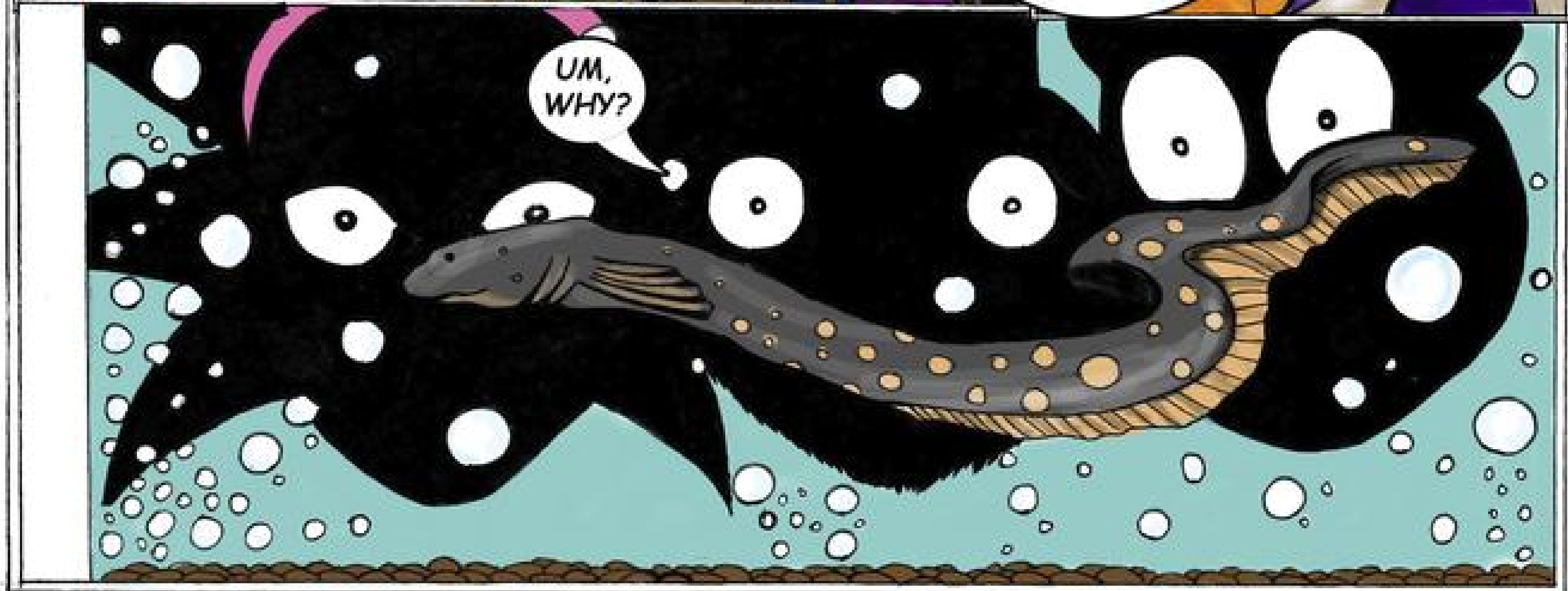


MOSA MACK **AND THE CASE OF THE** **BIG BLACKOUT**





JOKE GIFT FROM THE WIFE. YOU KNOW: ELECTRICAL ENGINEER, ELECTRIC EEL.

TO POSITIVE = ELECTRICITY

CAN HE REALLY SHOCK YOU?

MAGIC!

NOPE. NOT IN THE LEAST. THE SECRET TO ELECTRICITY, MY FRIEND, IS IN THE ATOM.

WHAT EVERYTHING IS MADE OF. YOU REMEMBER THE ATOM, RIGHT?

IT'S COMING, IT'S COMING

I REMEMBER ATOMS ARE MADE OF POSITIVE PROTONS AND NEGATIVE ELECTRONS.

