THIS JOB, I JUST HOPE GETTING CAUGHT UP IN ALL THIS DOESN'T RUIN MY CAREER.

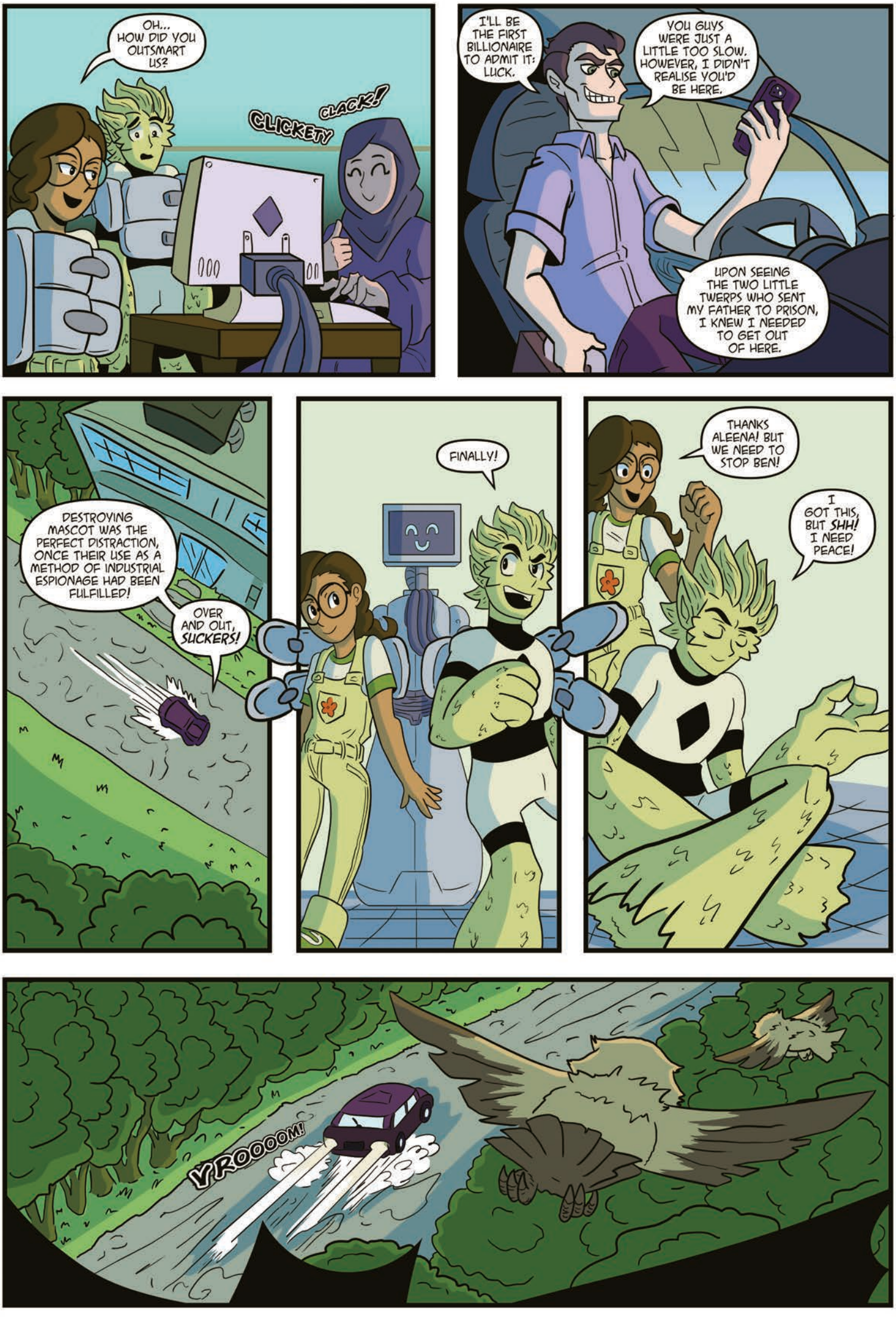

YOU'RE AN INCREDIBLY QUALIFIED MEMBER OF THE TEAM, YOU COULD EASILY HAVE EDITED THE CALCULATIONS.
IF IT WAS ME, I WOULDN'T HAVE BEEN CAUGHT.

