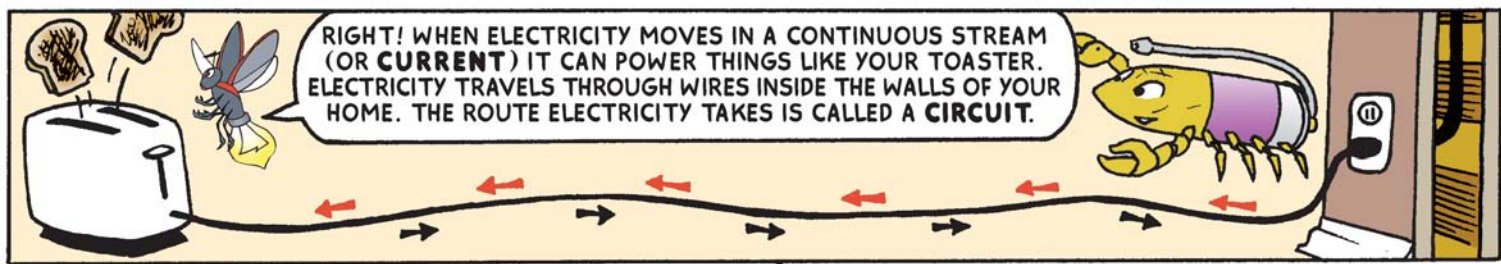


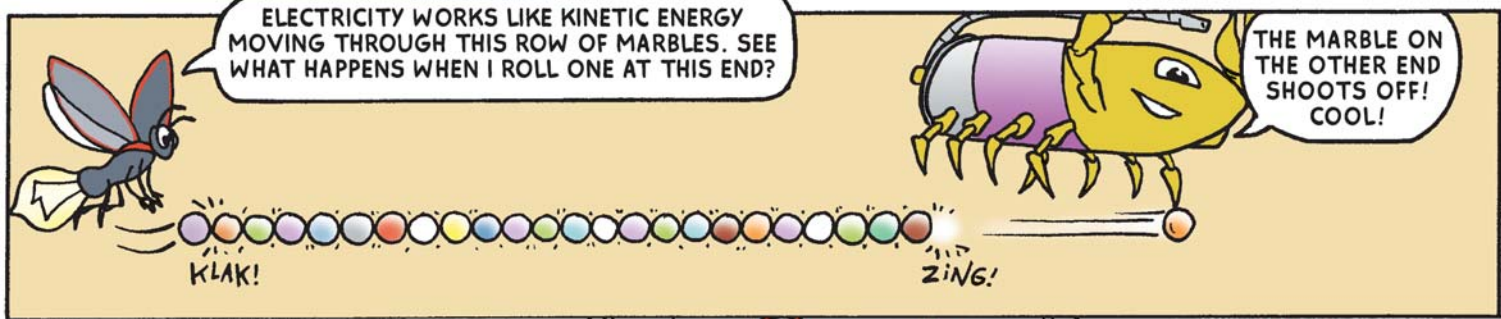
THERE'S NOTHING MAGICAL ABOUT THIS LIGHT'S ELECTRICITY, SCORPY. ELECTRICITY IS ONE OF THE BASIC FORMS OF ENERGY.

THE ANCIENT GREEKS DISCOVERED ONE FORM OF ELECTRICITY YEARS AGO. WHEN THEY RUBBED A PIECE OF AMBER AGAINST A CLOTH, SOMETHING LIGHT LIKE A FEATHER WOULD STICK TO THE CLOTH.

HEY, THAT'S **STATIC ELECTRICITY!**



RIGHT! WHEN ELECTRICITY MOVES IN A CONTINUOUS STREAM (OR **CURRENT**) IT CAN POWER THINGS LIKE YOUR TOASTER. ELECTRICITY TRAVELS THROUGH WIRES INSIDE THE WALLS OF YOUR HOME. THE ROUTE ELECTRICITY TAKES IS CALLED A **CIRCUIT**.

