



2

ANSWER

1. The supposition that the only light is sunlight is false. There are many sources of light apart from sunlight.

(1) Electrically excited vapors, gases, make light. e.g. neon, fluorescent tubes

(2) Lightning bugs. A mystery to entomologists. While physicists have been searching for years for a source of light without heat, this bug possesses the secret. One I saw that died with his light on. All shiny, he died.

(3) Phosphores. e.g. the glowing bodies of myriads of living creatures in tropical seas.

(4) Aurora borealis. Mystery. Perhaps connected with electro-magnetic waves.

(5) Radium. Radio-active glow of cosmic light. e.g. possibly our earth glows in space

Could have been the light of the sun, penetrating the heavy darkness. Could have been cosmic light, or aurora borealis

31

ANSWER

2. The sun, moon, stars, are "luminaries," "light containers," "light holders," not light itself.

Gen 1: 3 וַיִּבְרָא אֱלֹהִים אֶת הַמַּאֲרוֹת

Gen. 1: 14 וַיִּבְרָא אֱלֹהִים אֶת הַמַּאֲרוֹת

f. Exodus 25:6 = the 7 branched lampstand in the Tabernacle.

f. Mt. φῶς "light" & creature  
φωτῆρ "a luminary" = a carrier of light

ANSWER

3.

Light is a creature, a creation, physical thing.

Ps. 148: 3, 5 "sun, moon, stars of light... the Lord commanded and they were created"

Isa. 45: 5, 7 "I am the Lord and there is none else, there is no God beside me... I form the light, and create darkness..."

II Cor. 5: 6

f. Exodus 10: 21-23

(1) Impenetrable. no artificial light would penetrate it  
(2) So thick felt. In fact three days. But Israel had light.

# The mystery of the physical creation of light.

Light is physical - can be analyzed, measured, bent, distorted until crooked as a corkscrew, can be bounced off a polished surface, induced to follow a path, can be turned into sound, (sound can be turned 'into light').

Has also an almost spiritual nature. Can be passed thru a hard rock, glass, physical substance, unimpairing, nature unchanged. No hole or mark - although many thousand times the speed of a bullet.

Also, apparently never stops. The light from stars, 196,200 miles a second, trillions of years, still going, forever. 8.3 years to the light of the world.

## Speed.

Among many experiments measuring light, one of the most accurate by Albert A. MICHELSON (1852-1931) who measured the speed of light between Mt Wilson and Mt. San Antonio in California. By means of rapidly rotating mirror measured the speed of light traveling between the two mts. and returning. Results: 196,200 per second.  $7\frac{1}{2}$  times around the earth.

The French physicist HYPOLYTE L. FIZEAU (1819-1896) demonstrated that the speed of light thru water was only approximately  $\frac{3}{4}$  that of the speed thru a vacuum.

DIVISION

The strange, peculiar Hebrew text in 1:4

וַיִּבְרָא אֱלֹהִים אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ  
 וְאֶת הַיָּם וְאֶת כָּל הַחַיּוֹת הַיָּבֵשׁ וְאֶת כָּל הָעוֹף הַשָּׁמַיִם  
 וְאֶת אָדָם בְּיוֹם הַיְשִׁבְתּוֹ אֶת הָאָרֶץ וְאֶת הַיָּם

to separate  
to make a division

White light, such as sunlight, seems to be just one thing. But it is not. It contains all the wave lengths within the visible range, and all the colors of the rainbow.

Sir Isaac Newton in 1666 performed a famous experiment that gave birth to a new science, spectroscopy or the study of the separation of light into its component wave lengths. He subjected this white light to the dispersion effect of a prism and found that it consisted of a mixture of all colors: red, orange, yellow, green, blue, indigo, violet.

[cf. our experiment at Bayles: a disc with all colors on it revolves rapidly, turned white]

Elements and colors

Each element, heated, glows with its own color. By means of a spectroscope, every element glowing with light can be identified.

Copper " - its color  
 Sodium " - " "  
 A dozen elements heated - the spectroscopes separate each one.

f. "helium" - an element with a color in the spectroscopes not known on earth. Also, "helium" ἥλιος "sun." Discovered in natural gas

Wave length and sound and light.

It pleases God "to divide between the light ..."

Light, sound, is a wave of material matter vibrating through space. <sup>(Strikes a bell in a vacuum, no sound at all. Vibrations in gas, liquid and solids in other ways.)</sup> The difference in the length of the waves and the frequency of their vibrations makes the color and makes the difference between "light" and "sound." If a ray of light speeding on any frequency that makes color can have that frequency changed, either higher or lower, the color phenomena changes also. If these rays of light that make color are slowed down sufficiently, they lose their visibility but strike the ear as a light, like sound. The slower this progress, the lower this frequency, the deeper their tonal quality. If our ears were tuned to receive them, we would hear a different tonal value to every ray of light and every color in the spectrum. So God divides light on a plane, some to greet the ear, some to greet the eye.

Light is invisible sound; sound is audible light.

21

## Wave length and color.

Colors are merely rays of light material traveling at a different vibrations. The slower vibrations look red. The higher vibrations look violet. At one end of the spectrum is red. " the other " " " " violet.

If the waves of material matter vibrating through space are ~~long~~ enough to number 37,640 to the right and if they come at such frequency as only to number 458 thousand billion to the second, they will strike the eye as red. Red, then, is a light wave arriving on a certain frequency and length of vibrations.

If the waves of material matter vibrating through space are short enough to number 51,110 to the right and if they come at such high frequency as to number 6,223 thousand billion to the second, they strike the eye as blue. [another authority, a different set of figures]

Color <sup>in an object</sup> is the discarded light ray refused by that physical object. of a red rose: absorbs all the light rays except the red. Really, the rose is every color except red, the rejected color.

## Invisible light.

The lowest frequency, longest wave length that the eye can see is red. The highest frequency, the shortest wave length that the eye can see is violet. But there are wave lengths below the red, called infra-red; there are wave lengths above the violet, called ultra-violet.

Mr H. Wollaston (1766-1828) a London physician, discovered the existence of ultra-violet light.

Sir Mr Herschel (1738-1822) English astronomer, proved the existence of infra-red.

Mr Konrad Roentgen (1874-1923) German physicist, discovered the X-Ray.

Heinrich Hertz in 1896, (1857-1894 German physicist) demonstrated the similarity of light and radio waves.

All these differ from visible light only in their wave lengths.

The result of all this is to extend the range of electro-magnetic wave lengths from the very long radio waves to the short X-ray and gamma rays.



9

These invisible light rays (such as infra-red and ultra-violet) reveal many things not seen with the naked eye.

f. There are minute creatures in nature whose bodies are absolutely transparent. Light passes thru them so freely that it casts no shadow, hence they are invisible. But when the invisible rays of the ultra-violet are turned on them - they are seen.

g. What of God's - Satan's spirit world - if only the right rays of light to see them?

10/10/5