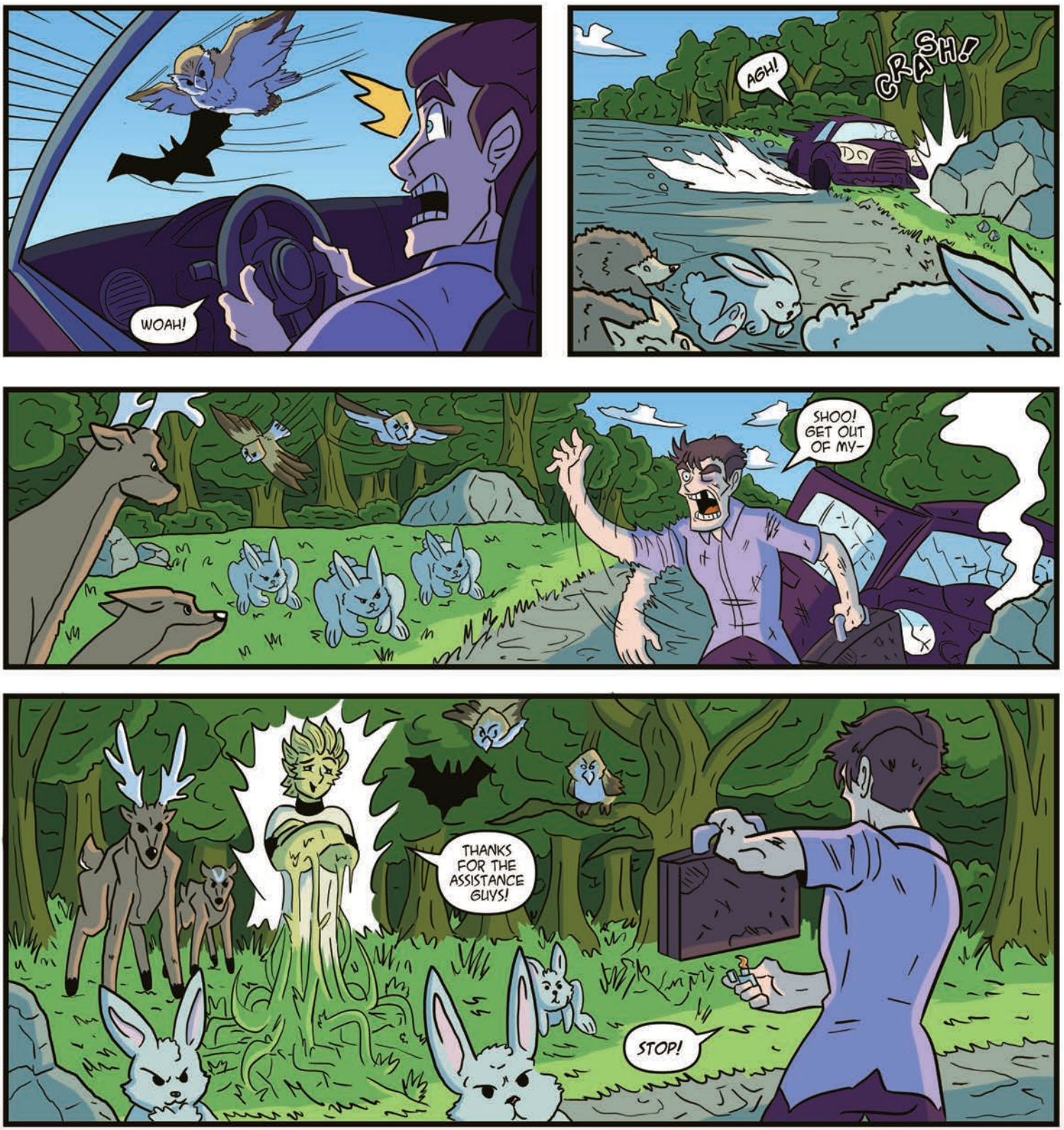

HONESTLY? I ONLY GOT THE JOB INTERVIEW BECAUSE OF A FAMILY CONNECTION. I CAN'T DISAPPOINT THEM NOW.