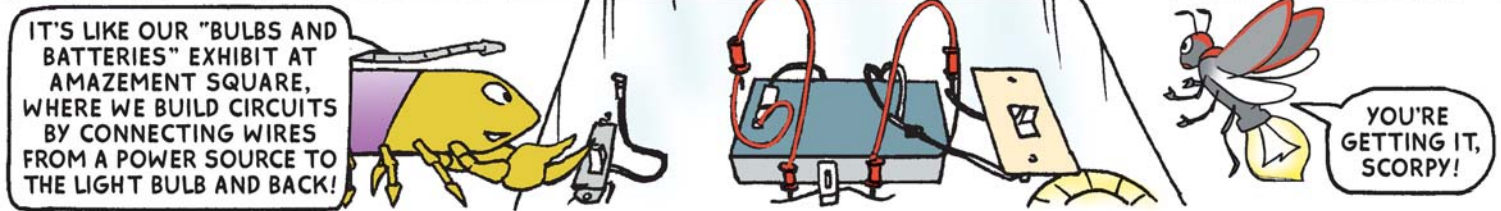


ELECTRICITY WORKS LIKE KINETIC ENERGY MOVING THROUGH THIS ROW OF MARBLES. SEE WHAT HAPPENS WHEN I ROLL ONE AT THIS END?

THE MARBLE ON THE OTHER END SHOOTS OFF! COOL!

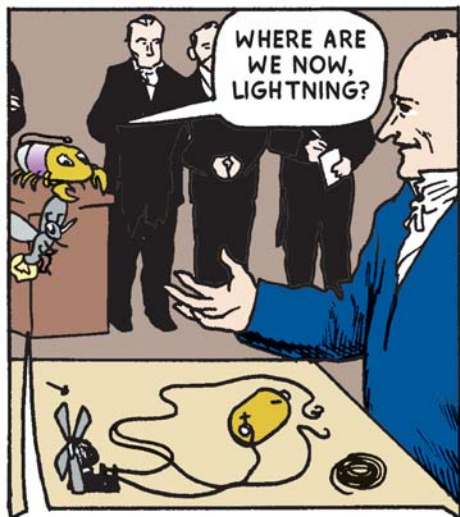
KLAK!

ZING!



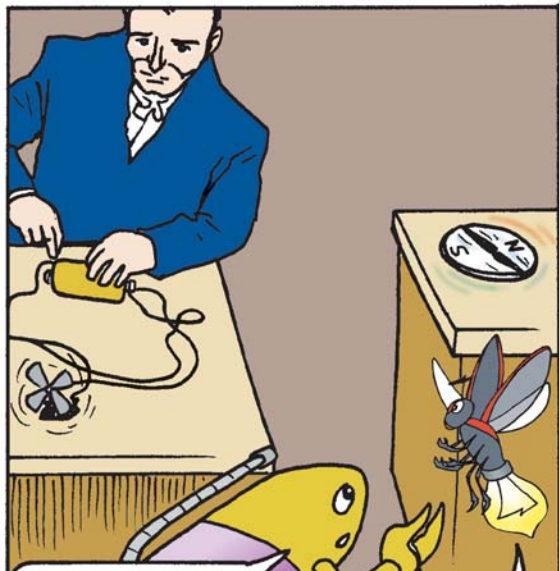
IT'S LIKE OUR "BULBS AND BATTERIES" EXHIBIT AT AMAZEMENT SQUARE, WHERE WE BUILD CIRCUITS BY CONNECTING WIRES FROM A POWER SOURCE TO THE LIGHT BULB AND BACK!

YOU'RE GETTING IT, SCORPY!