3 PROTONS
+
3 ELECTRONS
=
NEUTRAL

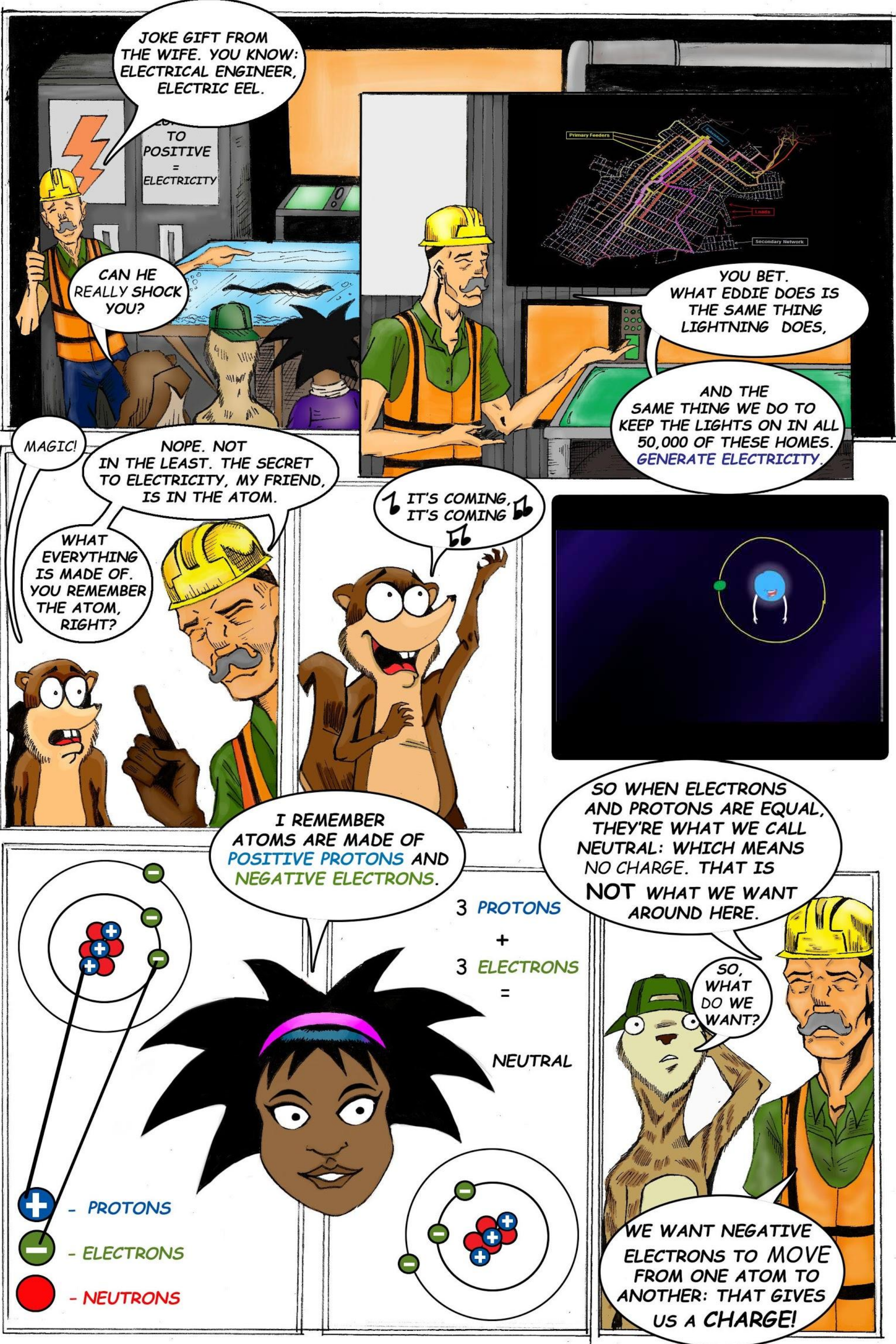
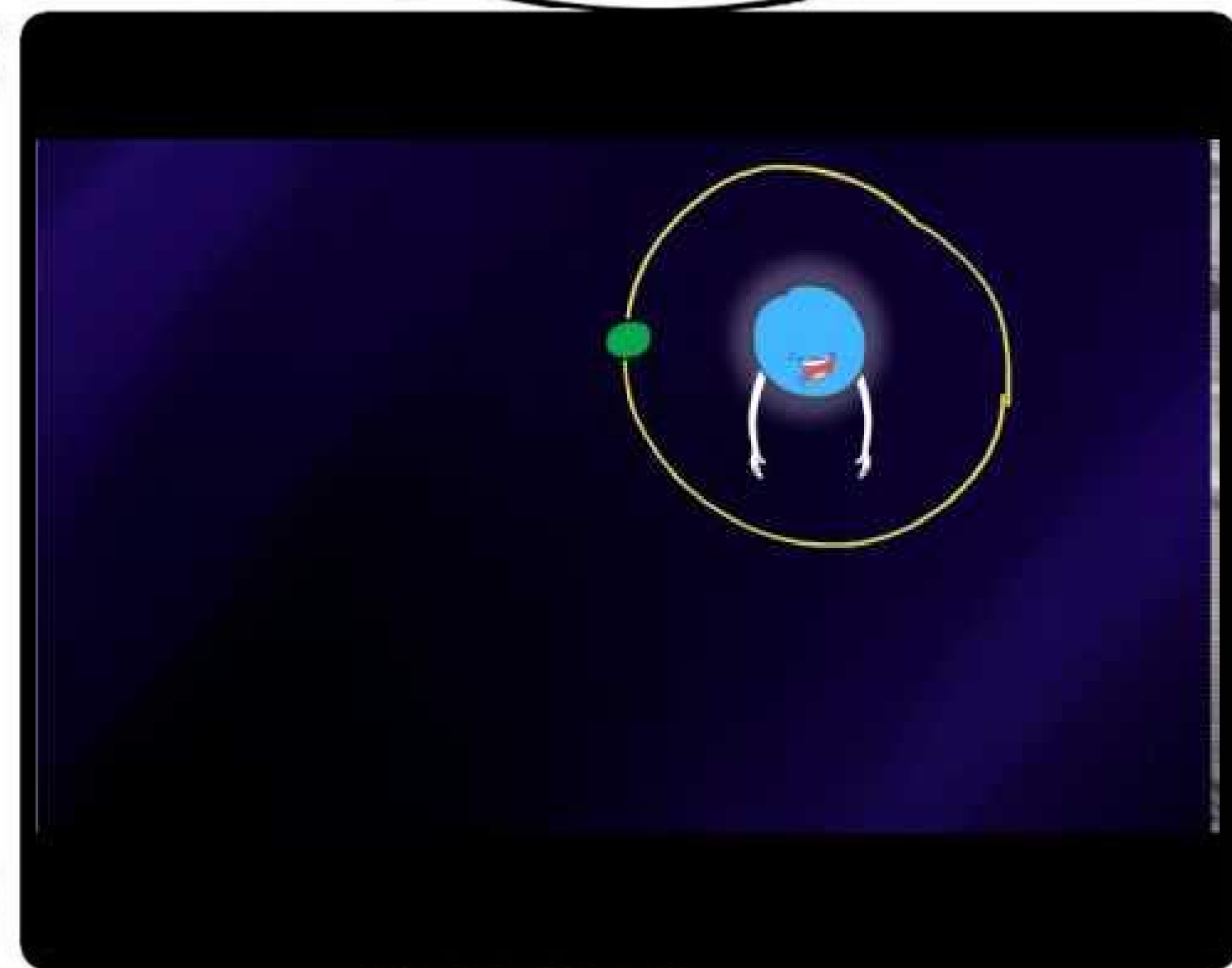
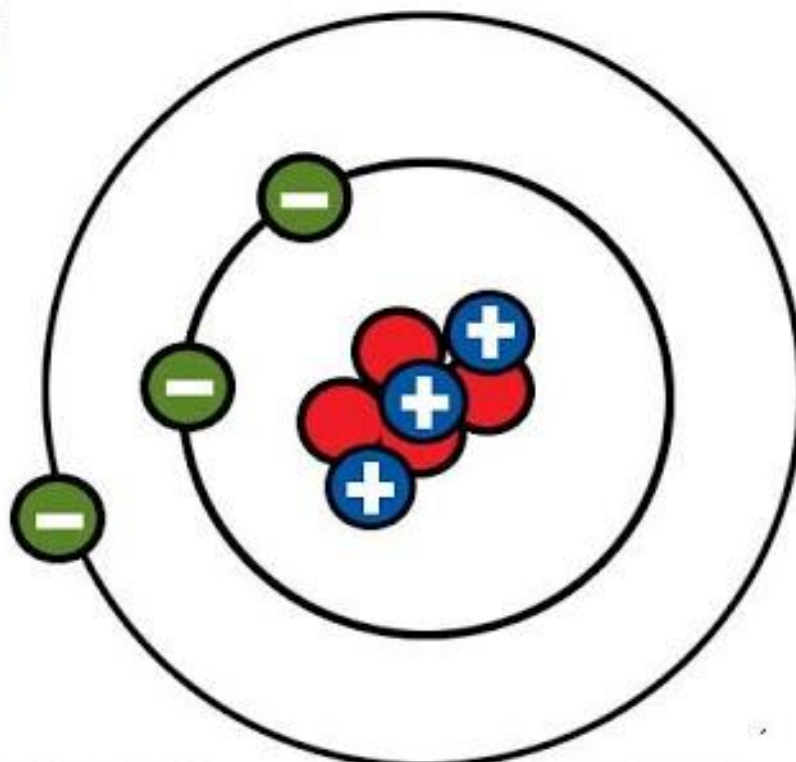
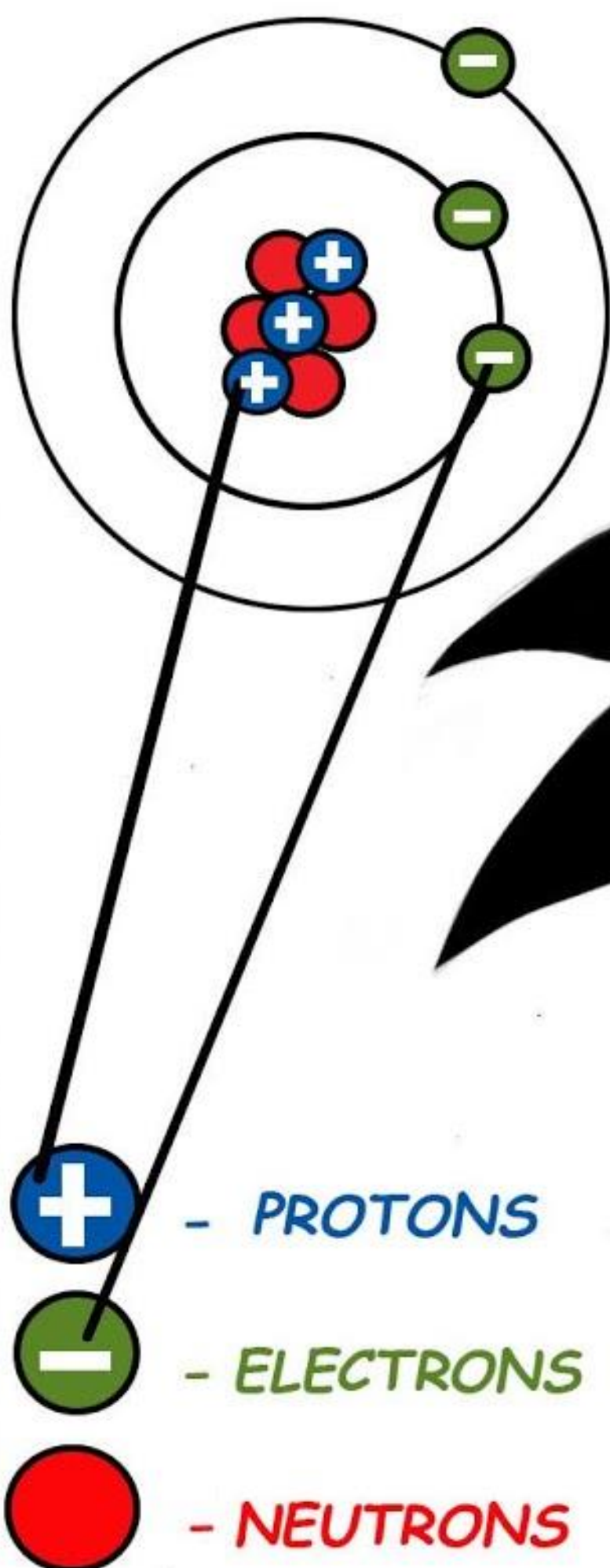
SO WHEN ELECTRONS AND PROTONS ARE EQUAL, THEY'RE WHAT WE CALL NEUTRAL: WHICH MEANS NO CHARGE. THAT IS NOT WHAT WE WANT AROUND HERE.

SO, WHAT DO WE WANT?

WE WANT NEGATIVE ELECTRONS TO MOVE FROM ONE ATOM TO ANOTHER: THAT GIVES US A CHARGE!