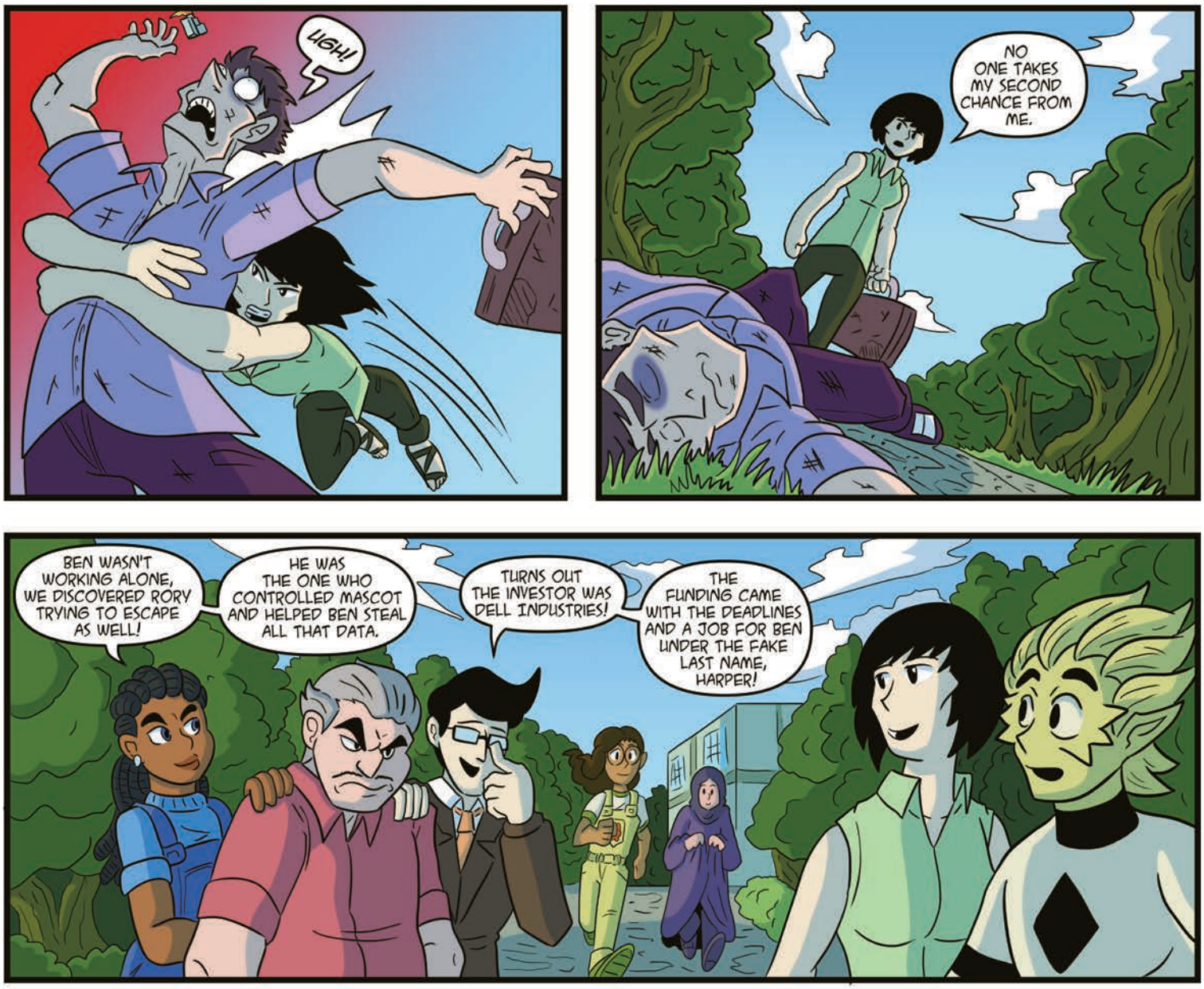

WE TOOK A QUICK LOOK INTO YOUR BACKGROUND FREYJA, IS IT TRUE THAT YOU'VE GOT A CRIMINAL RECORD?
UGH, THIS AGAIN.
I WAS ONCE ACCUSED OF INDUSTRIAL SABOTAGE, I WAS CLEARED ON ALL CHARGES.
MY BACKGROUND CHECK FOR STEP REFLECTS THIS. HOWEVER MY REPUTATION IN THE EUROPEAN SCIENTIFIC COMMUNITY WAS TARNISHED.
WHO'S TO SAY YOU'RE NOT UP TO YOUR OLD TRICKS?
THAT'S RIDICULOUS, I NEED THIS JOB TO WORK OUT. WHERE ELSE COULD I WORK WITH SUCH CUTTING EDGE MACHINERY?!
NOW YOU BETTER FIND WHO DID THIS BEFORE I DO!
OKAY SO TO RECAP.
IN ORDER TO MESS UP THE SCIENCE IT REALLY COULD HAVE ONLY BEEN BEN, AISHA, FREYJA OR ZHOU, UNLESS SOMEONE IS LYING.
ZHOU IS UNLIKELY CONSIDERING HE'S BEEN WORKING AT THIS FOR ALMOST 40 YEARS.
FREYJA IS UNLIKELY AS WELL DUE TO HER PAST.
BEN AND AISHA ARE UNLIKELY TOO CONSIDERING THEY'RE NEW TO THIS AND WOULDN'T WANT TO SABOTAGE THEIR CAREER PROSPECTS IN THE FUTURE, EVEN FOR THE BENEFIT OF ANOTHER SECTOR.


I'M STUMPED!
WELL, THIS ONLY LEAVES ONE SUSPECT IT COULD'VE BEEN.
MASCOT!
ACCORDING TO THE LOGS THEY'VE BEEN HERE EVERY DAY, 24/7. THEY'RE THE ONLY ONE WHO COULD HAVE SABOTAGED THE CALCULATIONS!
GOOD CALL! THEY SHOULD BE BACK ONLINE BY NOW!
GREEN KID, GRAB HER! I NEED TO CHECK THAT COMPUTER!
I TOLD YOU EVERYTHING ALREADY! WHAT ARE YOU DOING?
SORRY ALEENA, CAN'T TAKE ANY CHANCES.
ALRIGHT, LET'S SEE WHAT'S GOING ON HERE.
CLACK!
CLICKETY


DELL.EXE?!
DELL.EXE
I'VE LITERALLY JUST REBOOTED MASCOT. I HAVE NO IDEA WHAT THAT PROGRAM IS!
WELL IF IT WASN'T YOU, THE ONLY OTHER PERSON WHO HAS HAD ACCESS TO MASCOT WAS BEN!
DELL.EXE? WAIT IS BEN-
HEY!
OUGH!
WELL DONE SUMMER AND GREEN KID! YOU'VE GOT ME!
UNFORTUNATELY, IT'S TOO LATE. I'M ALREADY OUT OF HERE.
DADDY DELL" WILL BE PROUD TO SEE ME BRING HOME THE BACON AS IT WERE.
"EDITOR'S NOTE: SEE ISSUE 3 FOR THE INTRODUCTION OF DELL ALLEN.
PRECIOUS, UNTAMPERED DATA ON HOW TO CREATE A CUTTING EDGE TOKAMAK OF OUR OWN.