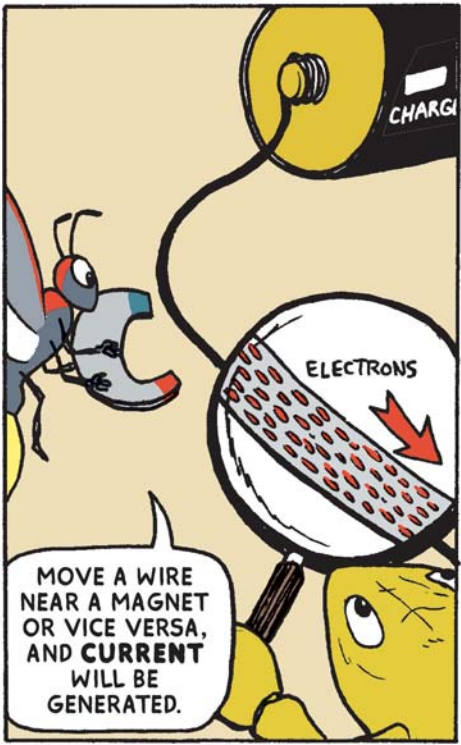
WHERE ARE WE NOW, LIGHTNING?

WE ARE BACK IN 1819 WITH A DUTCH PROFESSOR NAMED OERSTED. HE'S GIVING A LECTURE ON ELECTRICITY. BEFORE HIM, PEOPLE THOUGHT MAGNETISM WAS JUST AN INVISIBLE FORCE MAKING COMPASSES POINT NORTH AND MAKING MAGNETS ATTRACT AND REPEL.

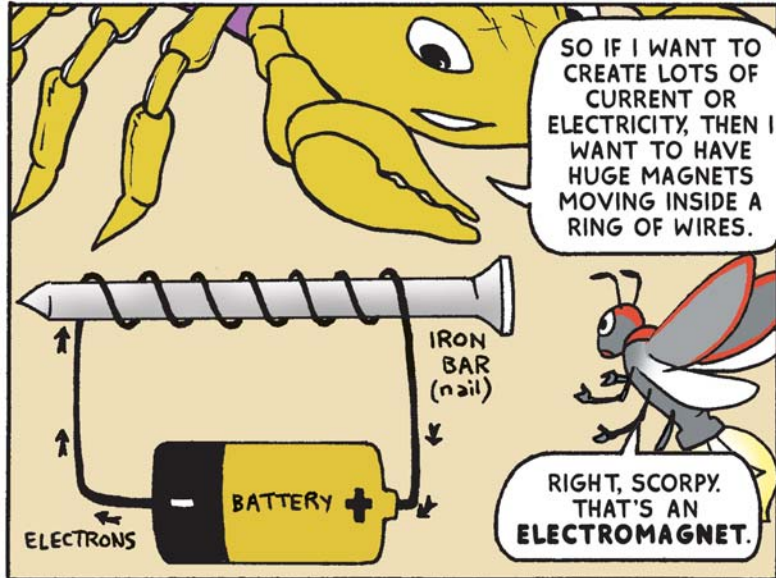


HEY! THAT COMPASS NEEDLE MOVED BY ITSELF! ALL HE DID WAS CONNECT THE WIRES TO THE BATTERY HERE!

THAT'S RIGHT, SCORPY! HE DISCOVERED BY ACCIDENT THAT ELECTRICAL CURRENTS HAVE MAGNETIC EFFECTS.

