

● Electromagnetic Spectrum <last lecture>

Phase change \Rightarrow changing from

SOLID \rightarrow to LIQUID \rightarrow From LIQUID \rightarrow
 \rightarrow to GAS

THIS SYMBOL f mean definitions of

<SOLID \rightarrow LIQUID \rightarrow GAS>

Can only [TRANSFER ENERGY] Conduct \leftarrow

Can Convection Radiation

Can - Convection Radiation

(NO LIQUID PHASE)

SUBLIMATION \rightarrow f : Goes straight from SOLID \rightarrow GAS
(EX: DRY ICE @ Atmospheric temp.
it goes from

In 24 HRS the EARTH RECEIVES ENOUGH ENERGY FROM SUN \rightarrow it would supply enough energy to support world for YEARS.

□ RADIATION OF ENERGY WORKS BEST IN A VACUUM

SOLAR CONSTANT = 2 CALORIES / cm^2 min' \leftarrow in one minutes time
Cubic centimeter

f : CALORIE: Amount of Energy to heat 1g. of water \uparrow 1 degree [1C]

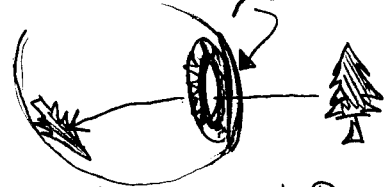
REFRACTION = §: Bending Light → **EXAMPLE** = PRISM

BASICALLY

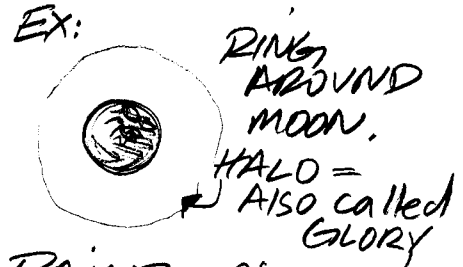
↳ Light from sun is Bent As it goes Thru. The Atmosphere.