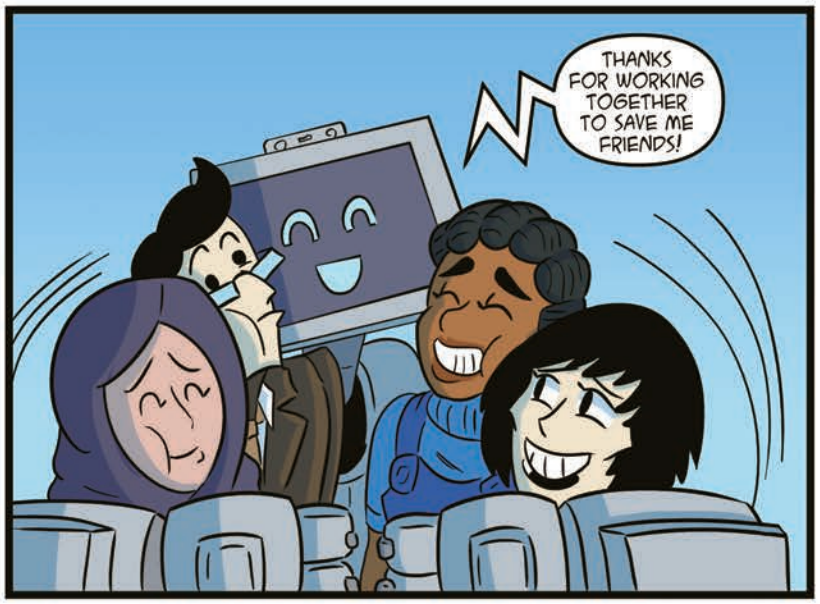

OH... HOW DID YOU OUTSMART US?
CLICKETY
CLACK!
I'LL BE THE FIRST BILLIONAIRE TO ADMIT IT: LUCK.
YOU GUYS WERE JUST A LITTLE TOO SLOW. HOWEVER, I DIDN'T REALISE YOU'D BE HERE.
UPON SEEING THE TWO LITTLE TWERPS WHO SENT MY FATHER TO PRISON, I KNEW I NEEDED TO GET OUT OF HERE.
DESTROYING MASCOT WAS THE PERFECT DISTRACTION, ONCE THEIR USE AS A METHOD OF INDUSTRIAL ESPIONAGE HAD BEEN FULFILLED!
OVER AND OUT, SUCKERS!
FINALLY!
THANKS ALEENA! BUT WE NEED TO STOP BEN!
I GOT THIS, BUT SHH! I NEED PEACE!
VROOOOM!

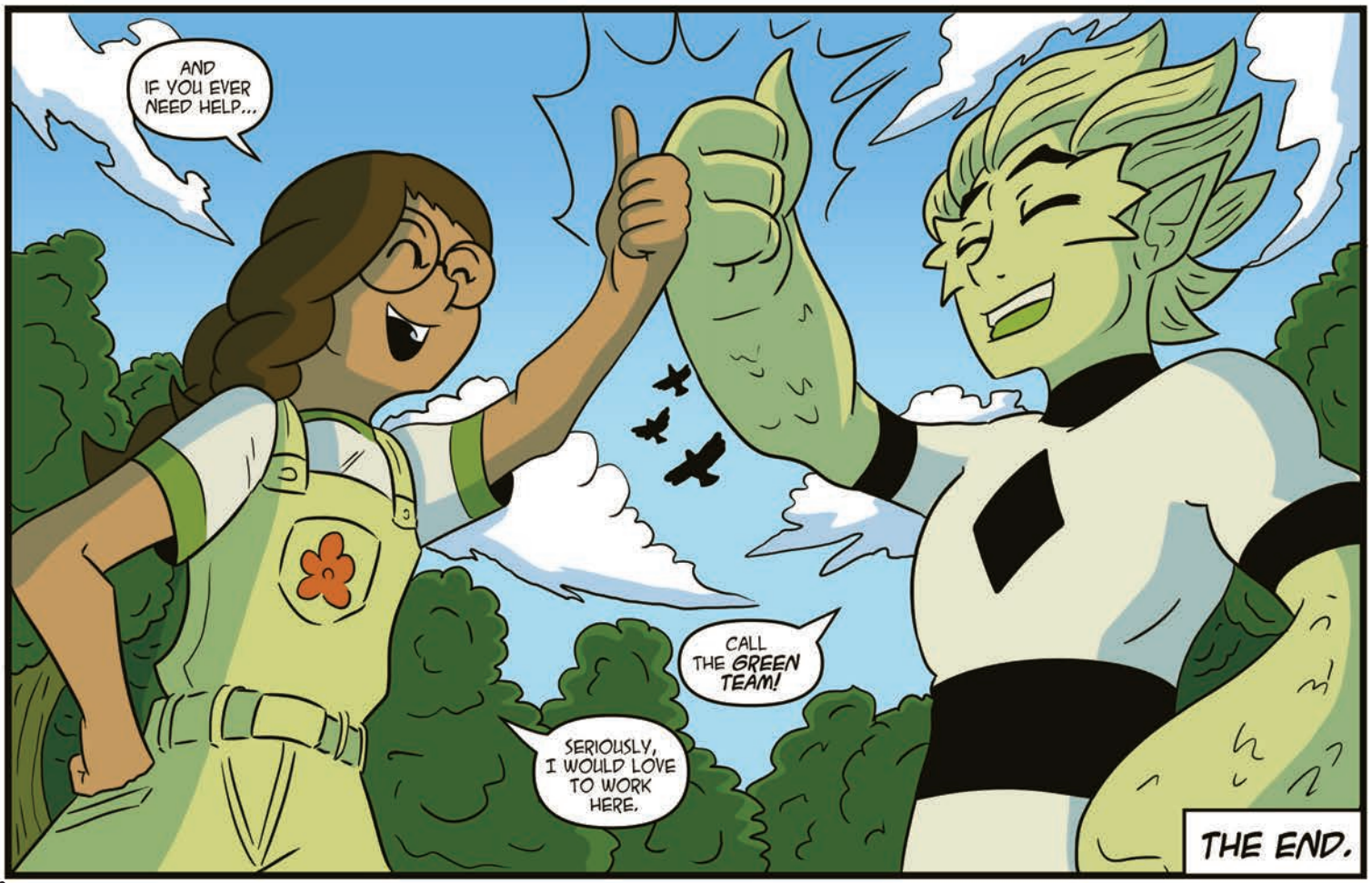

WOAH!
AGH!
CRASH!
SHOO! GET OUT OF MY-
THANKS FOR THE ASSISTANCE GUYS!
STOP!
NOW, UNLESS YOU WANT THIS ALL UP IN SMOKE, I SUGGEST YOU STEP AWAY NO-

