

Grade 10

Optics

Nature of Light

Light is a Wave.

Wave /

Undulatory Theory

In the 1670s:
light travels
through 'ether'
and reflection
can be
explained via
waves



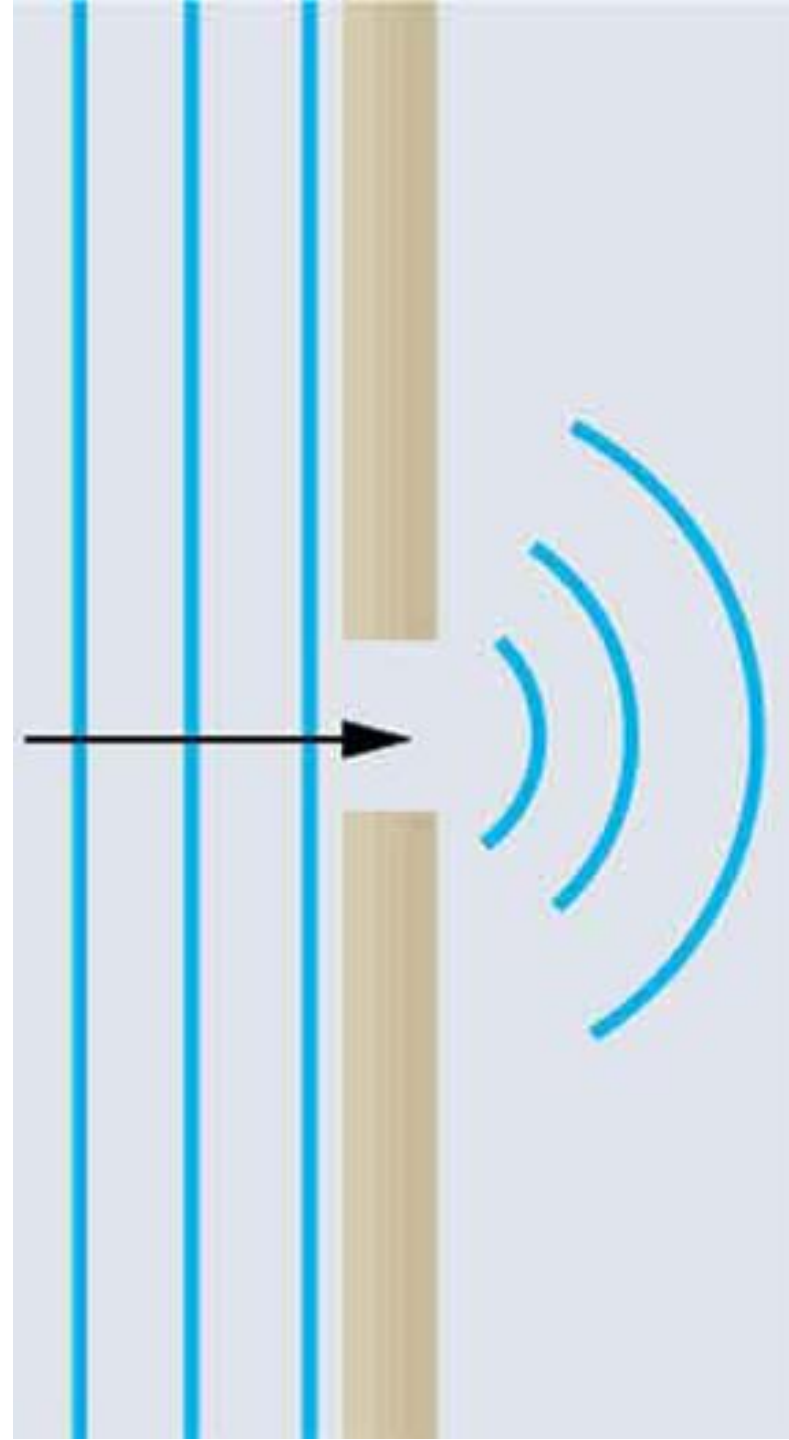
**Christian
Huygens**

Huygen's Principle every point on a wavefront is a source of wavelets. These wavelets spread out in the forward direction, at the same speed as the source wave.

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1801:
conducted the
**Double-Slit
Experiment**



**Thomas
Young**

1873:
predicted the
EM waves &
their speed



**James Clerk
Maxwell**

1887:
proved
Light IS an
EM Wave.



**Heinrich
Hertz**

Light is a Particle.