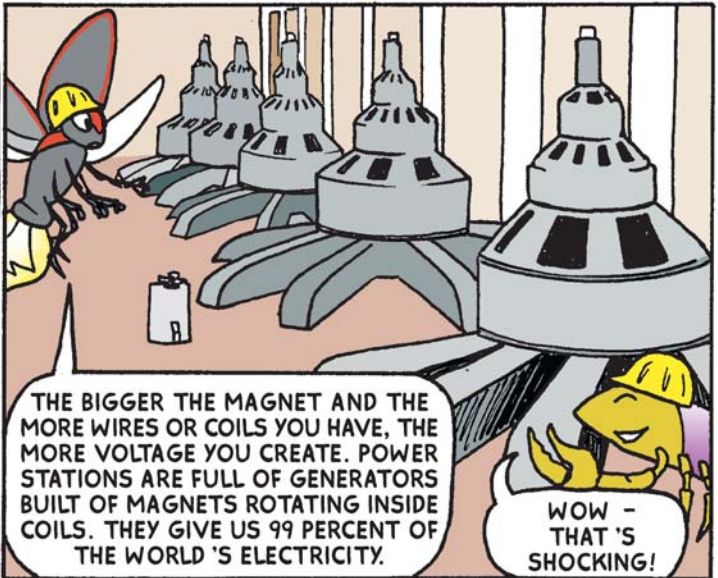


MOVE A WIRE NEAR A MAGNET OR VICE VERSA, AND **CURRENT** WILL BE GENERATED.