OR
EX: Sticking a stick into the water

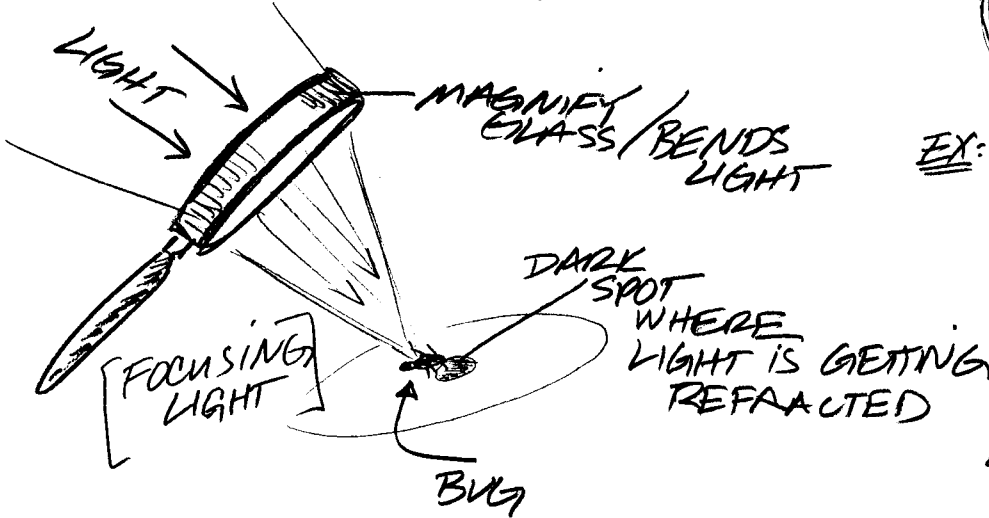
EX: lens of Eye



EX: MIRAGE - in DESERT



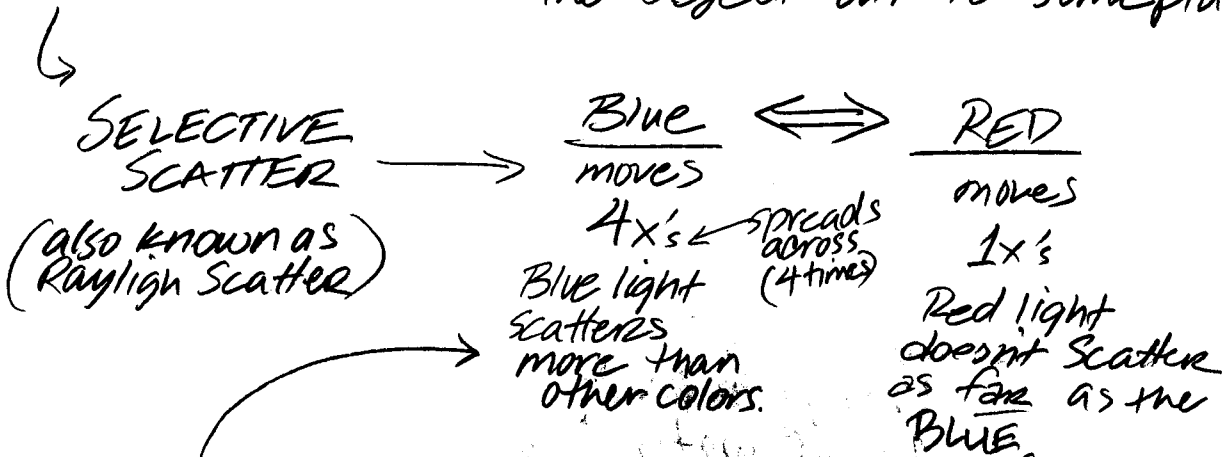
EX: RAINBOWS are Refracted



* if NO CLOUDS → you can focus the Light OF SUN.

ON SIDE NOTE [SUMMER - SUN IS HIGH → AND GOES THRU THINEST PART OF ATMOSPHERE]

SCATTERING = §: ^{PARTICLE OF (LIGHT)} Light hits object and bounces off the object out to someplace else.



idea = why is Sky BLUE?
The Darker the Color BLUE well - MORE BLUE are

When you have lg. particles of LIGHT IN SKY
That means it will MIE SCATTER the LIGHT

• MIE Scatter = f = NON Selective Scatter

< SIZE OF WAVE LENGTH > → sm. = Rayleigh Scatter

• SHORT / small wave length size of light = $\frac{1}{10}$ λ ← wave length

• LONG / large wave length size of light = 30 times λ

→ lg. particles = (IE.) - Salt Crystals in Air

THUS, Things will look more white / HARDER to see Monterey
← CAUSE NON-Selective Scatter


< AS SUN GOES DOWN → SCATTERING STILL CONTINUES
IDEA OF SUNSET >

SUNSET → [pollution will effect the quality of the colors of sky/sunset]

→ AS Blue is gone → Colors go from Blue → to Yellow → to RED

THE, Higher the clouds are up in the sky
- those clouds are last to turn Red.

→ NEXT (2) SUBJECTS ARE END PRODUCTS FROM REFRACTING/SCATTERING

ALBEDO - f : The % of LIGHT REFLECTED
→ OUT OF 100% 

4) Albedo of SNOW = 90% < SNOW absorbs 10% of Light = Reflects 90% of Light

ALBEDO of EARTH = 35% < EARTH ABSORBS 65% of Light = Refl 35%

Albedo of FORREST → of the light which falls onto the forest → the forest soaks up around 93-95%
 ↓
 = 5-7%

(BLACK absorbs more Energy of wave lengths. = very ↓ Low ALBEDO)

- When light falls upon a pigment of color.
 i.e. light falls upon RED cloth, All light is absorbed EXCEPT THE Red which is Reflected out.

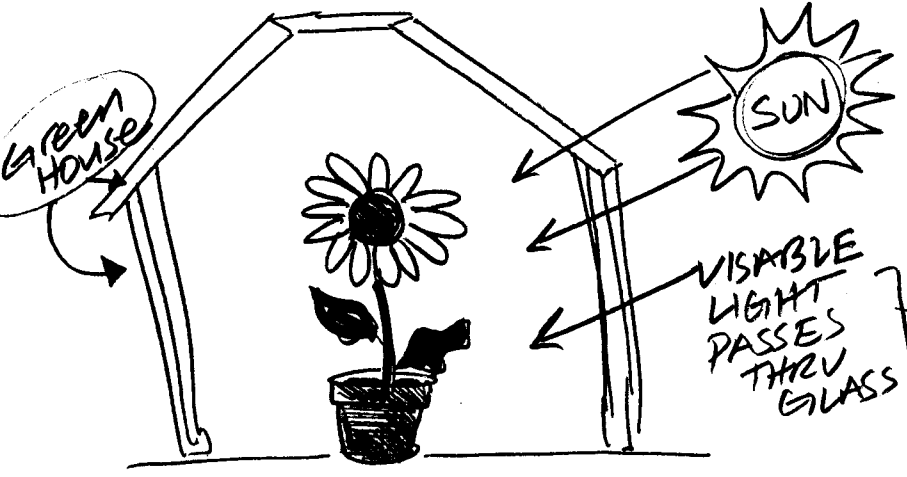
**** WHAT IS NOT REFLECTED → IS ABSORBED ****

