

IT'S TOO DARK IN HERE, SCORPY. TURN A LIGHT ON SO YOU CAN SEE BETTER!



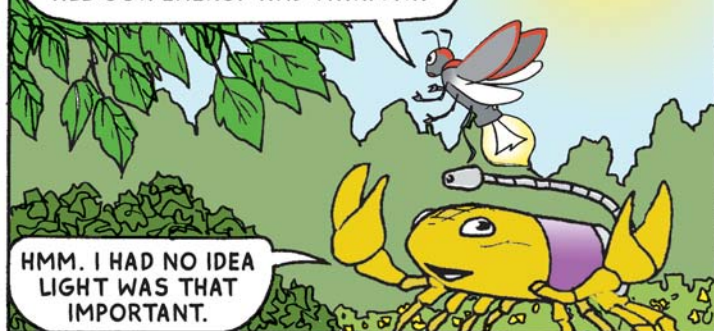
CLICK



AH! THANKS



LIGHT IS VERY IMPORTANT. PLANTS GROW BY ABSORBING LIGHT AND CHANGING IT TO FOOD. LIGHT FROM THE SUN IS THE SOURCE OF NEARLY ALL OUR ENERGY AND WARMTH.

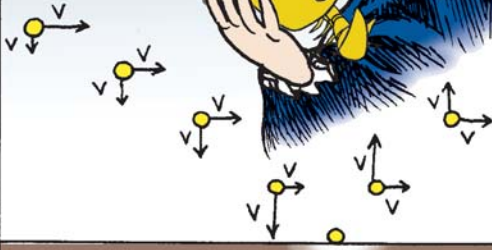


HMM. I HAD NO IDEA LIGHT WAS THAT IMPORTANT.

LIGHT HAS FASCINATED PEOPLE FOR CENTURIES. **SIR ISAAC NEWTON** BELIEVED LIGHT IS MADE UP OF TINY **PARTICLES** MOVING AT HIGH SPEED. HE SAID THAT IS WHY LIGHT TRAVELS IN STRAIGHT LINES AND CASTS SHADOWS. NEWTON SAID MIRRORS REFLECT LIGHT BECAUSE THESE "CORPUSCLES" BOUNCE OFF GLASS LIKE TENNIS BALLS OFF A WALL.

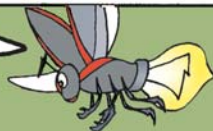


MAKES SENSE TO ME.



THOMAS YOUNG HAD A DIFFERENT VIEW. HE THOUGHT LIGHT IS MADE OF WAVES.

IN AN 1801 EXPERIMENT HE SHINED A BEAM OF LIGHT THROUGH TWO SLITS IN A PIECE OF CARDBOARD. THE SLITS DIVIDED THE LIGHT INTO TWO BEAMS THAT THEN FORMED A PATTERN OF ALTERNATING LIGHT AND DARK BANDS ON A SCREEN.



WAVES? THIS IS BEGINNING TO REMIND ME OF SOUND!



TODAY'S SCIENTISTS SAY IT IS IMPOSSIBLE TO PIN DOWN LIGHT - SOMETIMES IT ACTS AS WAVES AND SOMETIMES AS PARTICLES. (FOR MOST PRACTICAL PURPOSES, LIGHT CAN BE TREATED AS WAVES.)

COOL! WE ARE FINALLY SEEING THE LIGHT ABOUT LIGHT!

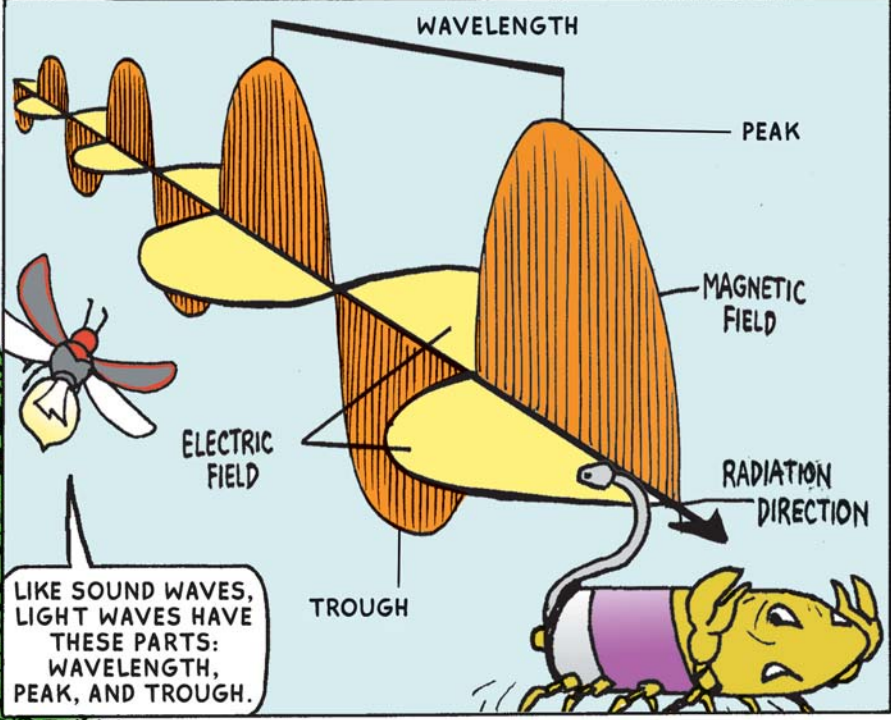
Wheee!

