

11-19-13

CH. 26

" 25

" 24

H.W. POSTED

P-11

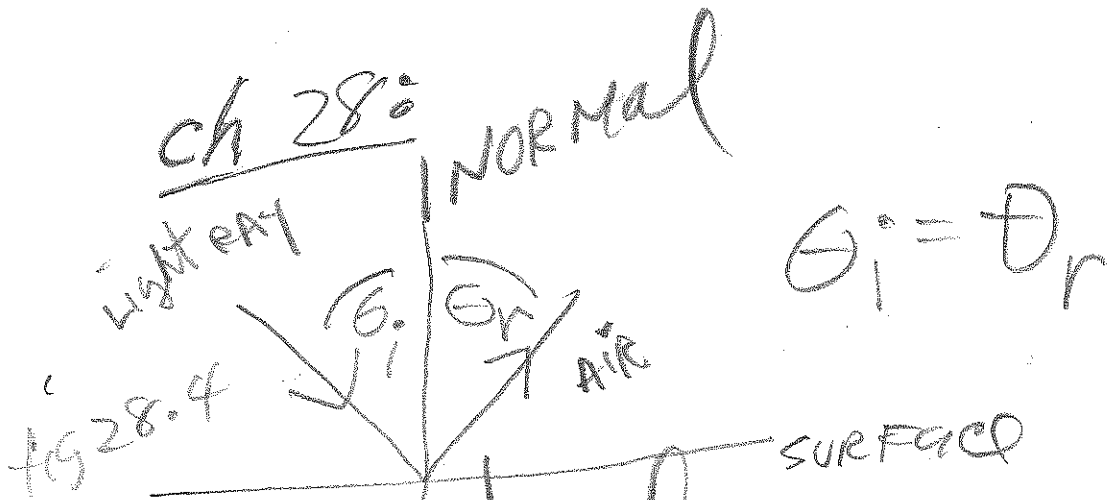


fig 28.4

fig 28.6

Ray Tracing

you (object)