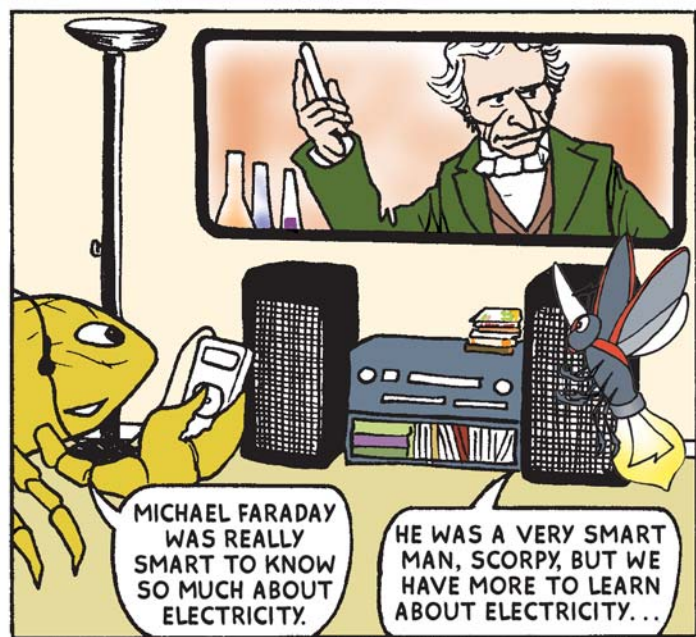
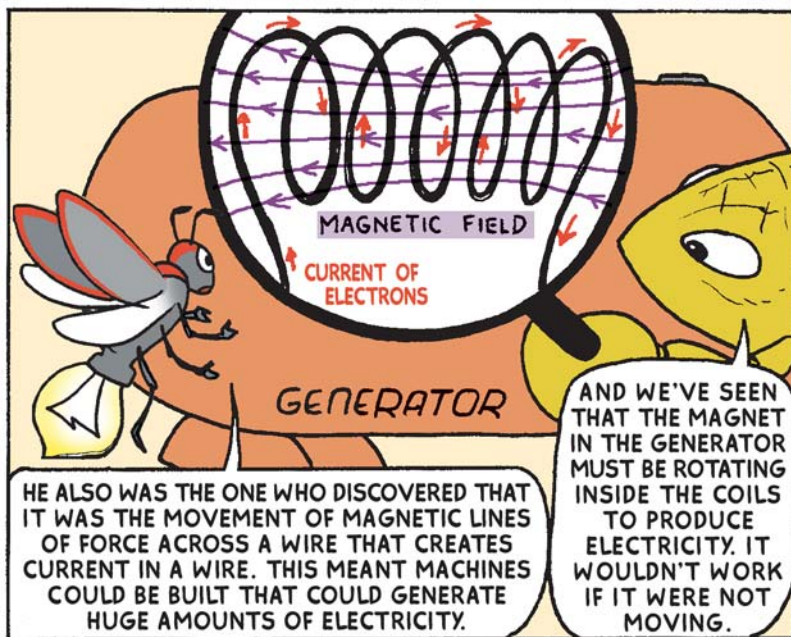
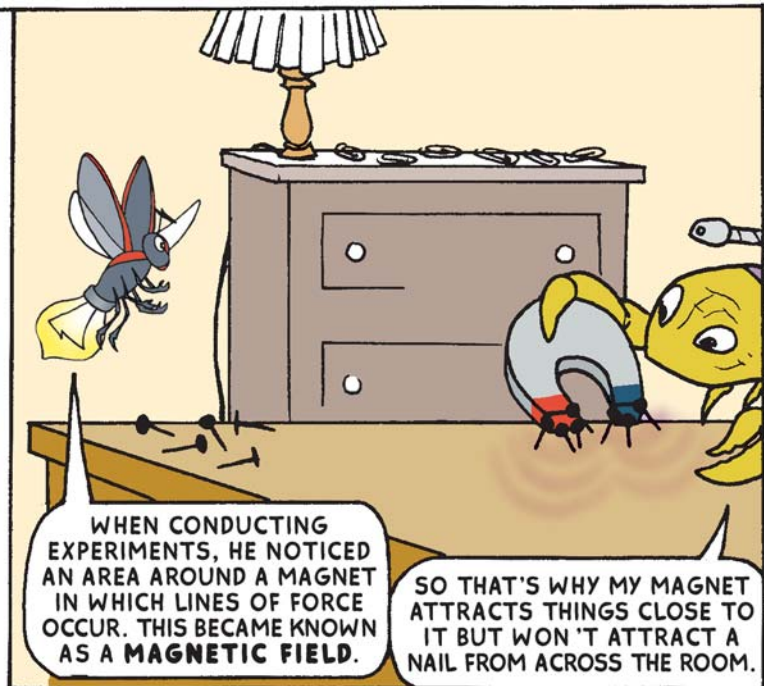
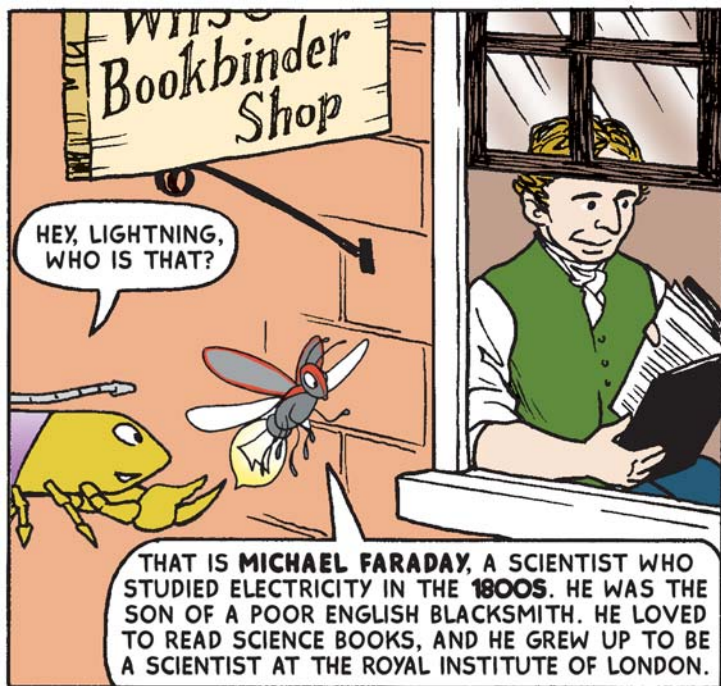
SO IF I WANT TO CREATE LOTS OF CURRENT OR ELECTRICITY, THEN I WANT TO HAVE HUGE MAGNETS MOVING INSIDE A RING OF WIRES.

RIGHT, SCORPY. THAT'S AN **ELECTROMAGNET**.