Corpuscular / Emission
Theory

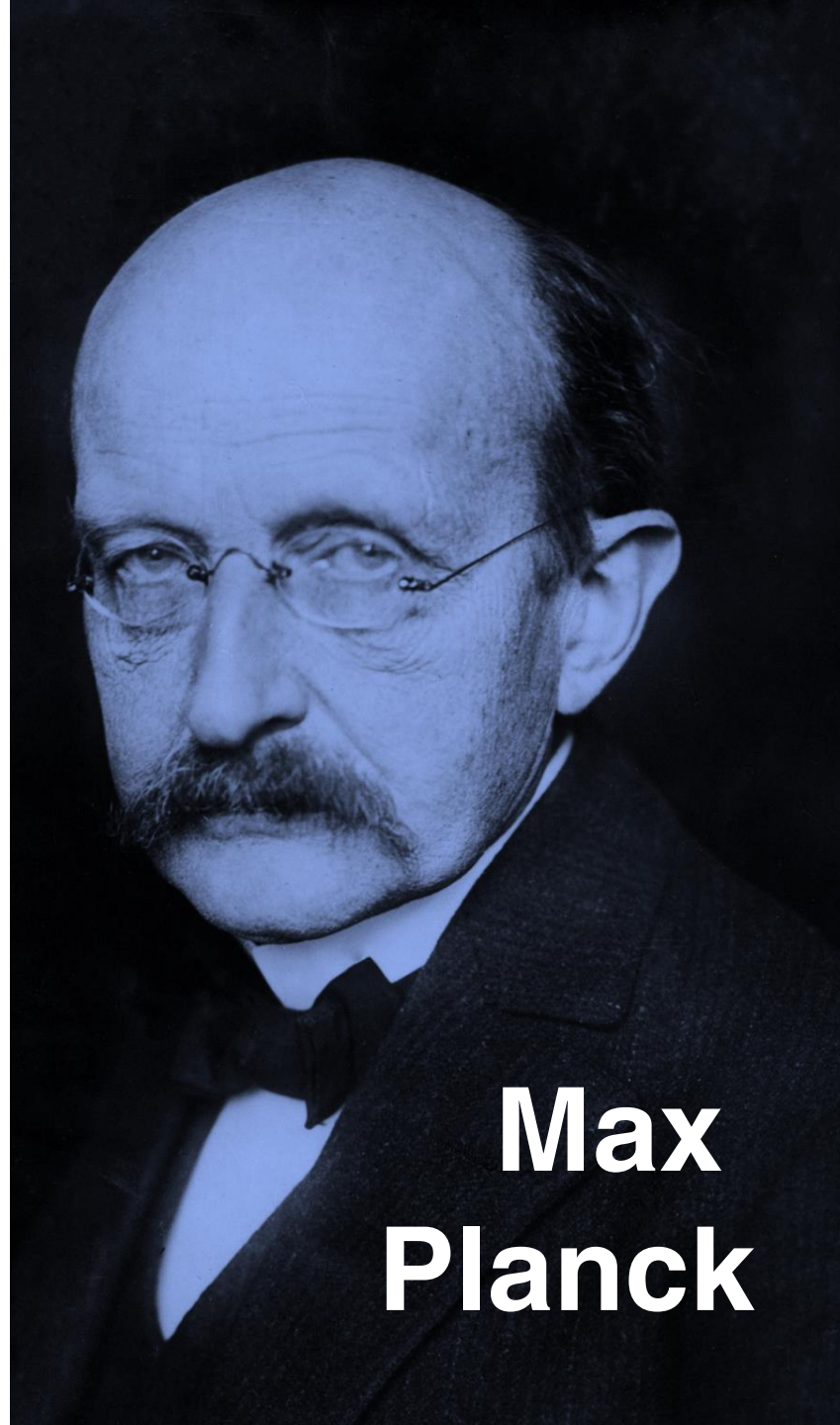
In the 1600s:

Light is made
up of particles
called

corpuscles

Planck's Constant (h)

Energy in
photons only
exists in
multiples of
 6.626×10^{-34} .