WE'RE GOING REALLY FAST!!!

GOING DOWNHILL MAKES US GO FASTER, BUT THIS IS NOTHING COMPARED TO THE SPEED OF LIGHT!

LIGHT TRAVELS LIKE I AM GOING. MUCH LIKE SOUND, LIGHT MOVES IN WAVES TRAVELING IN STRAIGHT PATHS (RAYS).

LIKE RAYS OF SUNSHINE!



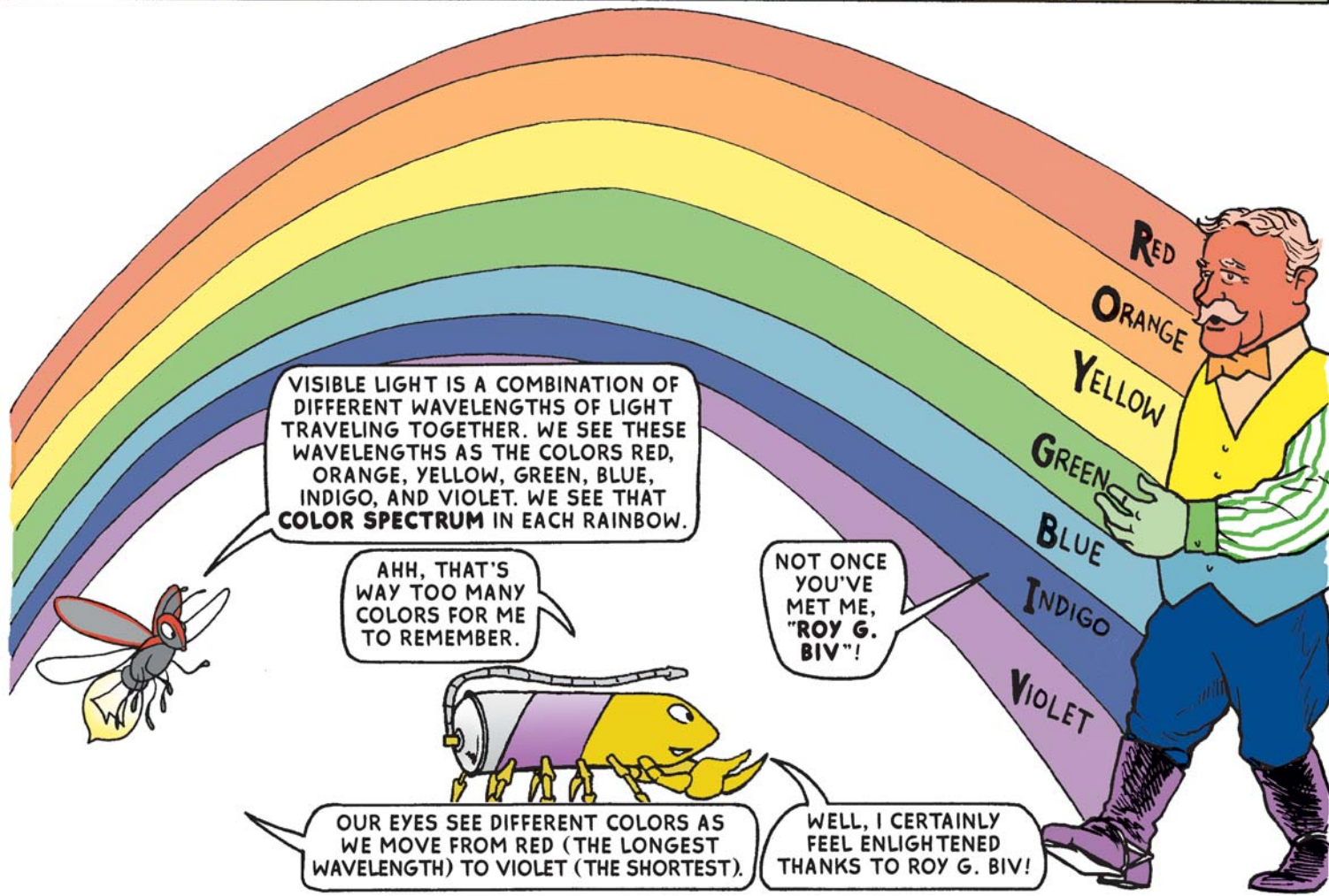
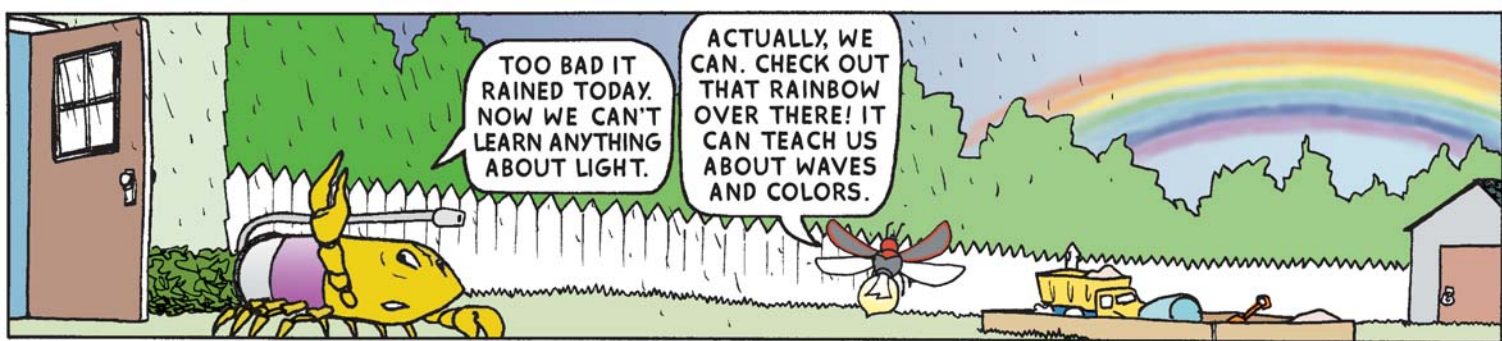
LIKE SOUND WAVES, LIGHT WAVES HAVE THESE PARTS: WAVELENGTH, PEAK, AND TROUGH.