THE BIGGER THE MAGNET AND THE MORE WIRES OR COILS YOU HAVE, THE MORE VOLTAGE YOU CREATE. POWER STATIONS ARE FULL OF GENERATORS BUILT OF MAGNETS ROTATING INSIDE COILS. THEY GIVE US 99 PERCENT OF THE WORLD'S ELECTRICITY.

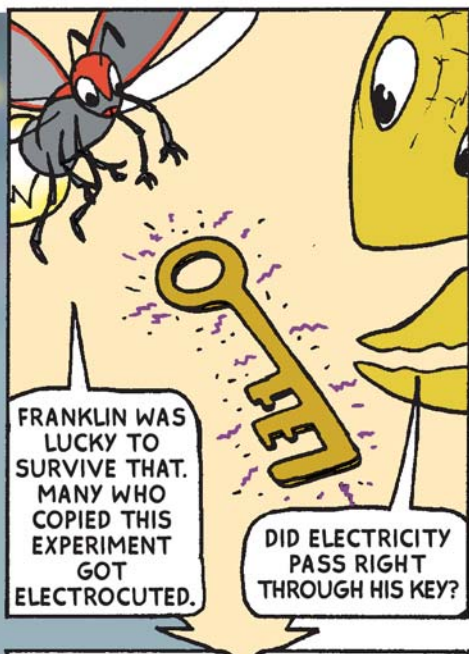
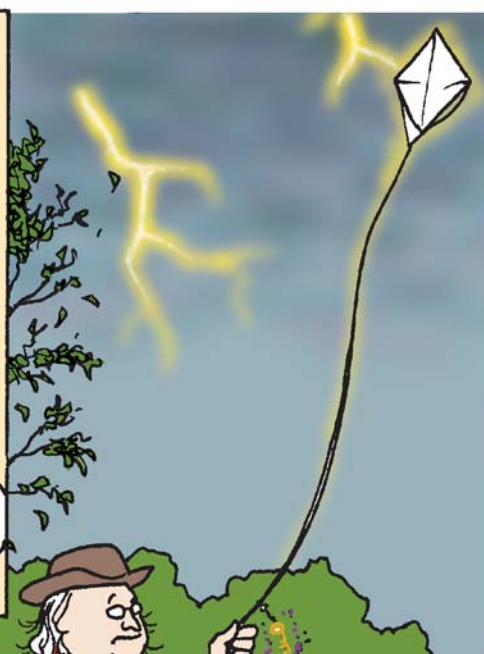
WOW - THAT'S SHOCKING!





WOW, THAT IS SOME STORM OUT THERE!

YES, SCORPY, LIGHTNING IS BEAUTIFUL AND POWERFUL. **BENJAMIN FRANKLIN** THOUGHT SO, TOO.



FRANKLIN WAS LUCKY TO SURVIVE THAT. MANY WHO COPIED THIS EXPERIMENT GOT ELECTROCUTED.

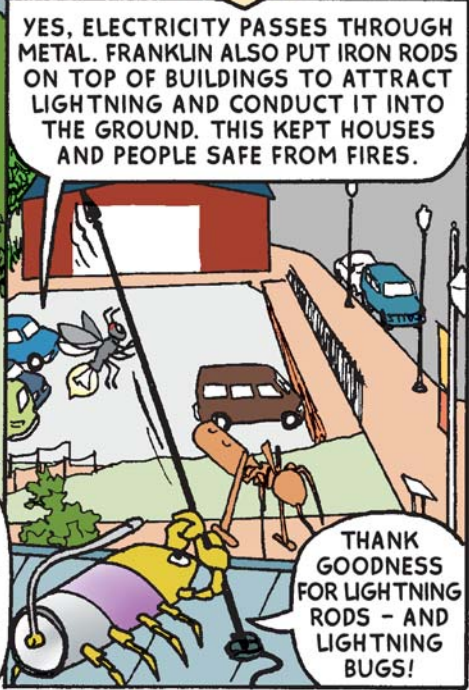
DID ELECTRICITY PASS RIGHT THROUGH HIS KEY?