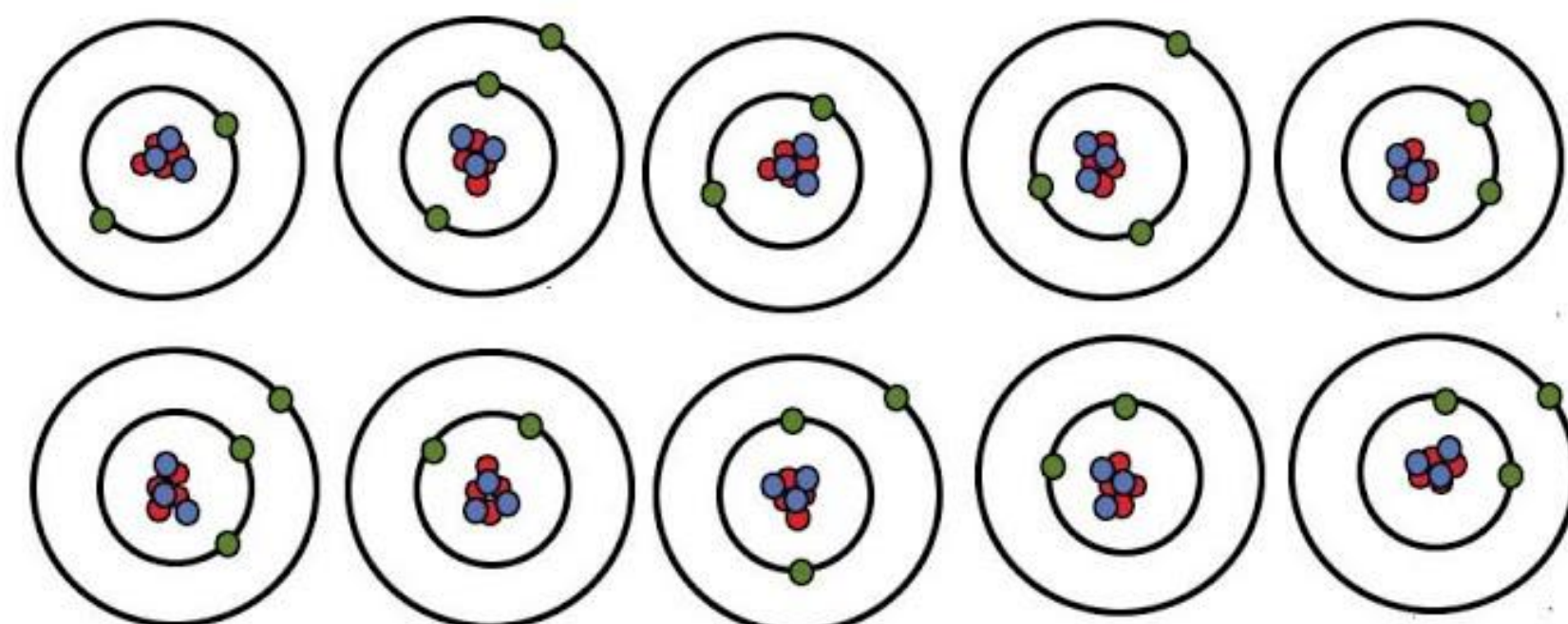
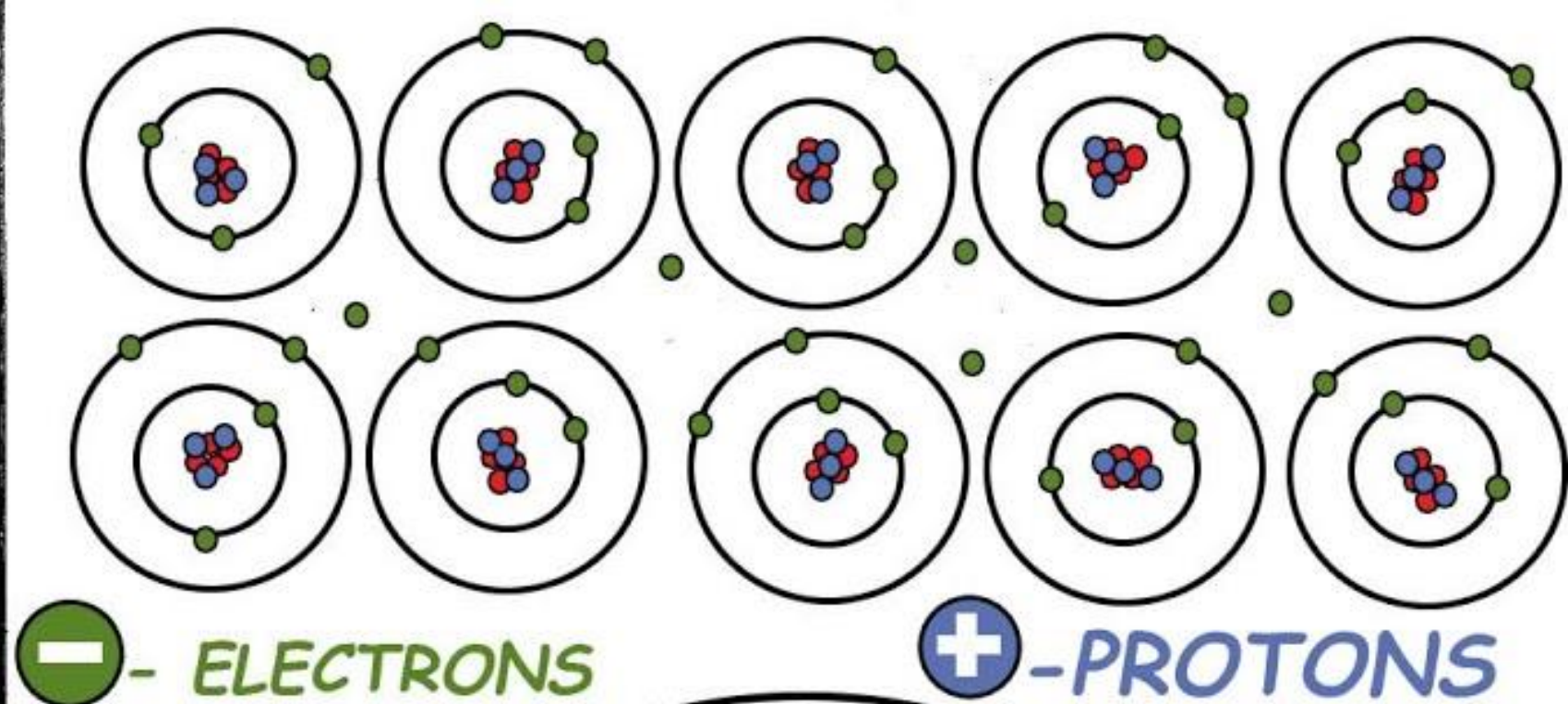
YOU BET. WHAT EDDIE DOES IS THE SAME THING LIGHTNING DOES,

AND THE SAME THING WE DO TO KEEP THE LIGHTS ON IN ALL 50,000 OF THESE HOMES. GENERATE ELECTRICITY.



NEGATIVELY CHARGED AREA:

POSITIVELY CHARGED AREA:



AN AREA WITH A **NEGATIVE** CHARGE HAS MORE **ELECTRONS**...

AND AN AREA WITH A **POSITIVE** CHARGE HAS MORE **PROTONS**?