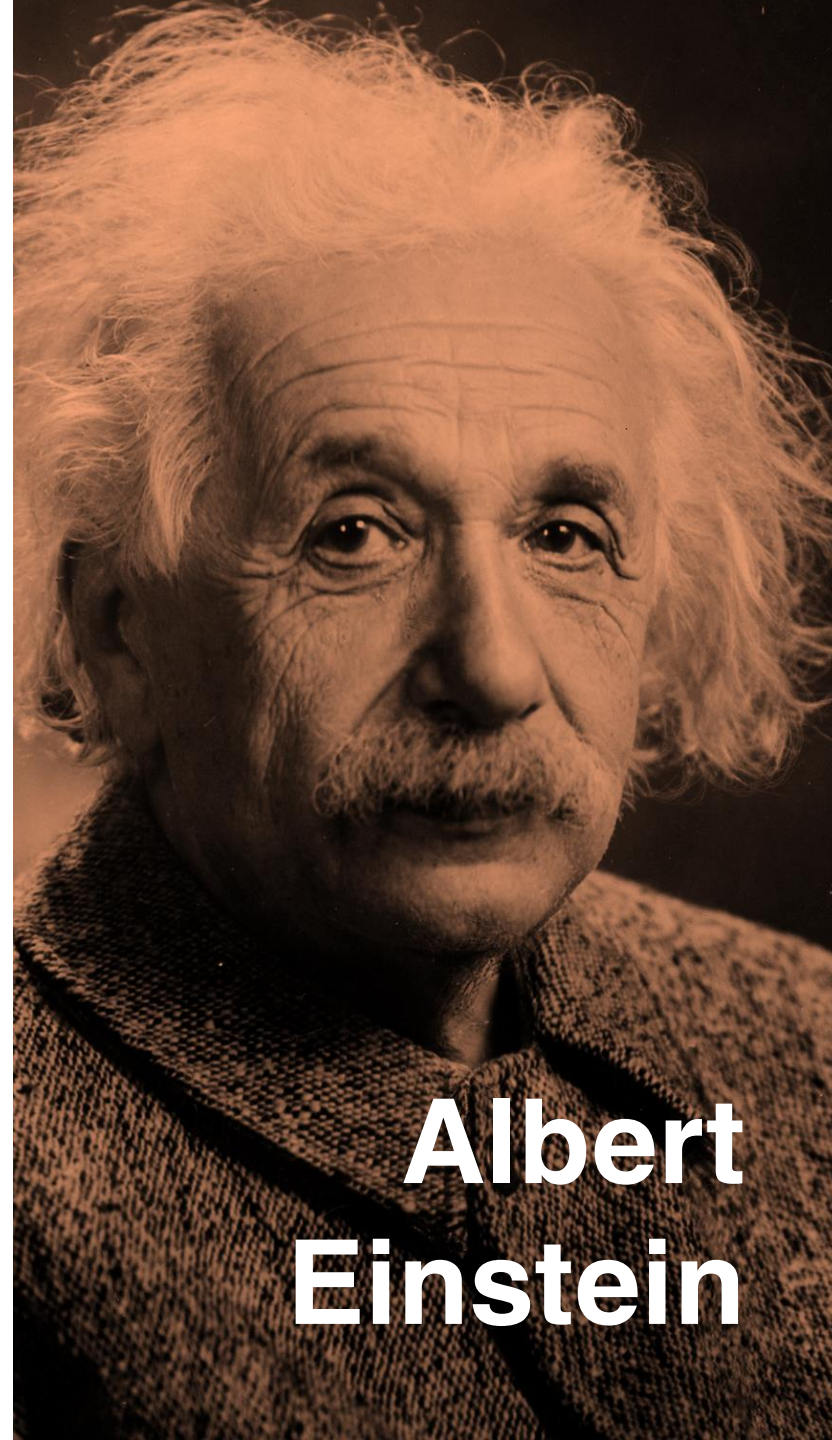
**Max
Planck**

Blackbody

Theoretical object that absorbs all EM wave and emits radiation whose spectrum is based on temperature alone.

1905:

Light exists in
discrete
bundles of
energy called
Photons.