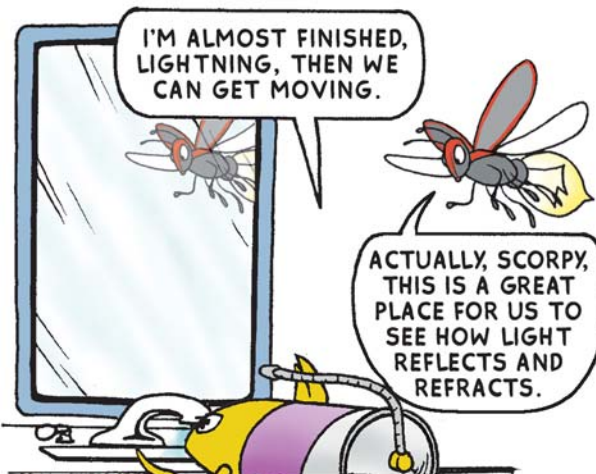
COMPARED TO SOUND WAVES, LIGHT WAVES TRAVEL VERY FAST - ABOUT 186,000 MILES PER SECOND. IT TAKES LIGHT FROM THE SUN LESS THAN 8.5 MINUTES TO TRAVEL THE MILLIONS OF MILES TO EARTH.

SO THAT'S WHY I SEE LIGHTNING BEFORE I HEAR THE THUNDER!

OK, SCORPY, TIME TO GO HOME SO YOU CAN DO YOUR HOMEWORK.

FINE. JUST DON'T EXPECT ME TO DO IT AT THE SPEED OF LIGHT!






I'M ALMOST FINISHED,
LIGHTNING, THEN WE
CAN GET MOVING.

ACTUALLY, SCORPY,
THIS IS A GREAT
PLACE FOR US TO
SEE HOW LIGHT
REFLECTS AND
REFRACTS.