* Reflecting telescope - uses MIRRORS [uses Albedo]
 < MIRRORS REFLECT Light >

< Next Green House effect >

ALBEDO - Taking in Radiation Energy - and heating up from it.

GREEN HOUSE EFFECT



white OAR - has higher Albedo and will feel cooler than a Black CAR parked next to it.

Visible light comes thru and out @ the Speed of Light.

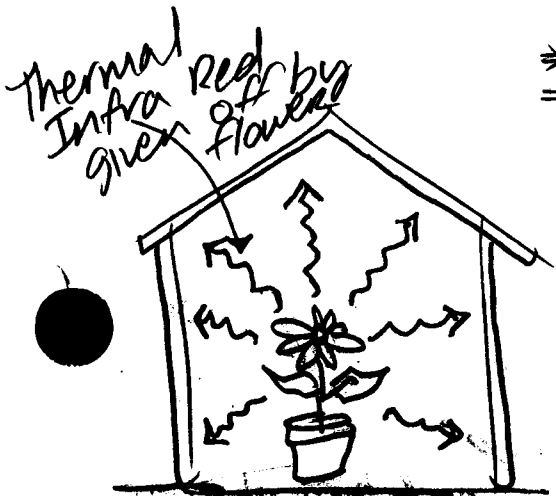
What happens when Solar Energy when it hits the flower?

- white petals = Albedo HIGH
- purple center = Albedo LOW = Absorbs all light color BUT purple.
- green leaves - Absorbs All light BUT green.

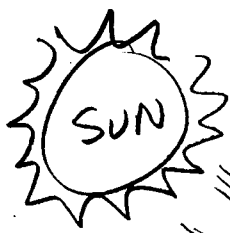
PLANT IS GOING TO GIVE OFF ENERGY so it doesn't heat up too much.

→ Flower is going to Re-Radiate Thermal Infra Red wave lengths.

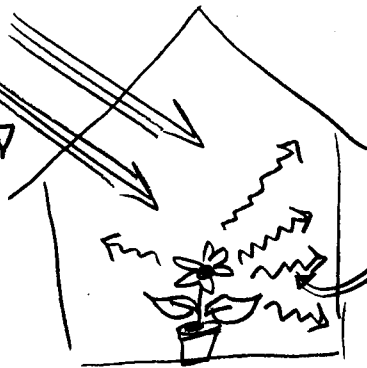
- ⇒ AND traveling @ Speed of Light
- ⇒ AND WILL NOT PASS



VENTILATION = (to give off Heat out of green house)
for Every 8 sq Ft you need
1 sq. Ft. of ventilation ⇒ 1/8
or 1/6 would be better.



Visible light goes IN/OUT of GLASS



ON SIDE = ~~XXXXXXXXXX~~
By Increasing Earth Temp
It will Expand the SEA/OCEAN
and Raise the level of SEA
THUS - Sea level cities will be wiped out.

12-6

Infra Red can NOT GO THRU GLASS

(4) Chamber stomach



GREENHOUSE GASES =

- CO₂ - Carbon Dioxide
- Methane
- H₂O Vapor

comes from animals w/ (4) Chamber Stomachs
(to break down grasses)

ALSO Found Around Dump sites.

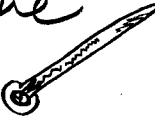
ARIZONA

→ very little H₂O vapor
to keep temp same over Night
↳ Can Drop Almost 50°

climates

w/ A lot of H₂O Vapor in Atmosphere
= will hold temp° over Night

Thermometer has only been around for the LAST 400 YEARS



CO₂ = caused:

SHIFT in weather patterns / Shift in Climate

comes from

Burning of fossil fuels / And Burning every-thing

INCREASING EARTH'S TEMP°

- ↑ Raising Thermal Equilibrium Temp°
- ↓ Thermal Infra Red Radiation = leaving Atmosphere