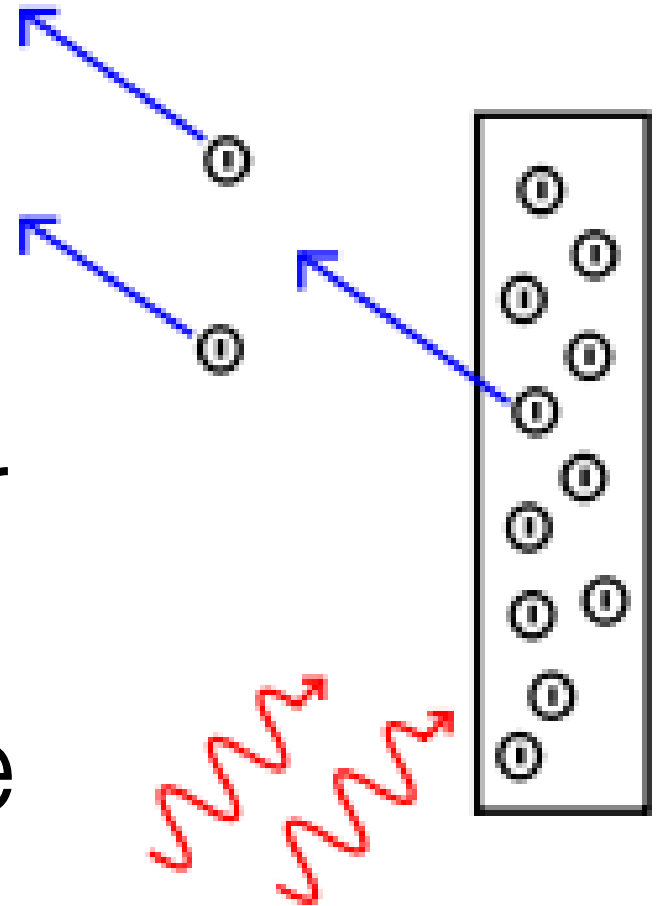
**Albert
Einstein**

1921:

Einstein awarded Nobel
Prize for the
Photoelectric Effect.

Photoelectric Effect

production
of electron or other
free carriers
when light is shone
onto a material



1930:

Quantum
Electrodynamics
merged both.

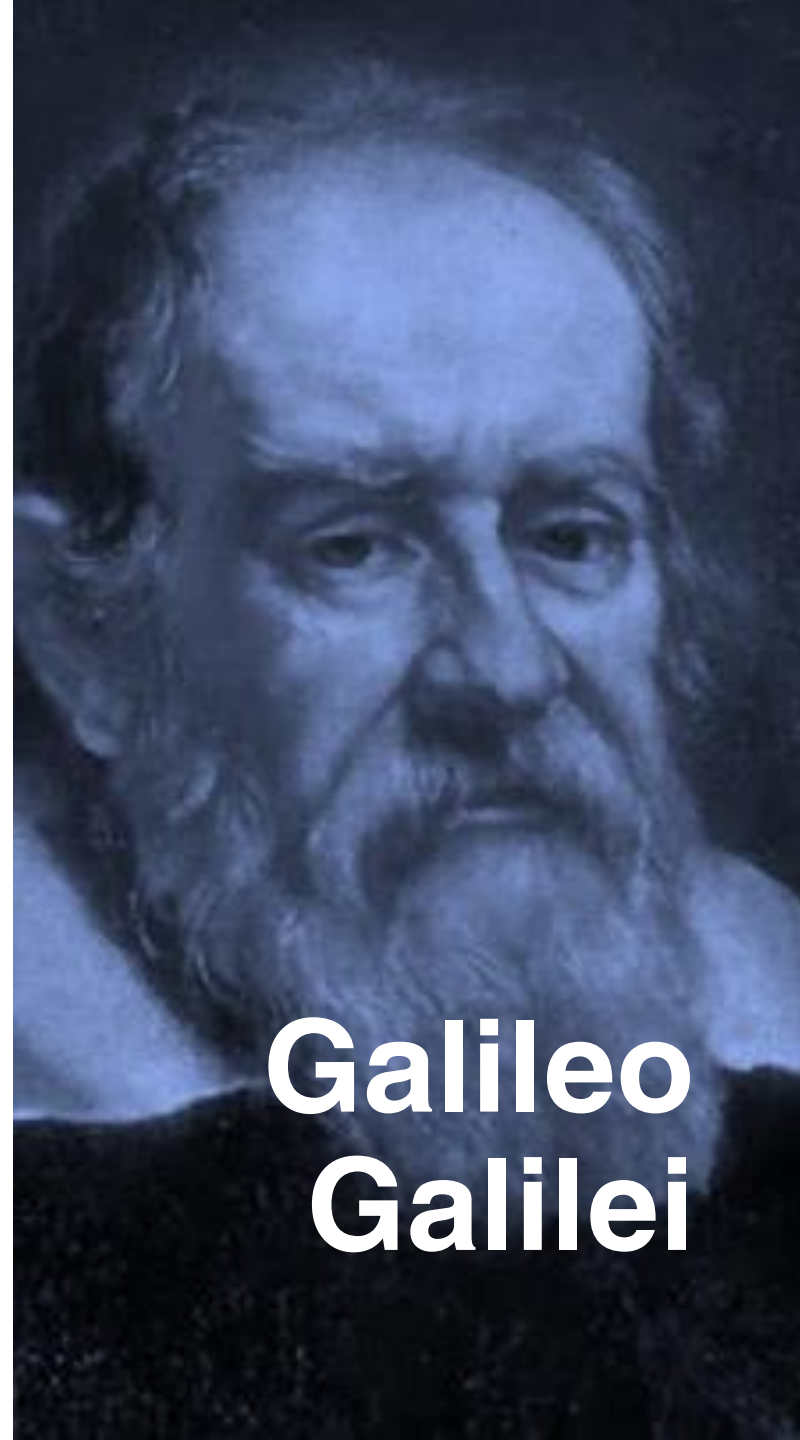
Wave Model

best describes
propagation.