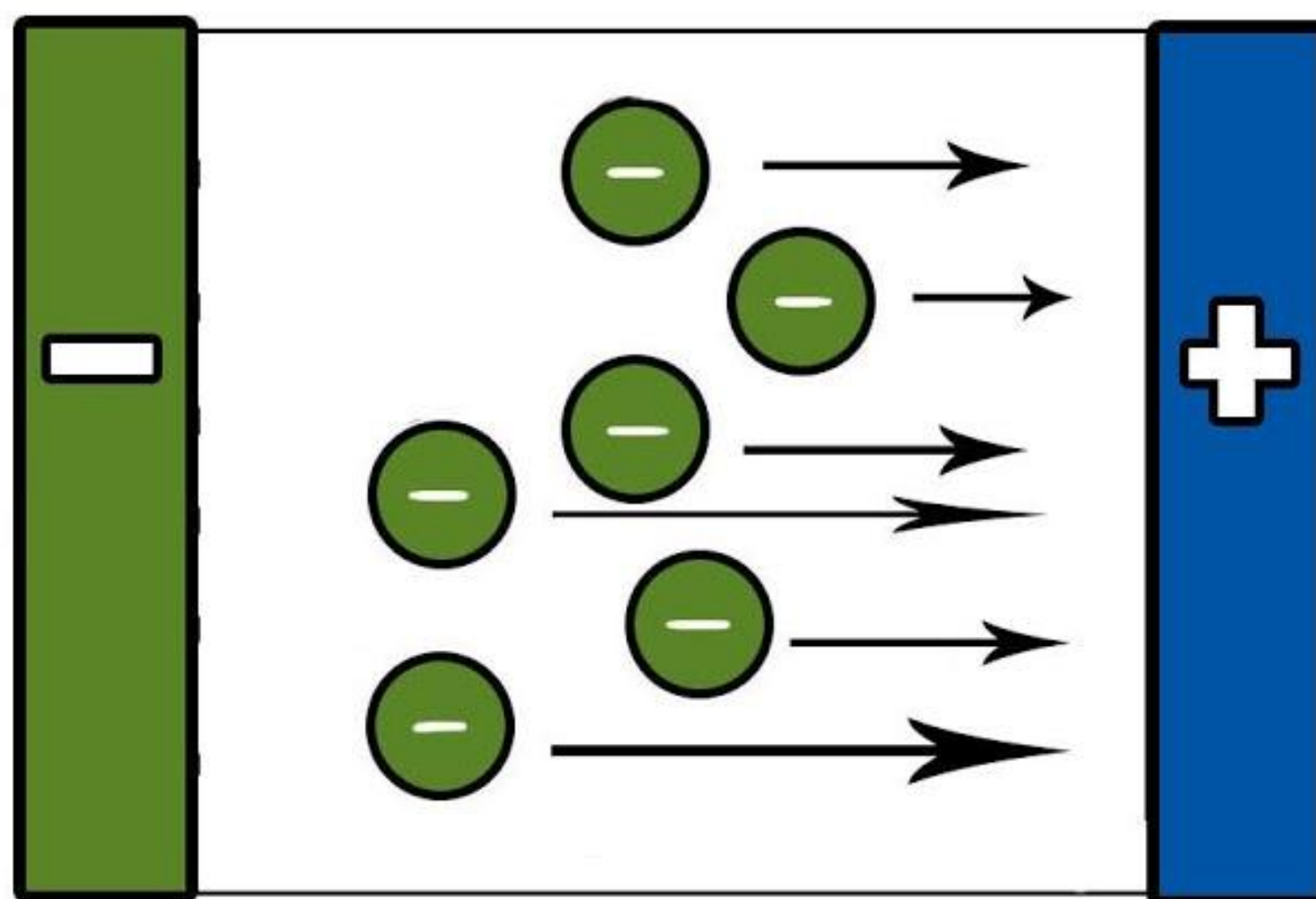
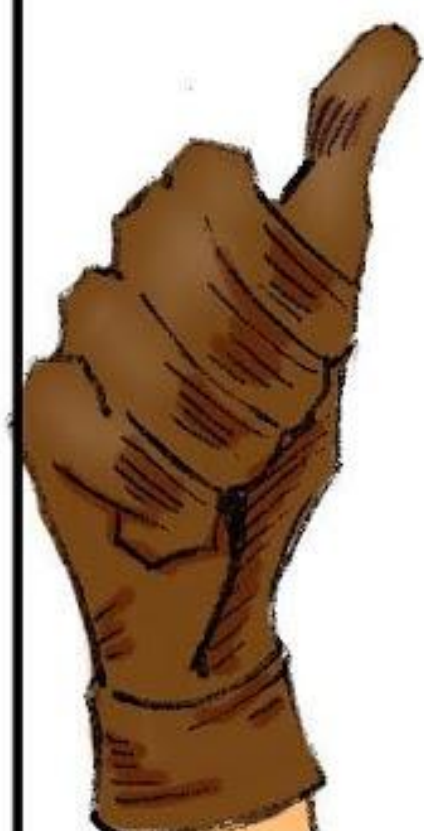
VERY CLOSE! AN AREA WITH A **POSITIVE** CHARGE HAS FEWER **ELECTRONS**.



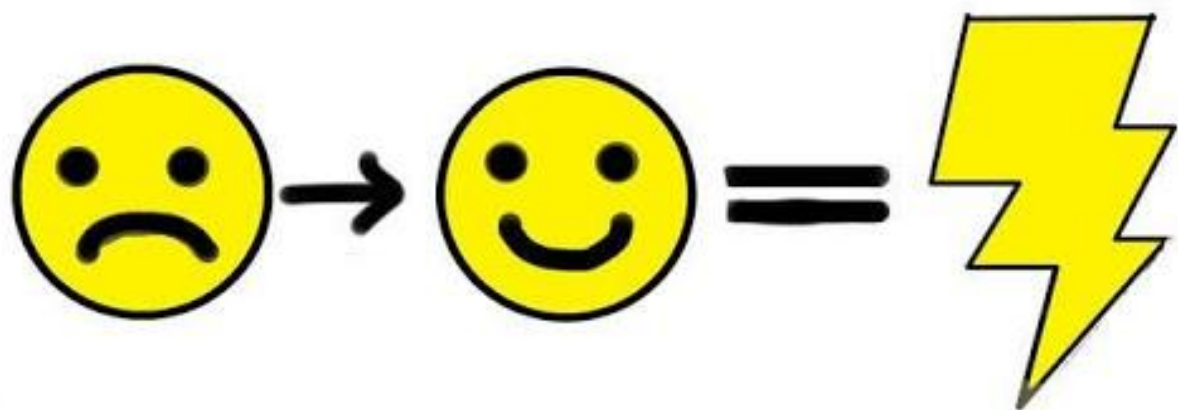
I APPRECIATE THE SUBTLETY.



NOW HERE'S THE KICKER:



WHEN YOU HAVE AN AREA WITH MORE **ELECTRONS** (**NEGATIVE**) AND AN AREA WITH FEWER **ELECTRONS** (**POSITIVE**), THERE'S A DIFFERENCE IN CHARGE. THAT DIFFERENCE RIGHT THERE IS KEY.



NEGATIVE
TO
POSITIVE
=
ELECTRICITY



BECAUSE **ELECTRONS** ALWAYS MOVE FROM WHERE THERE'S A **NEGATIVE** CHARGE... TO WHERE THERE'S A MORE **POSITIVE** CHARGE. THAT'S WHAT GENERATES ENERGY.



ZAP

WHAT?!
NO - NO - NOOO!!!

IT'S A BLACKOUT!
I DIDN'T TOUCH
ANYTHING, I
SWEAR!

DID HE
JUST FAINT?

NOW WHAT?
WE'VE GOT 50,000 HOUSES
WITHOUT ELECTRICITY AND
OUR ENGINEER IS OUTCOLD!

HI, JESSIE.

INCOMING
CALL...
JESSIE

WHY'S IT DARK,
MOSA? ARE YOU
SLEEPING?

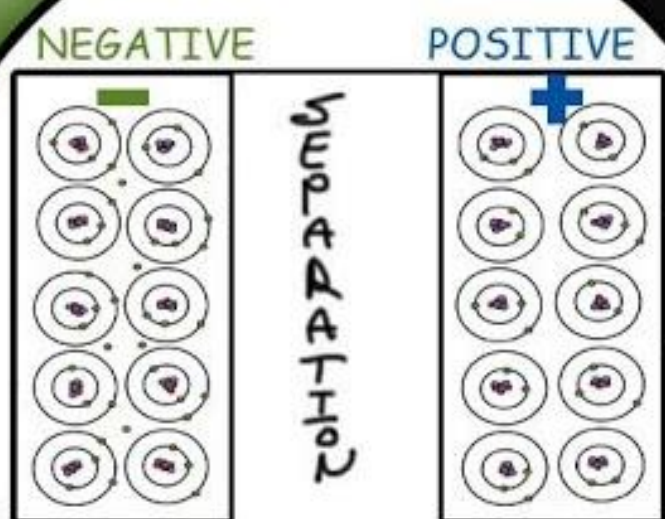
UMMM,
NO

GOOD,
'CAUSE MY MODEL
SKYSCRAPER IS DUE
TOMORROW AND I CAN'T
GET THE LIGHTS
ON!

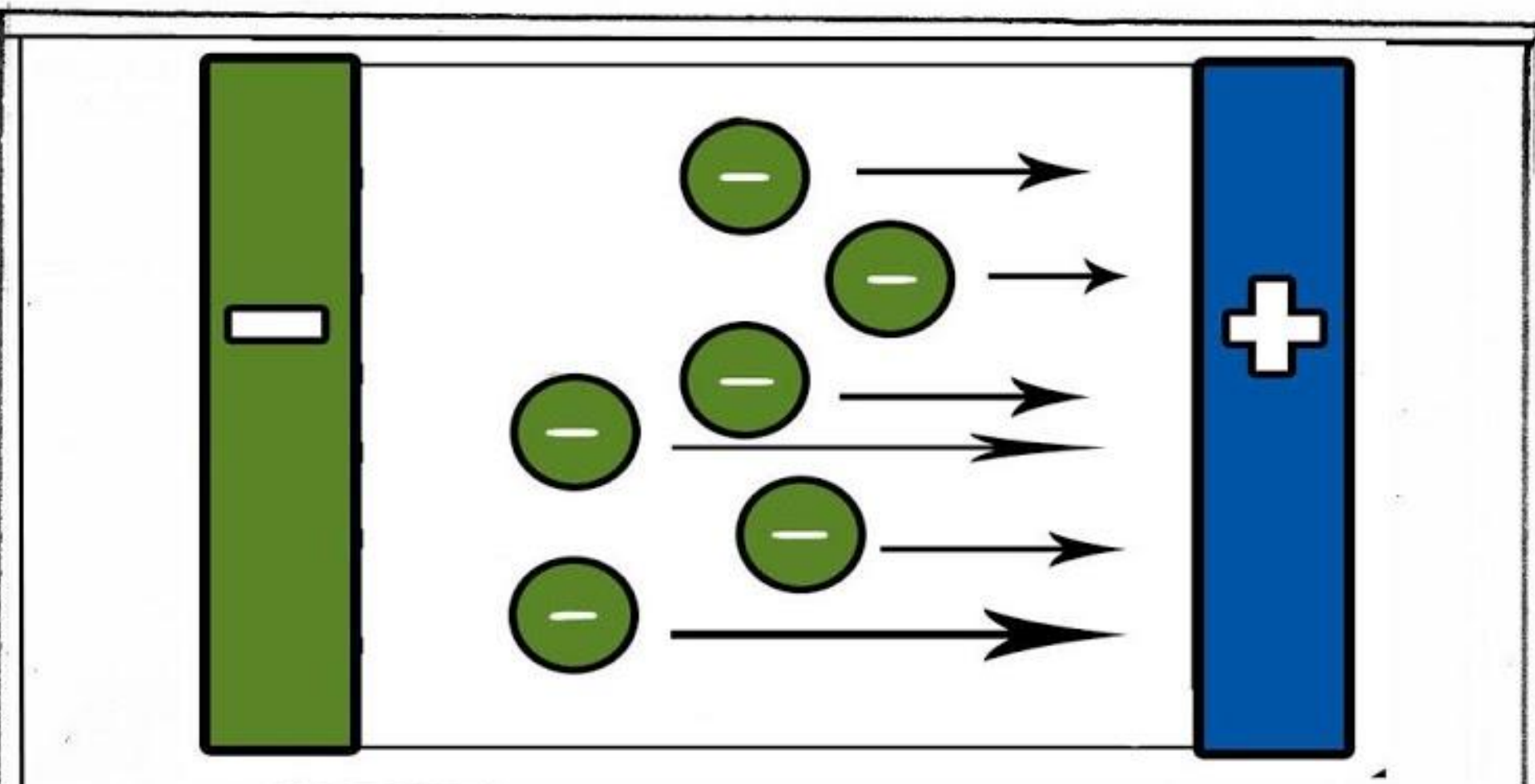
SHE'S GOT
OUR PROBLEM.