parallel

PLANE MIRROR

fig 28.7

virtual image

YOUR IMAGE

AXIS

d_i

Behind MIRROR

$d_o = d_i$

d_o

parallel rays from far distance

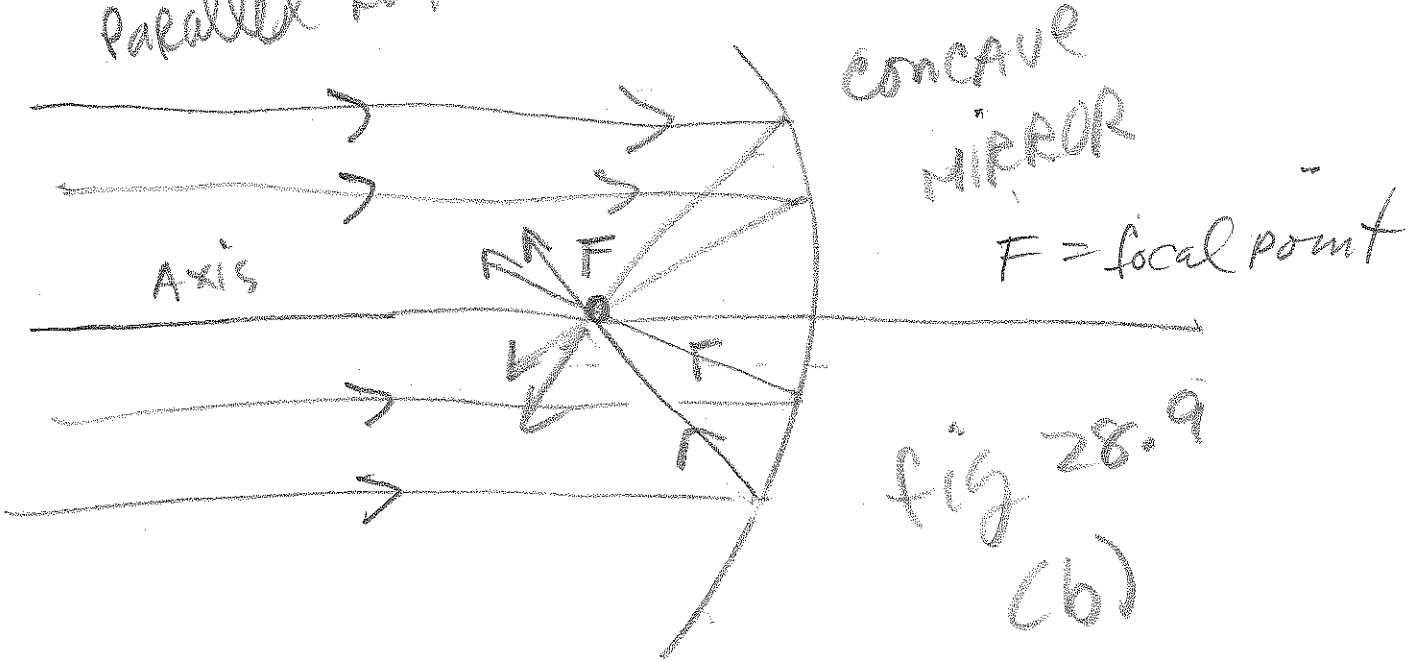


fig 28.9
(b)