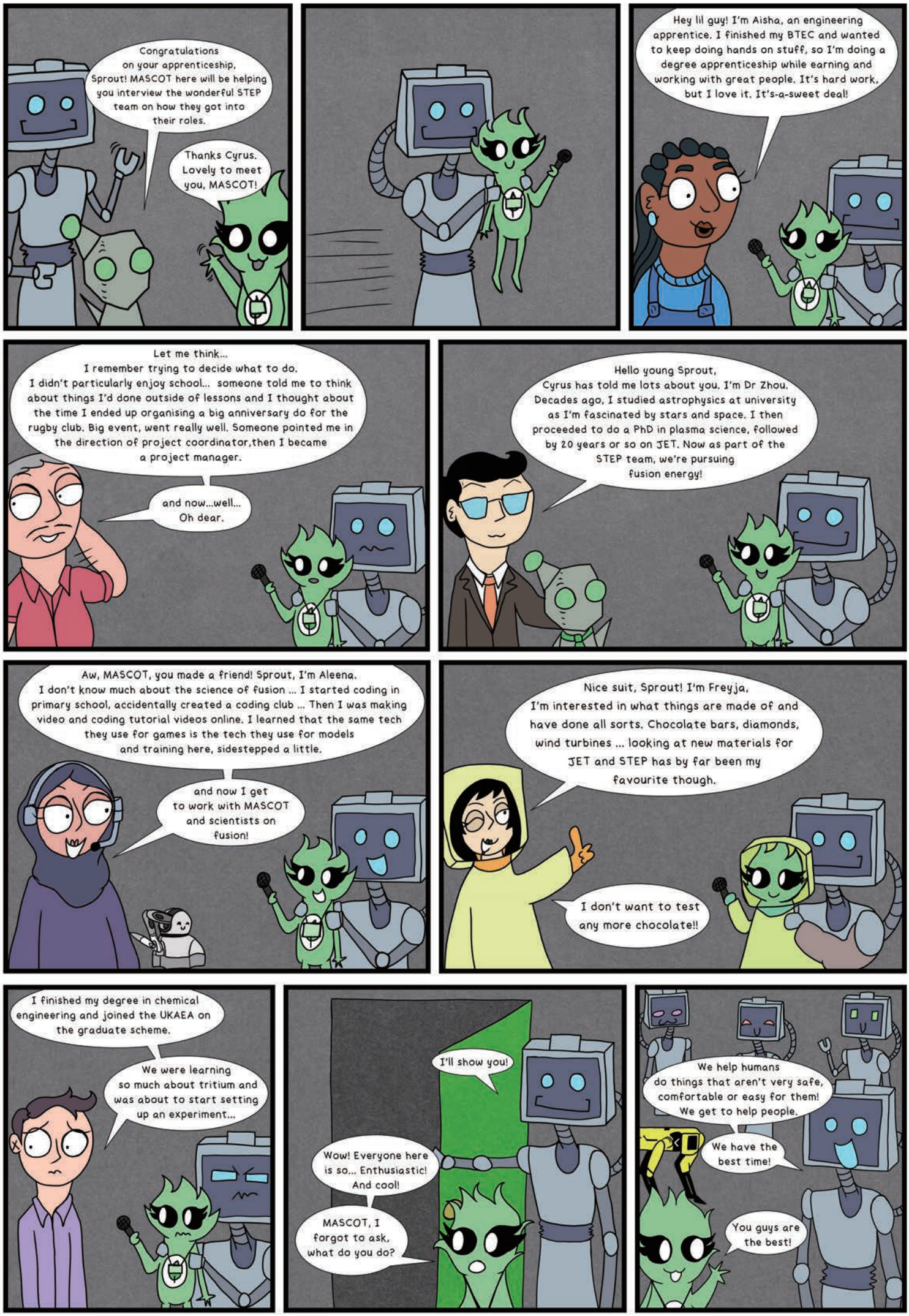

UGH!
NO ONE TAKES MY SECOND CHANCE FROM ME.
BEN WASN'T WORKING ALONE, WE DISCOVERED RORY TRYING TO ESCAPE AS WELL!
HE WAS THE ONE WHO CONTROLLED MASCOT AND HELPED BEN STEAL ALL THAT DATA.
TURNS OUT THE INVESTOR WAS DELL INDUSTRIES!
THE FUNDING CAME WITH THE DEADLINES AND A JOB FOR BEN UNDER THE FAKE LAST NAME, HARPER!
NOW THAT WE WON'T HAVE RORY HERE BREATHING DOWN YOUR NECK, I HOPE WE CAN WORK TOGETHER TO FINALLY FINISH THE MODEL OF OUR FUSION POWER STATION! WHAT DO YOU THINK, ZHOU?
I COULDN'T AGREE MORE, AISHA.
AND I'M SORRY FOR ACCUSING YOU ALEENA.
NO HARM DONE IN THE END! MASCOT EVEN SEEMS PERKIER NOW THEY'VE BEEN REPAIRED.


WITH ALL OF WHAT'S HAPPENED OVER THE PAST DAY, HOW CAN WE REALLY TRUST EACH OTHER WITH THIS REVOLUTIONARY TECHNOLOGY?


LIKE I SAID BEFORE, AS LONG AS EVERYONE IS WORKING TOWARDS A COMMON GOAL, YOU CAN TRUST IN THAT!


THANKS FOR WORKING TOGETHER TO SAVE ME FRIENDS!


AND IF YOU EVER NEED HELP...
CALL THE GREEN TEAM!
SERIOUSLY, I WOULD LOVE TO WORK HERE.
THE END.