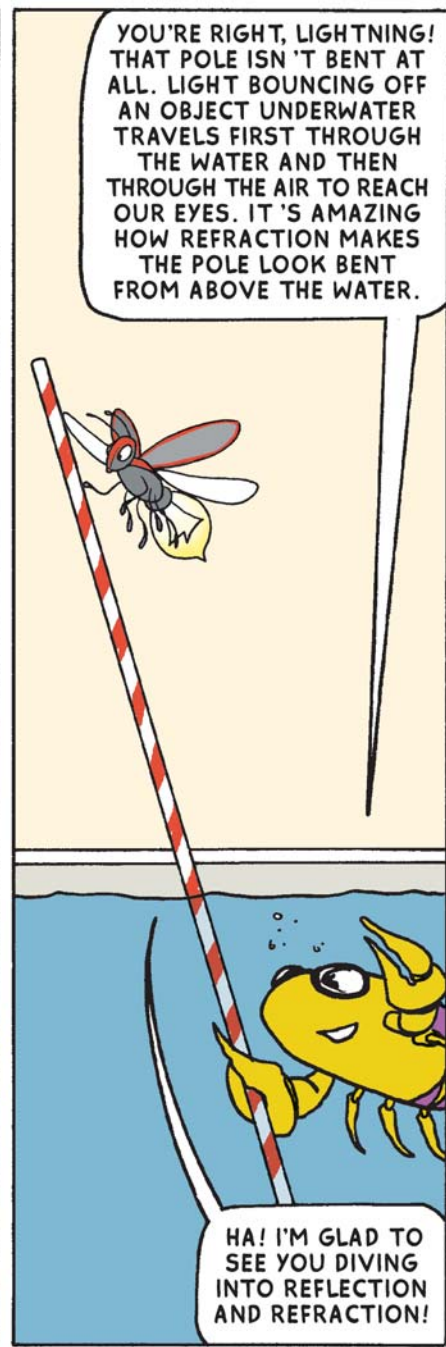
LIGHT TRAVELS IN STRAIGHT
PATHS UNTIL IT HITS AN OBJECT.
SOMETIMES IT HITS AN OBJECT
AND BOUNCES STRAIGHT BACK
TO THE SOURCE - THIS IS
REFLECTION. THAT'S HOW
YOU AND I CAN SEE OUR
IMAGES IN THIS MIRROR.

MIRROR,
MIRROR, ON
THE WALL, WHO
IS THE FAIREST
BUG OF ALL?



BECAUSE LIGHT TRAVELS AT
DIFFERENT SPEEDS THROUGH
DIFFERENT MATERIALS, IT CHANGES
SPEED AT THE BOUNDARY BETWEEN
TWO MATERIALS. IF THE BEAM
HITS THIS BOUNDARY AT AN ANGLE,
THE LIGHT ON THE EDGE OF THE BEAM
THAT HITS FIRST WILL BE FORCED
TO SPEED UP OR SLOW DOWN
BEFORE THE LIGHT ON THE OTHER
EDGE REACHES THE BOUNDARY -
MAKING THE LIGHT BEAM BEND!
THIS IS CALLED **REFRACTION**.

HMM, I'D
BETTER
MAKE SURE
THAT POLE
ISN'T REALLY
BENT.



YOU'RE RIGHT, LIGHTNING!
THAT POLE ISN'T BENT AT
ALL. LIGHT BOUNCING OFF
AN OBJECT UNDERWATER
TRAVELS FIRST THROUGH
THE WATER AND THEN
THROUGH THE AIR TO REACH
OUR EYES. IT'S AMAZING
HOW REFRACTION MAKES
THE POLE LOOK BENT
FROM ABOVE THE WATER.

HA! I'M GLAD TO
SEE YOU DIVING
INTO REFLECTION
AND REFRACTION!

HEY, IT'S NOT SUNDAY.
WHY ARE WE AT CHURCH?

THIS IS A GREAT PLACE
TO EXPLORE LIGHT AND
THE TERMS "OPAQUE,"
"TRANSPARENT," AND
"TRANSLUCENT."

STORE ROOM

THIS WINDOW IS
TRANSPARENT.
WE CAN SEE
OBJECTS THROUGH
IT CLEARLY. LIGHT
PASSES THROUGH
WITH LITTLE OR NO
INTERRUPTION.

THIS WINDOW IS
TRANSLUCENT. LIGHT
PASSES THROUGH BUT
IS NOT AS BRIGHT. THE
LIGHT IS DIFFUSED, SO
WE CAN'T CLEARLY SEE
WHAT IS ON THE OTHER
SIDE OF THE GLASS.

AND THIS WINDOW
IS **OPAQUE**, NOT
ALLOWING ANY
LIGHT THROUGH.
WE CAN'T SEE
ANYTHING
ON THE OTHER SIDE!

I'M GLAD IT IS
TRANSPARENT -
WHAT A NICE VIEW!

WHO NEEDS A CLEAR
VIEW, WHEN WE HAVE
BEAUTIFUL COLORS
LIKE THIS?

I HAD NO IDEA THAT LIGHT
WAS SO FASCINATING. I
HAVE BEEN ENLIGHTENED!