HERE'S WHAT I KNOW. A BATTERY
HAS A **NEGATIVE** END AND **POSITIVE**
END AND A SEPARATOR IN THE MIDDLE
PREVENTING THEM FROM MOVING
TOWARD EACH OTHER.

IT'S THAT DIFFERENCE
OF CHARGE! THE **NEGATIVE** END
MUST BE WHERE THERE ARE MORE
ELECTRONS. THE **POSITIVE** END
MUST BE WHERE THERE ARE
FEWER **ELECTRONS**.



I HOOK UP A WIRE TO GET THE **ELECTRONS** TO MOVE -- FROM THE **NEGATIVE** END THROUGH THE WIRE TO THE BULB. BUT NOTHING HAPPENS!



WAIT. THE ENGINEER SAID THE **ELECTRONS** FROM THE NEGATIVE AREA GENERATE ENERGY BY MOVING TOWARD THE POSITIVE AREA

WHICH MEANS?

THE **ELECTRONS** NEED TO GET TO A **POSITIVELY** CHARGED AREA!



IS THE LIGHT A **POSITIVE** CHARGE?



NO! WHICH IS WHY IT ISN'T LIGHTING UP. MAYBE INSTEAD OF STOPPING AT THE LIGHT BULB, THE WIRE COULD GO THROUGH IT!

SO: A WIRE GOING OUT OF THE LIGHT BULB TO TAKE THE **ELECTRONS** BACK TO THE **POSITIVE** END OF THE BATTERY?

MAYBE?



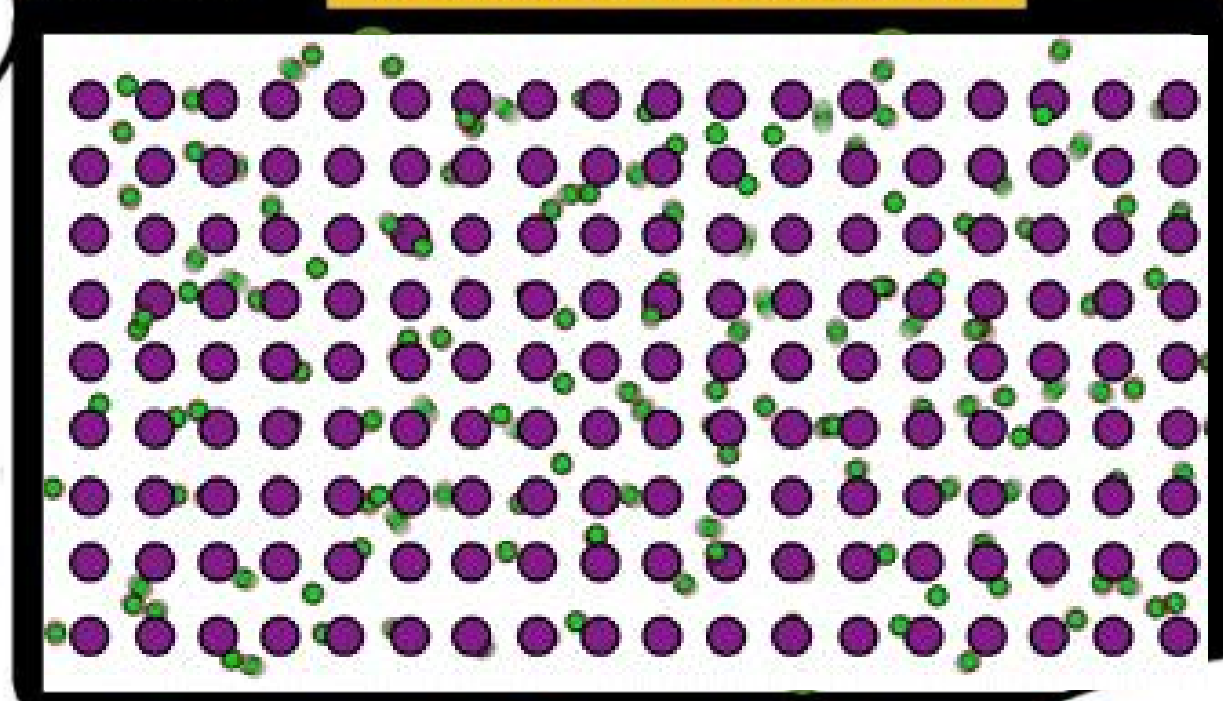
BEFORE I HOOK IT UP, LET'S MAKE SURE.

OKAY, APPARENTLY THIS IS CALLED "ELECTRICAL CURRENT."

CURRENT, AS IN RIVER? DO THE **ELECTRONS** USE TINY PADDLES?

THIS IS WHAT A WIRE LOOKS LIKE WITHOUT CURRENT.