Congratulations on your apprenticeship, Sprout! MASCOT here will be helping you interview the wonderful STEP team on how they got into their roles.
Thanks Cyrus. Lovely to meet you, MASCOT!
Hey lil guy! I'm Aisha, an engineering apprentice. I finished my BTEC and wanted to keep doing hands on stuff, so I'm doing a degree apprenticeship while earning and working with great people. It's hard work, but I love it. It's-a-sweet deal!
Let me think... I remember trying to decide what to do. I didn't particularly enjoy school... someone told me to think about things I'd done outside of lessons and I thought about the time I ended up organising a big anniversary do for the rugby club. Big event, went really well. Someone pointed me in the direction of project coordinator,then I became a project manager.
and now...well... Oh dear.
Hello young Sprout, Cyrus has told me lots about you. I'm Dr Zhou. Decades ago, I studied astrophysics at university as I'm fascinated by stars and space. I then proceeded to do a PhD in plasma science, followed by 20 years or so on JET. Now as part of the STEP team, we're pursuing fusion energy!
Aw, MASCOT, you made a friend! Sprout, I'm Aleena. I don't know much about the science of fusion ... I started coding in primary school, accidentally created a coding club ... Then I was making video and coding tutorial videos online. I learned that the same tech they use for games is the tech they use for models and training here, sidestepped a little.
and now I get to work with MASCOT and scientists on fusion!
Nice suit, Sprout! I'm Freyja, I'm interested in what things are made of and have done all sorts. Chocolate bars, diamonds, wind turbines ... looking at new materials for JET and STEP has by far been my favourite though.
I don't want to test any more chocolate!!
I finished my degree in chemical engineering and joined the UKAEA on the graduate scheme.
We were learning so much about tritium and was about to start setting up an experiment...
I'll show you!
Wow! Everyone here is so... Enthusiastic! And cool!
MASCOT, I forgot to ask, what do you do?
We help humans do things that aren't very safe, comfortable or easy for them! We get to help people.
We have the best time!
You guys are the best!

WORDSEARCH

E	A	U	S	I	M	U	L	A	T	I	O	N	S
U	L	D	P	O	E	E	L	E	M	E	N	T	O
A	T	E	T	N	E	E	U	I	E	E	E	U	U
I	T	U	C	L	E	A	N	E	N	E	R	G	Y
A	O	T	A	J	I	T	I	S	O	T	O	P	E
A	K	E	R	M	E	S	P	Y	M	A	E	U	T
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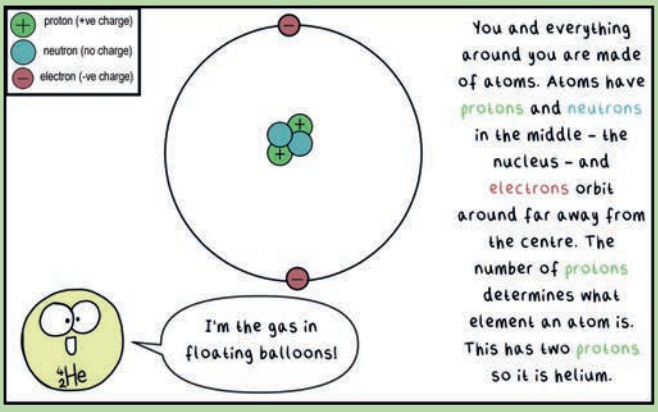
M	M	I	J	U	E	I	T	O	F	S	T	E	L
U	A	U	E	L	L	M	R	R	U	A	O	T	A
I	K	M	T	N	E	T	E	M	S	L	E	P	O
T	M	A	G	A	C	O	E	I	I	P	Y	E	E
I	E	E	T	E	S	K	N	M	O	E	K	T	U
R	T	U	L	O	E	R	A	M	N	D	O	S	R
T	U	E	N	U	M	O	A	A	I	S	C	A	M

ATOM
CLEAN ENERGY
DEUTERIUM
ELECTRON
ELEMENT
FUSION
ISOTOPE
JET
PLASMA
SIMULATIONS
STEP
TOKAMAK
TRITIUM

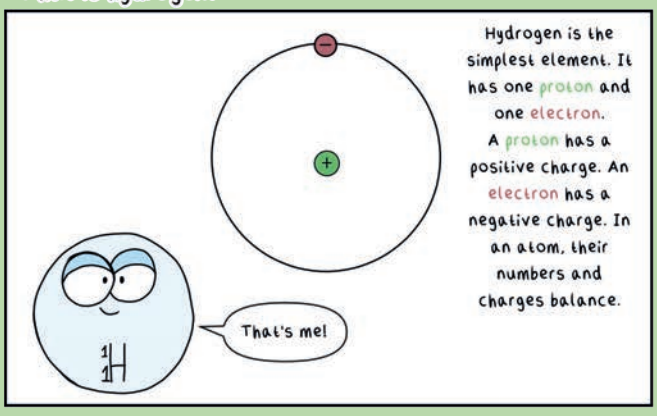
WHAT ARE ATOMS? WITH ATOM BOY

What is an atom?



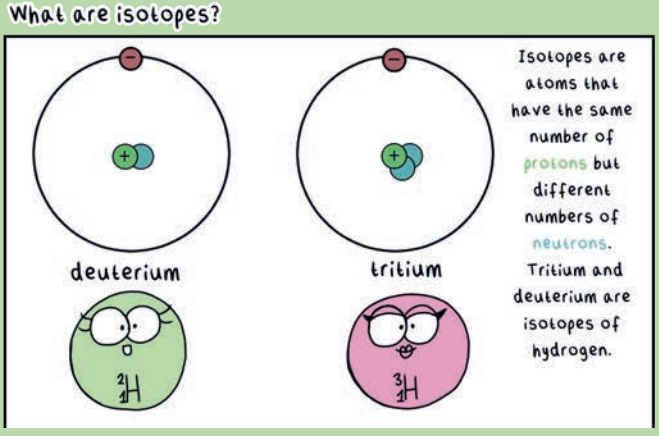
You and everything around you are made of atoms. Atoms have protons and neutrons in the middle – the nucleus – and electrons orbit around far away from the centre. The number of protons determines what element an atom is. This has two protons so it is helium.