FRANKLIN WAS BORN TO A POOR FAMILY IN BOSTON IN 1706. HE ATTENDED GRAMMAR SCHOOL UNTIL HE WAS ABOUT 10 YEARS OLD AND LATER TRAINED AS A PRINTER. FRANKLIN WAS ALSO INTERESTED IN SCIENCE.

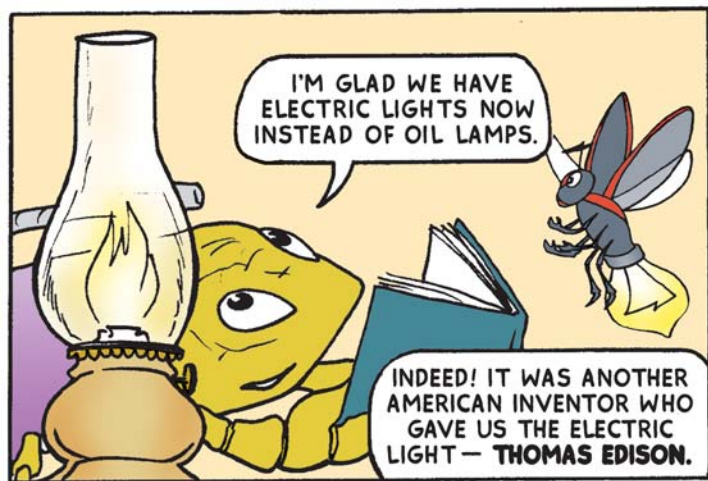
WAIT A MINUTE, THAT'S REALLY DANGEROUS TO BE OUTSIDE IN A LIGHTNING STORM - WITH A KITE!!

YOU'RE RIGHT, SCORPY. BUT FRANKLIN WANTED TO PROVE THAT LIGHTNING WAS AN ELECTRICAL CURRENT. HE PUT A METAL KEY ON THE KITE SO IT COULD BE CLOSER TO THE LIGHTNING. THE KEY WAS STRUCK BY LIGHTNING, AND FRANKLIN FELT A SHOCK WHEN HE PUT HIS HAND NEAR THE KEY.



YES, ELECTRICITY PASSES THROUGH METAL. FRANKLIN ALSO PUT IRON RODS ON TOP OF BUILDINGS TO ATTRACT LIGHTNING AND CONDUCT IT INTO THE GROUND. THIS KEPT HOUSES AND PEOPLE SAFE FROM FIRES.

THANK GOODNESS FOR LIGHTNING RODS - AND LIGHTNING BUGS!

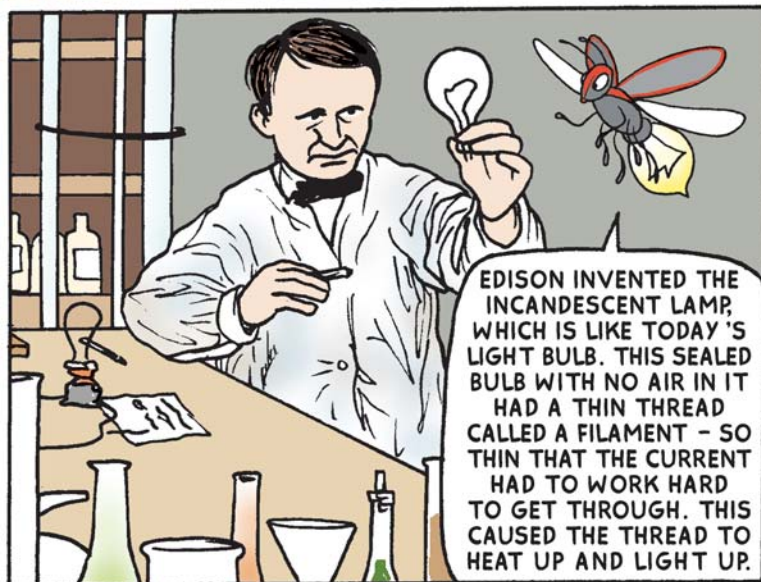


I'M GLAD WE HAVE ELECTRIC LIGHTS NOW INSTEAD OF OIL LAMPS.