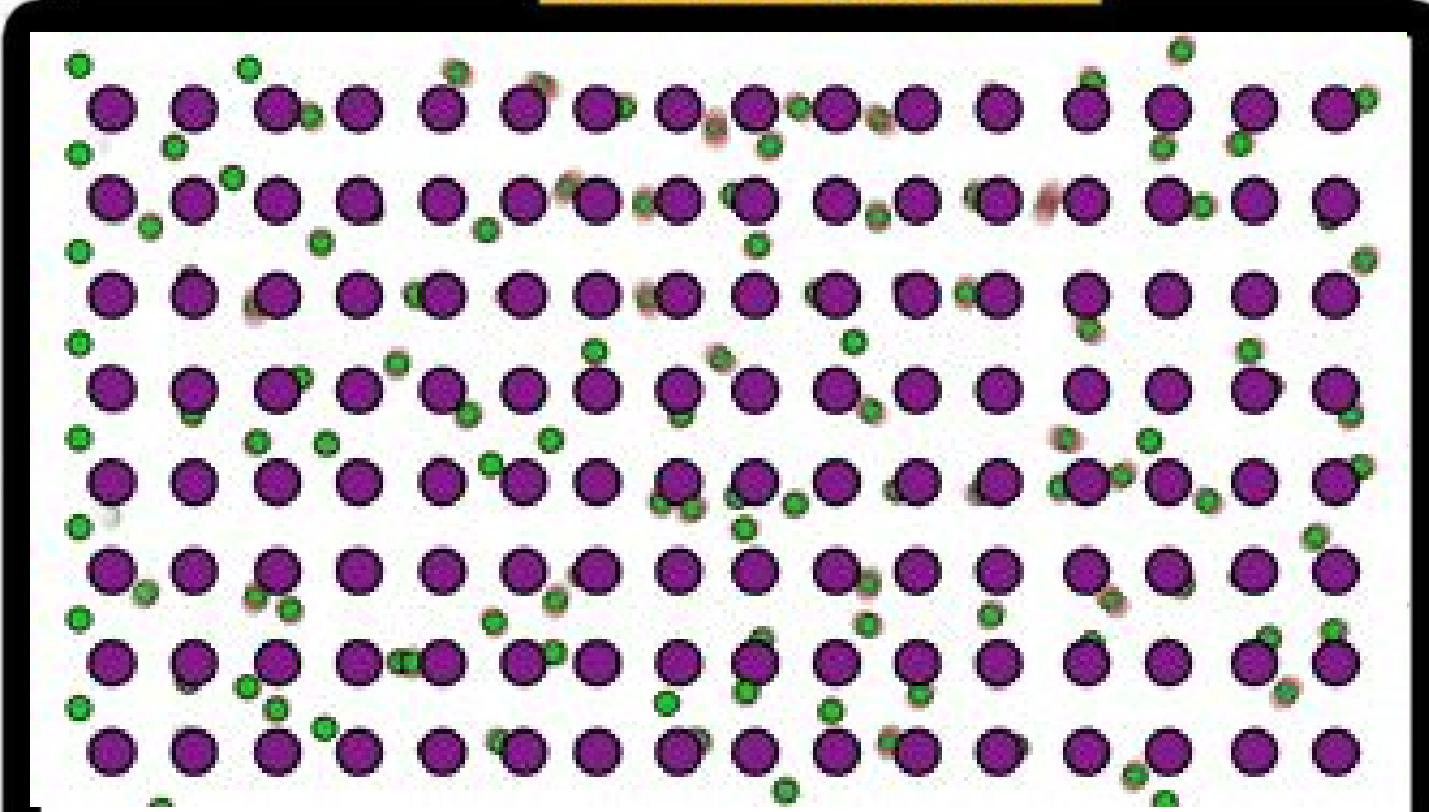
WITHOUT CURRENT



+

AND THIS IS WHAT CURRENT LOOKS LIKE.

WITH CURRENT



+

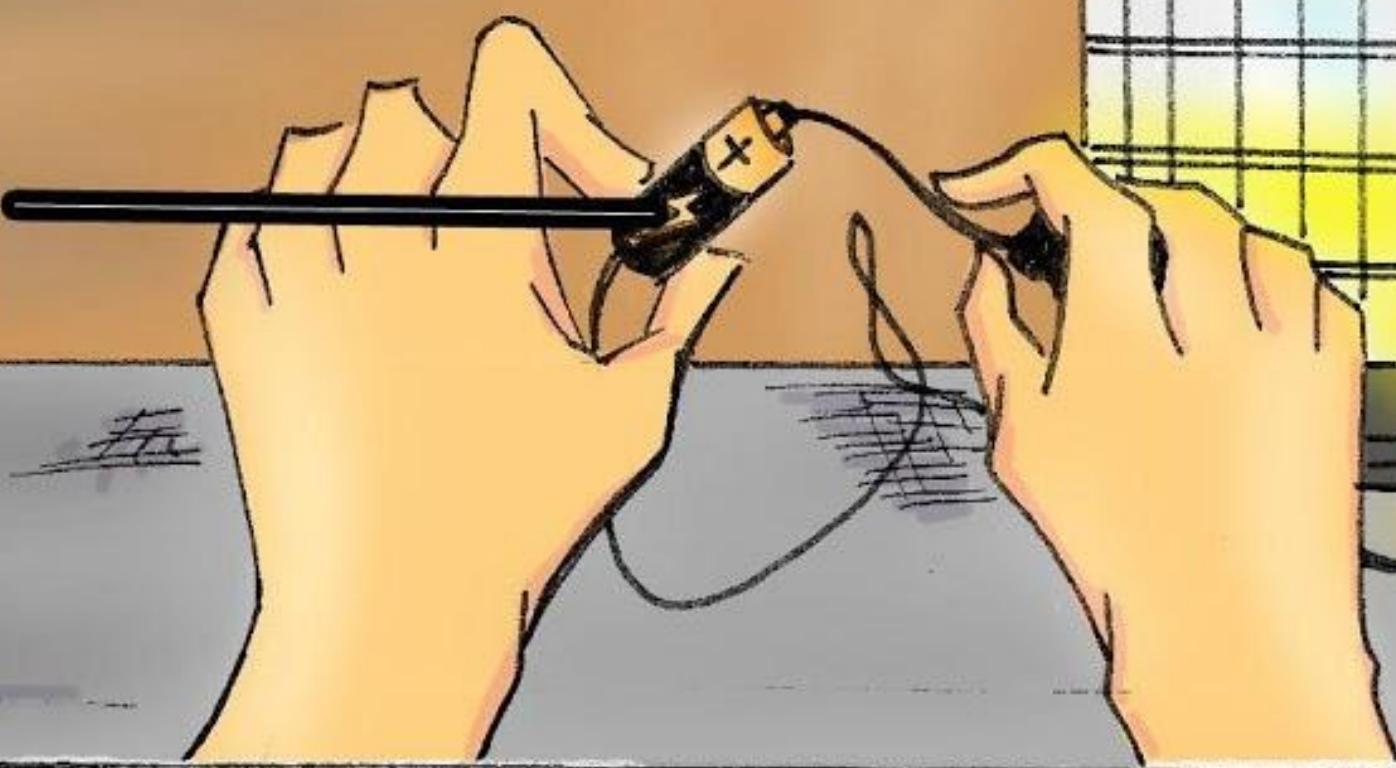
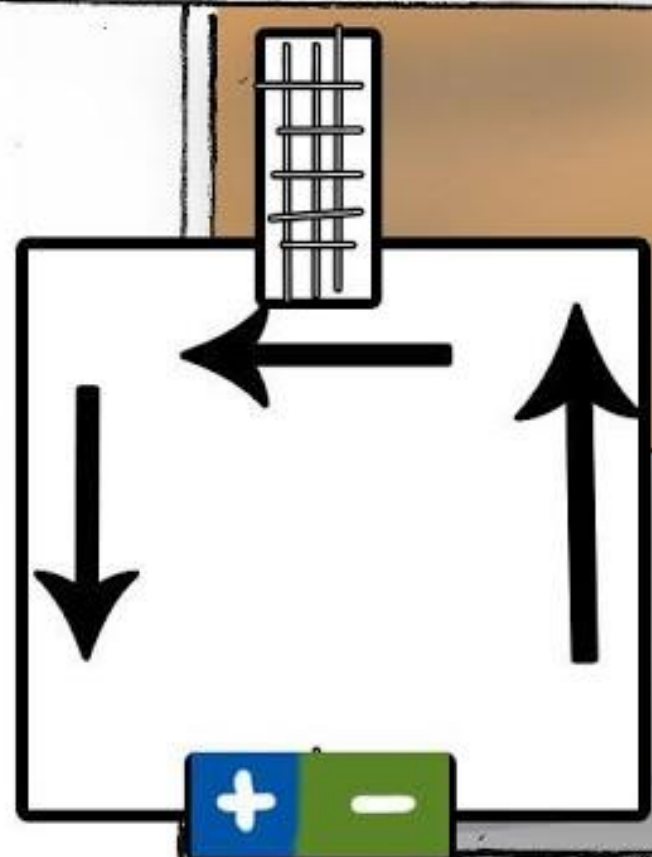
HMM, THE **ELECTRONS** ARE MOVING, BUT THE CURRENT ISN'T EXACTLY THE MOVING **ELECTRONS**. THE CURRENT IS THE CHARGE CARRIED BY THE MOVING **ELECTRONS**.

THE **ELECTRONS** BUMP INTO EACH OTHER...

AND THE CHARGE PASSES ALONG THEM CREATING ENERGY.

A CURRENT IS CAUSED BY THE MOVEMENT OF **ELECTRONS** WHEN THE BATTERY IS ATTACHED. THE CURRENT CARRIES ELECTRICAL ENERGY, KNOWN AS ELECTRICITY.