What is hydrogen?



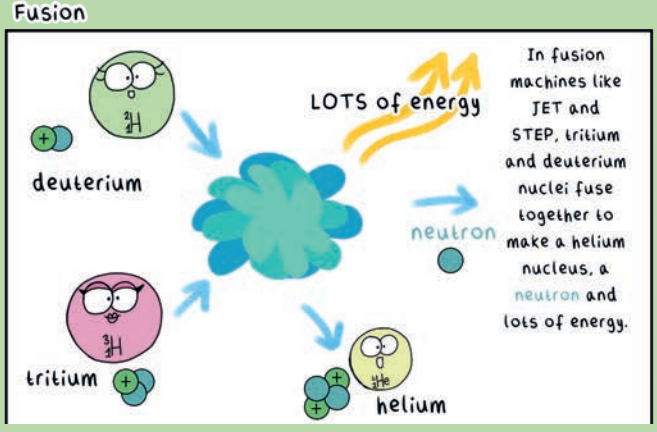
Hydrogen is the simplest element. It has one proton and one electron. A proton has a positive charge. An electron has a negative charge. In an atom, their numbers and charges balance.

What are isotopes?



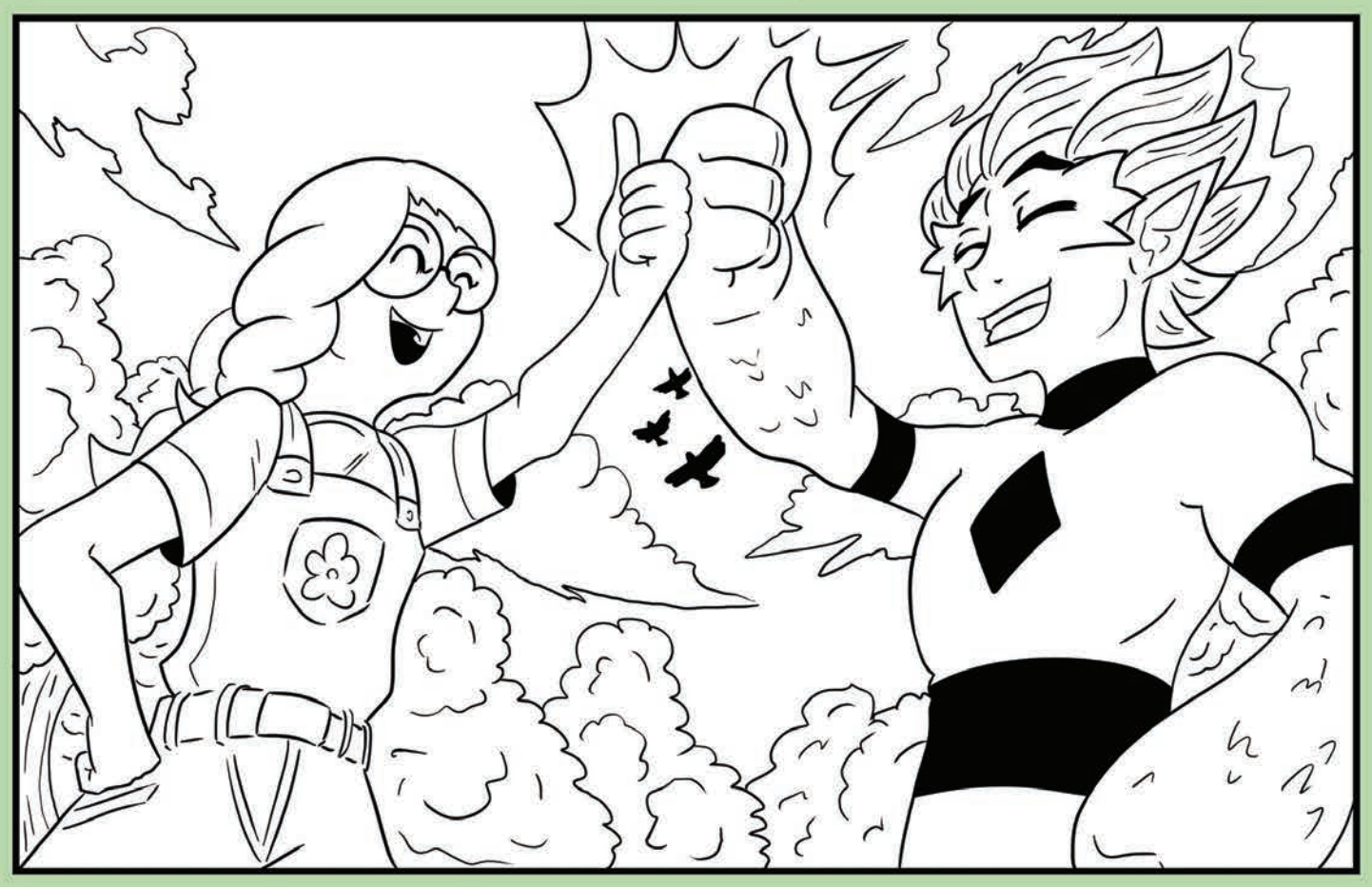
Isotopes are atoms that have the same number of protons but different numbers of neutrons. Tritium and deuterium are isotopes of hydrogen.