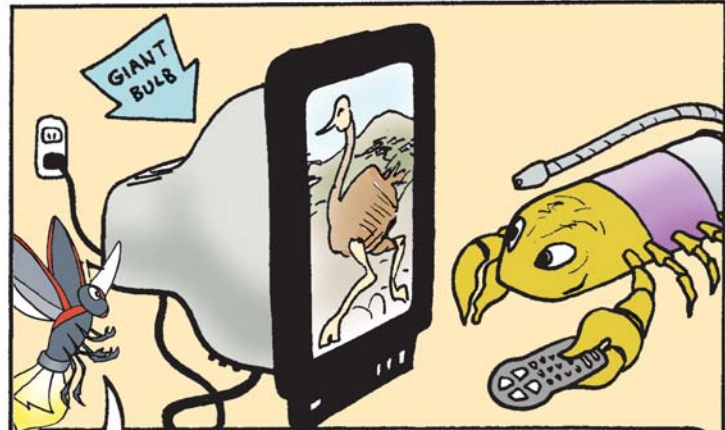
INDEED! IT WAS ANOTHER AMERICAN INVENTOR WHO GAVE US THE ELECTRIC LIGHT — **THOMAS EDISON.**



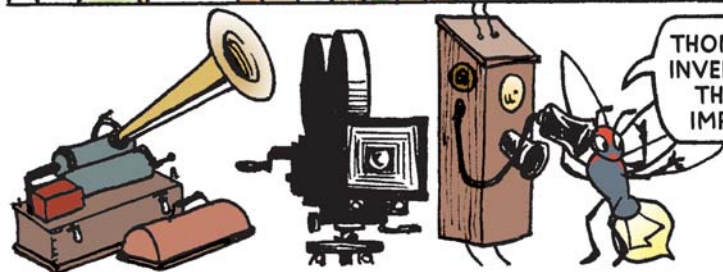
THOMAS EDISON WAS BORN IN MILAN, OHIO, IN 1847. HE MOVED WITH HIS FAMILY TO PORT HURON, MICHIGAN, AND GOT A JOB SELLING APPLES AND PAPERS. HE ATTENDED SCHOOL ONLY THREE MONTHS, BUT HIS MOM TAUGHT HIM READING, WRITING, AND ARITHMETIC. HE GOT SICK AND LOST MOST OF HIS HEARING.



EDISON INVENTED THE INCANDESCENT LAMP, WHICH IS LIKE TODAY'S LIGHT BULB. THIS SEALED BULB WITH NO AIR IN IT HAD A THIN THREAD CALLED A FILAMENT — SO THIN THAT THE CURRENT HAD TO WORK HARD TO GET THROUGH. THIS CAUSED THE THREAD TO HEAT UP AND LIGHT UP.



EDISON ALSO SAW HOW PARTICLES OF CARBON BLACKENED THE INSIDE OF BULBS. THIS WAS CAUSED BY THE EMISSION OF ELECTRONS FROM THE FILAMENT. MODIFIED BULBS WOULD LATER BE USED TO CONTROL A FLOW OF ELECTRONS THROUGH A VACUUM. THIS IS HOW TVS AND COMPUTERS WORK!



THOMAS EDISON HAD MORE THAN 1,000 INVENTIONS, SUCH AS THE PHONOGRAPH, THE MOTION PICTURE CAMERA, AND IMPROVEMENTS TO THE TELEPHONE.

I'D BE BORED WITHOUT HIS STUFF! EDISON'S MOM MUST HAVE BEEN A REALLY GOOD TEACHER.