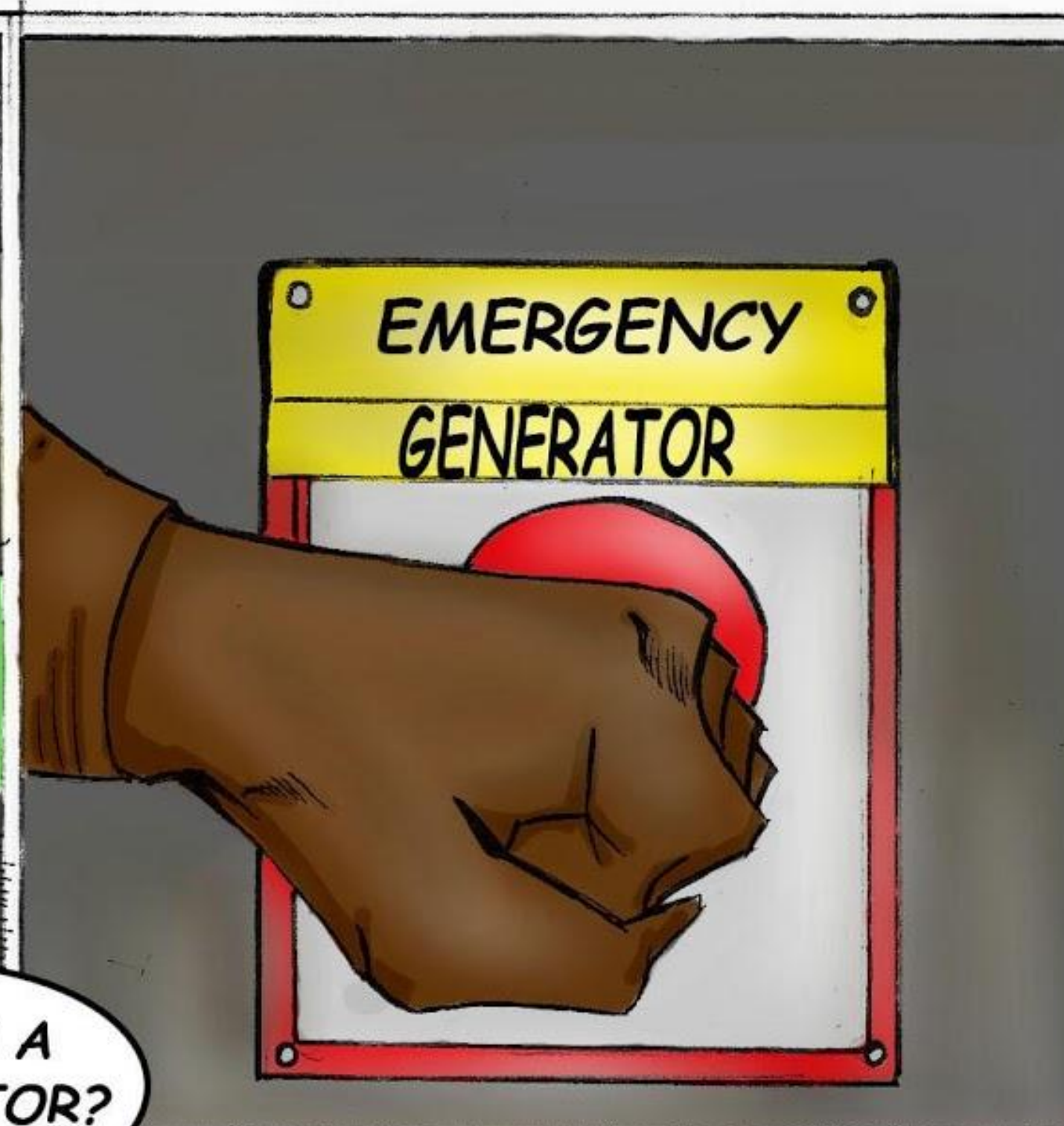
LET'S HOOK IT UP.



WHAAAAAAAAAAT?!!



WHAT HAPPENED?
WHAT'S ALL THIS
HOLLERING?

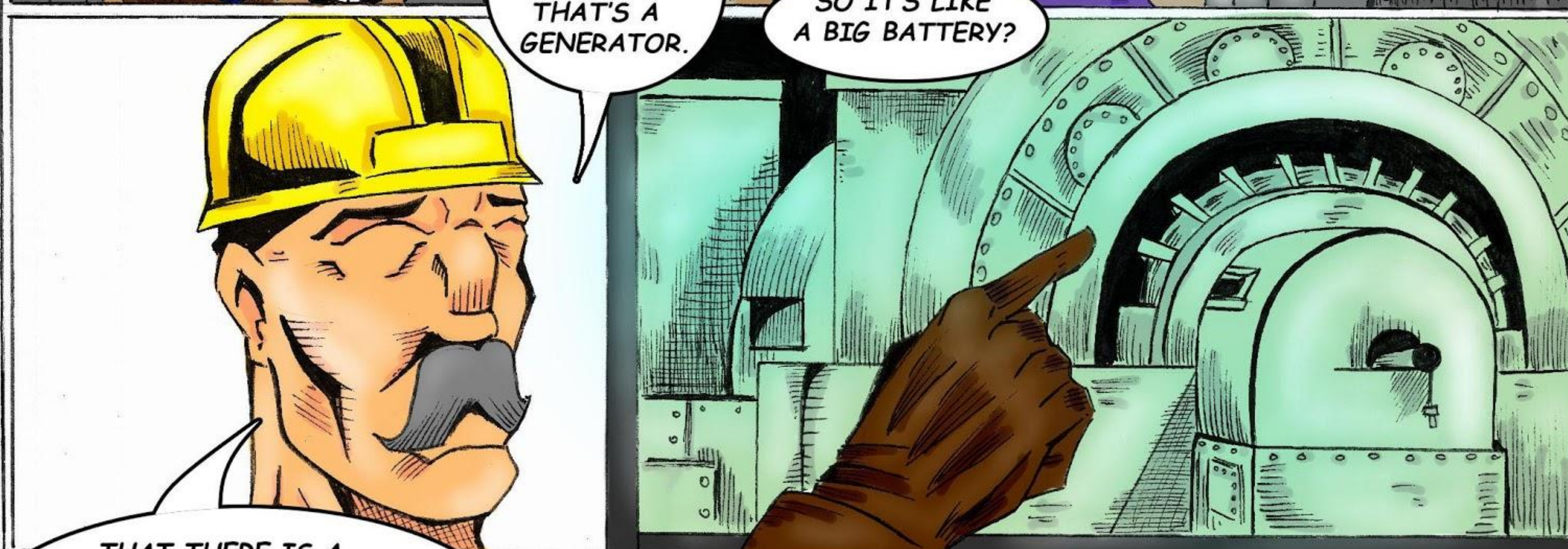


EMERGENCY
GENERATOR



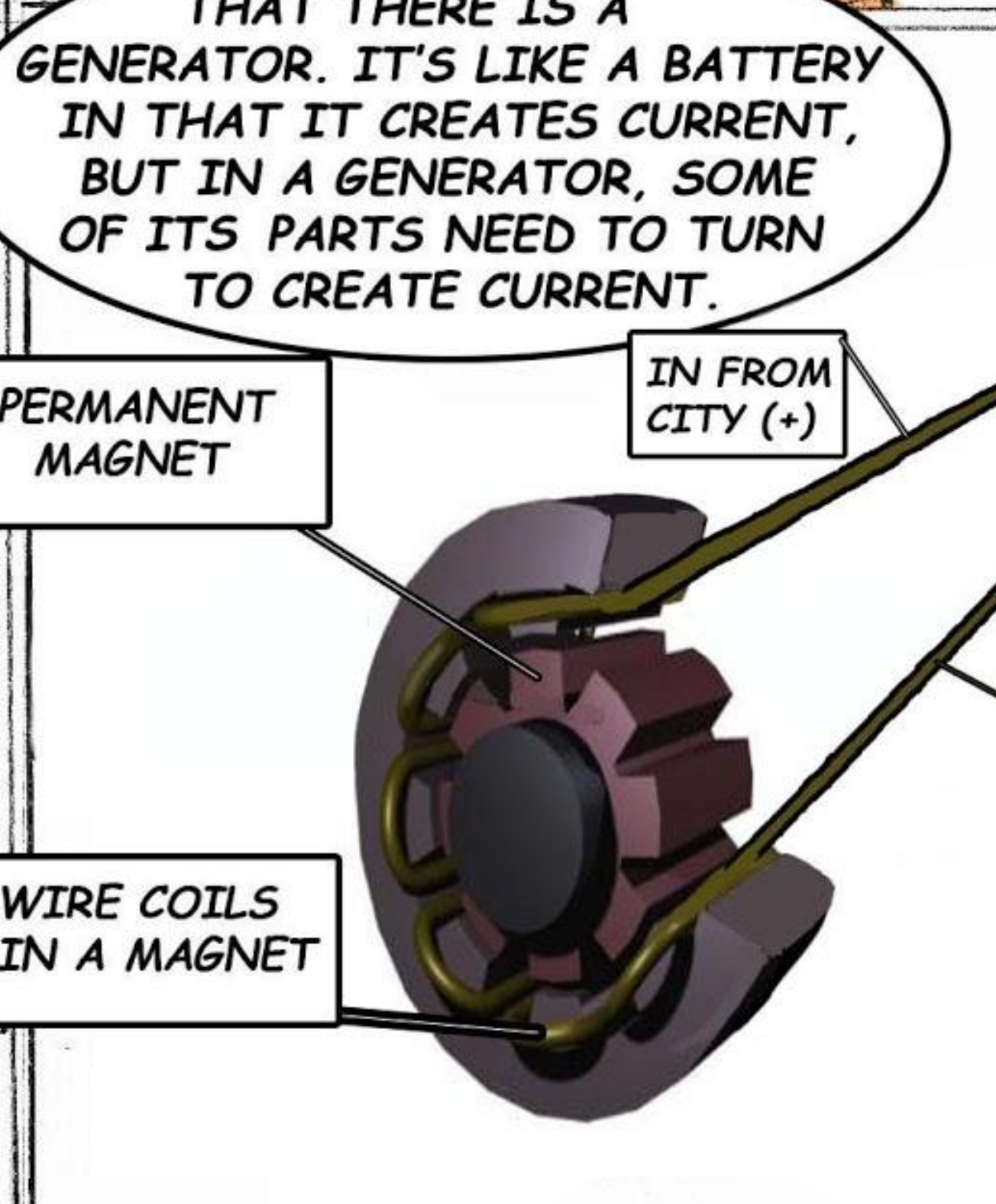
OKAY,
BACK TO WORK!