Fusion

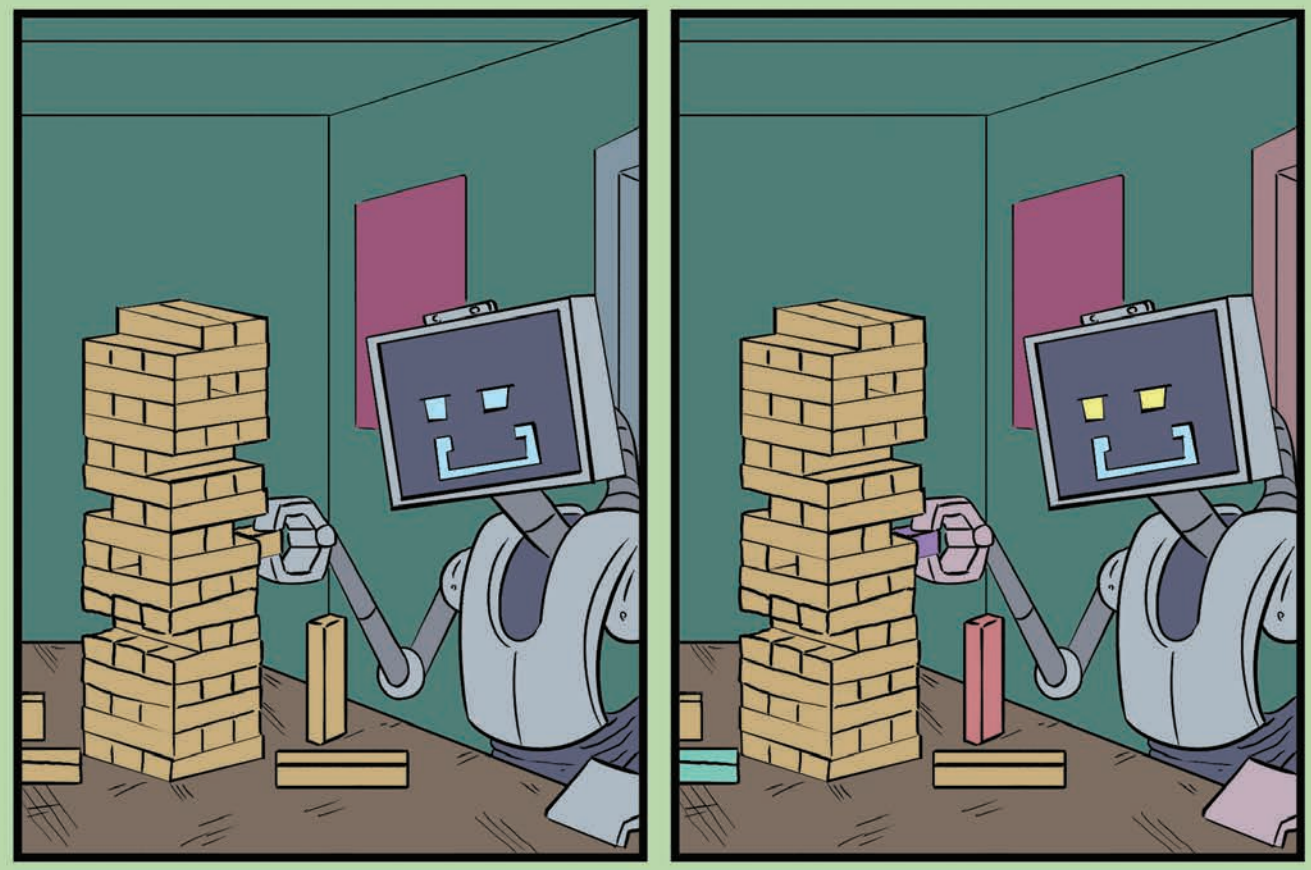


In fusion machines like JET and STEP, tritium and deuterium nuclei fuse together to make a helium nucleus, a neutron and lots of energy.

COLOUR ME IN!



SPOT THE DIFFERENCE



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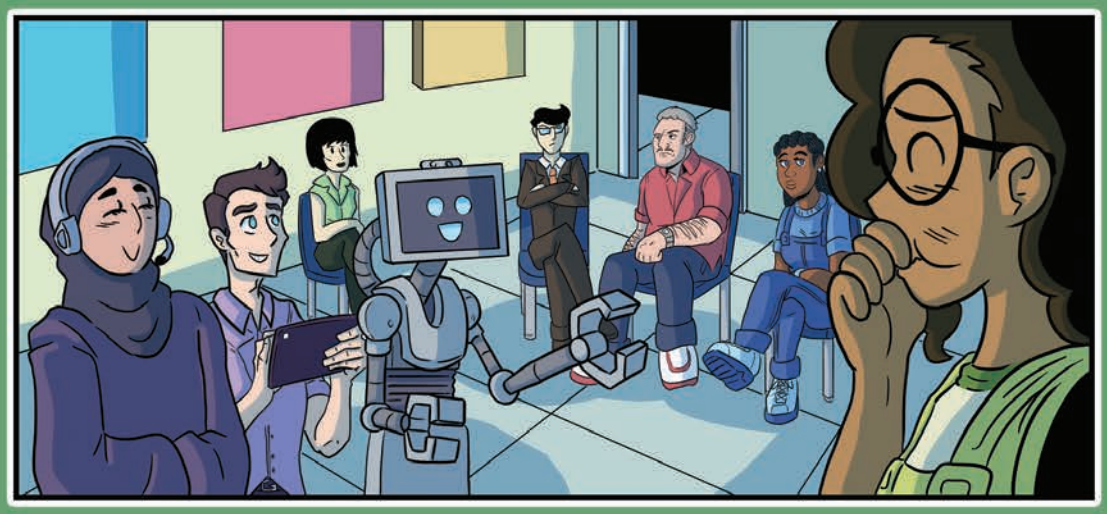

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