Particle Model for emissions and absorption.

Speed of Light

Hypothesized
that Light
had speed.



**Galileo
Galilei**

First person
to measure
speed of
light.

220M m/s

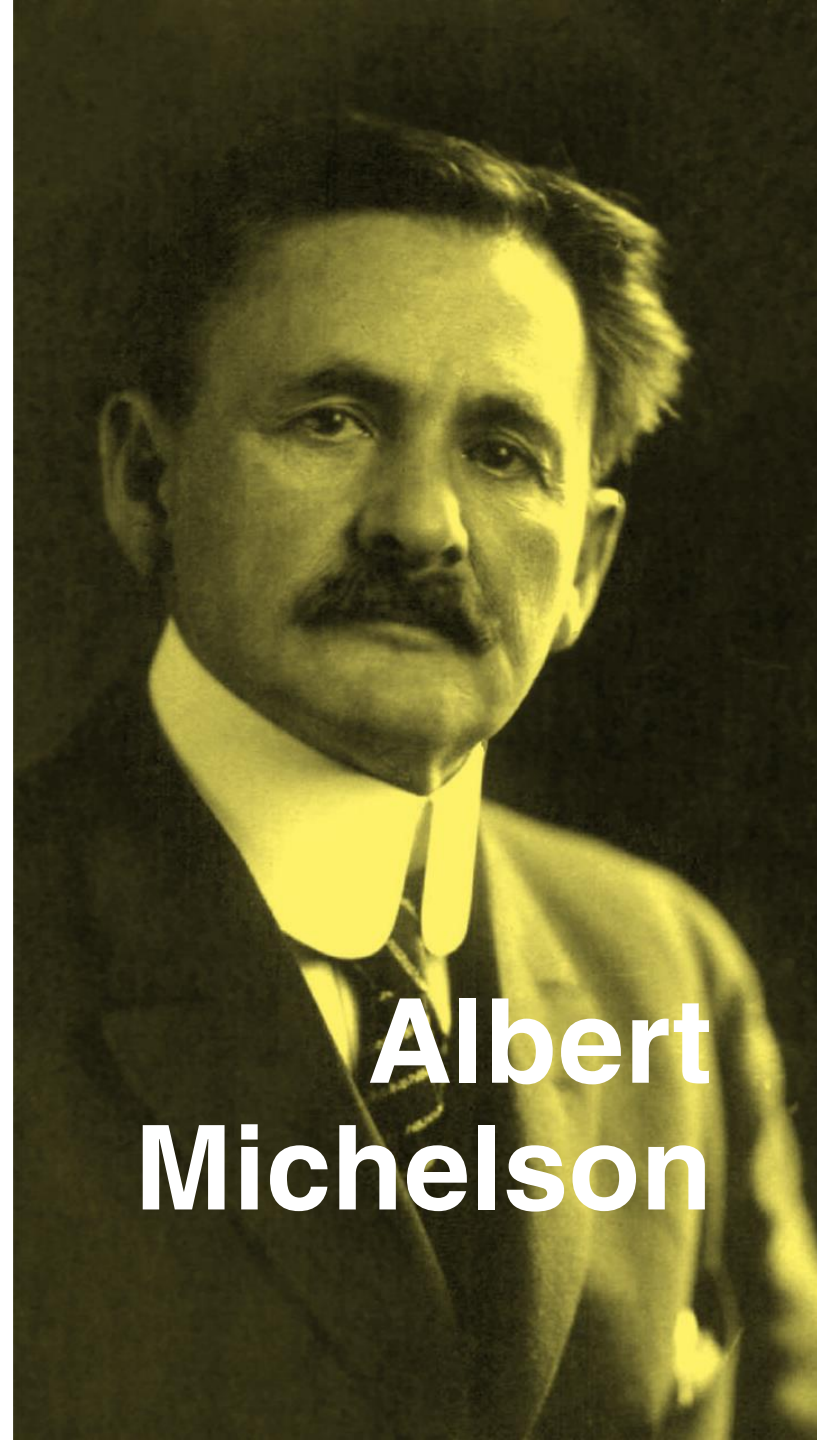


**Ole
Rømer**

Speed of Light

2.9979×10^8

m/s



**Albert
Michelson**