WHAT'S A
GENERATOR?



TAKE A
LOOK-SEE
ON SCREEN 2!
THAT'S A
GENERATOR.

SO IT'S LIKE
A BIG BATTERY?



THAT THERE IS A
GENERATOR. IT'S LIKE A BATTERY
IN THAT IT CREATES CURRENT,
BUT IN A GENERATOR, SOME
OF ITS PARTS NEED TO TURN
TO CREATE CURRENT.

PERMANENT
MAGNET

IN FROM
CITY (+)

OUT TO
CITY (-)

WIRE COILS
IN A MAGNET

WHEN YOU
THINK OF A
MAGNET, WHAT
COMES TO
MIND?

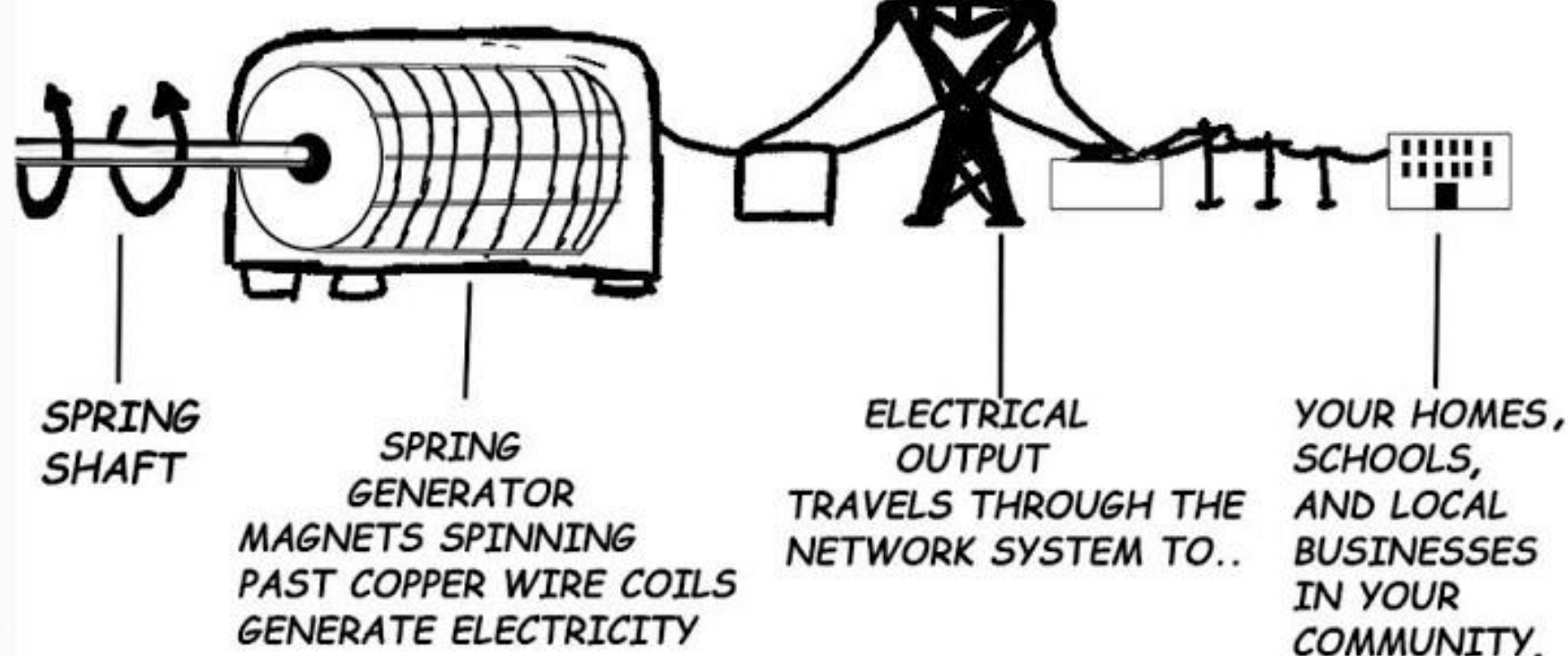


A **NEGATIVE**
AND **POSITIVE** END?

A BIRTHDAY
PRESENT?

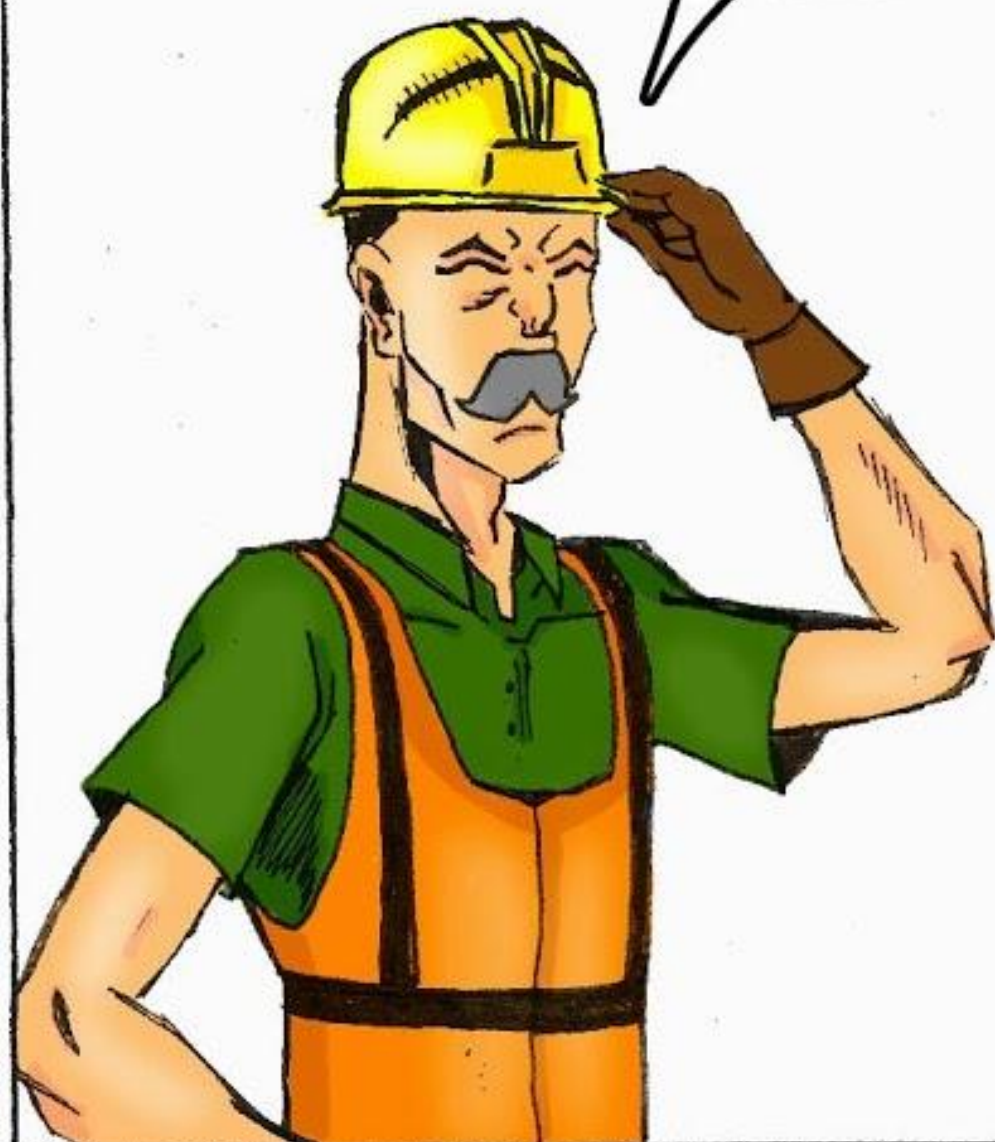
RIGHT, AND THE **ELECTRONS** MOVE CAUSING A CURRENT TO GIVE ELECTRICITY FOR THE TOWN.

AND THE **ELECTRONS** STILL MOVE FROM **NEGATIVE** TO **POSITIVE**?



NOW HOW'D YOU KNOW THAT?

YOU TOLD US BEFORE YOU FAINTED?



IS EVERY GENERATOR THAT BIG?



SOME ARE EVEN BIGGER.



STRONGER GENERATORS WOULD MEAN A BIGGER DIFFERENCE IN CHARGE.

WHICH MEANS MORE ELECTRICITY.



YOU BET! SECTOR 4 HERE -- THEY GOT A BACK-UP GENERATOR, BUT IT'S NOT STRONG ENOUGH TO POWER THE NEW MALL, SO THAT'S GONNA HAVE TO STAY CLOSED TILL WE GET THE REGULAR GENERATOR UP AND RUNNING.





What did Mosa figure out?