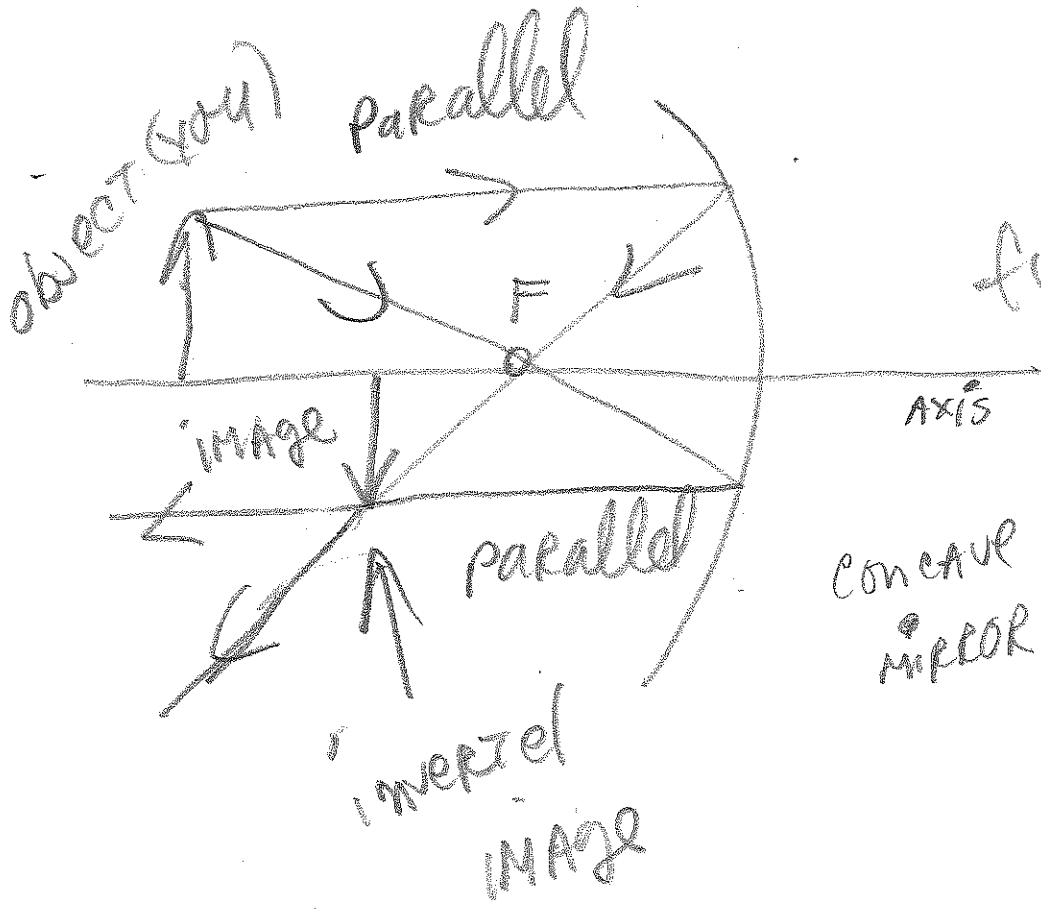


fig 28.9
(b)

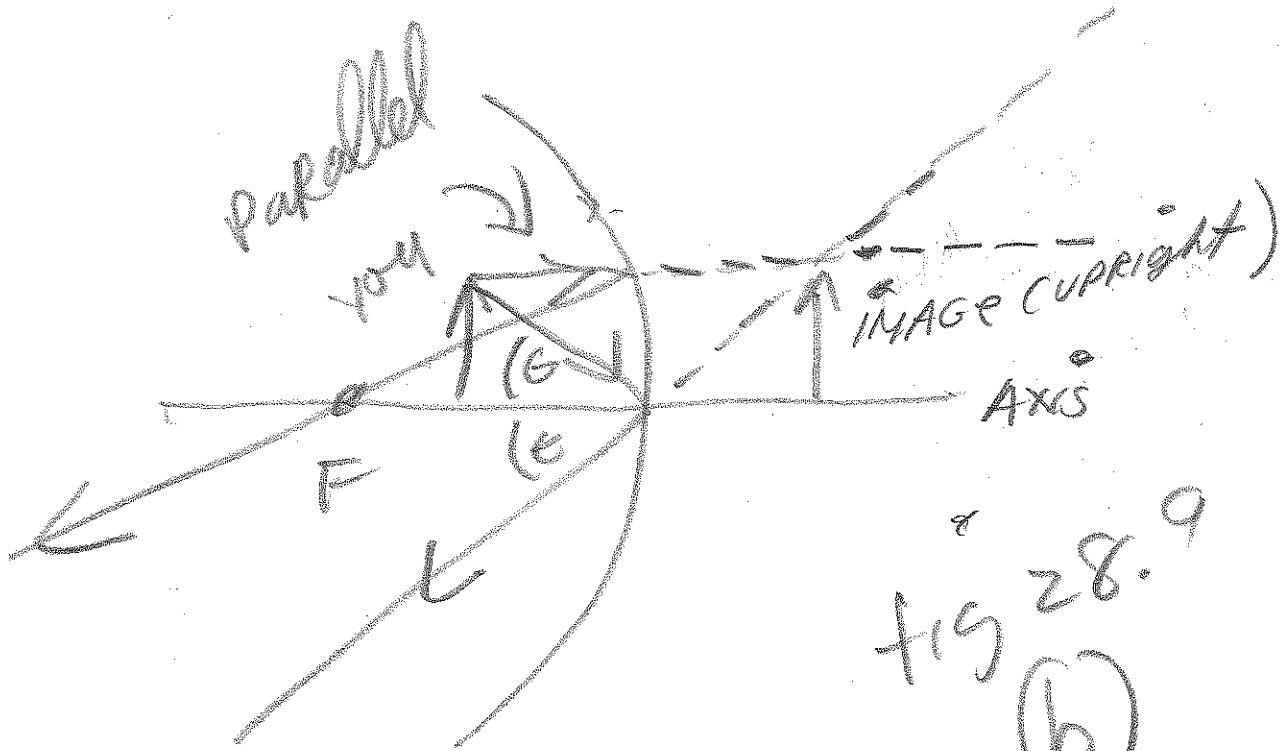
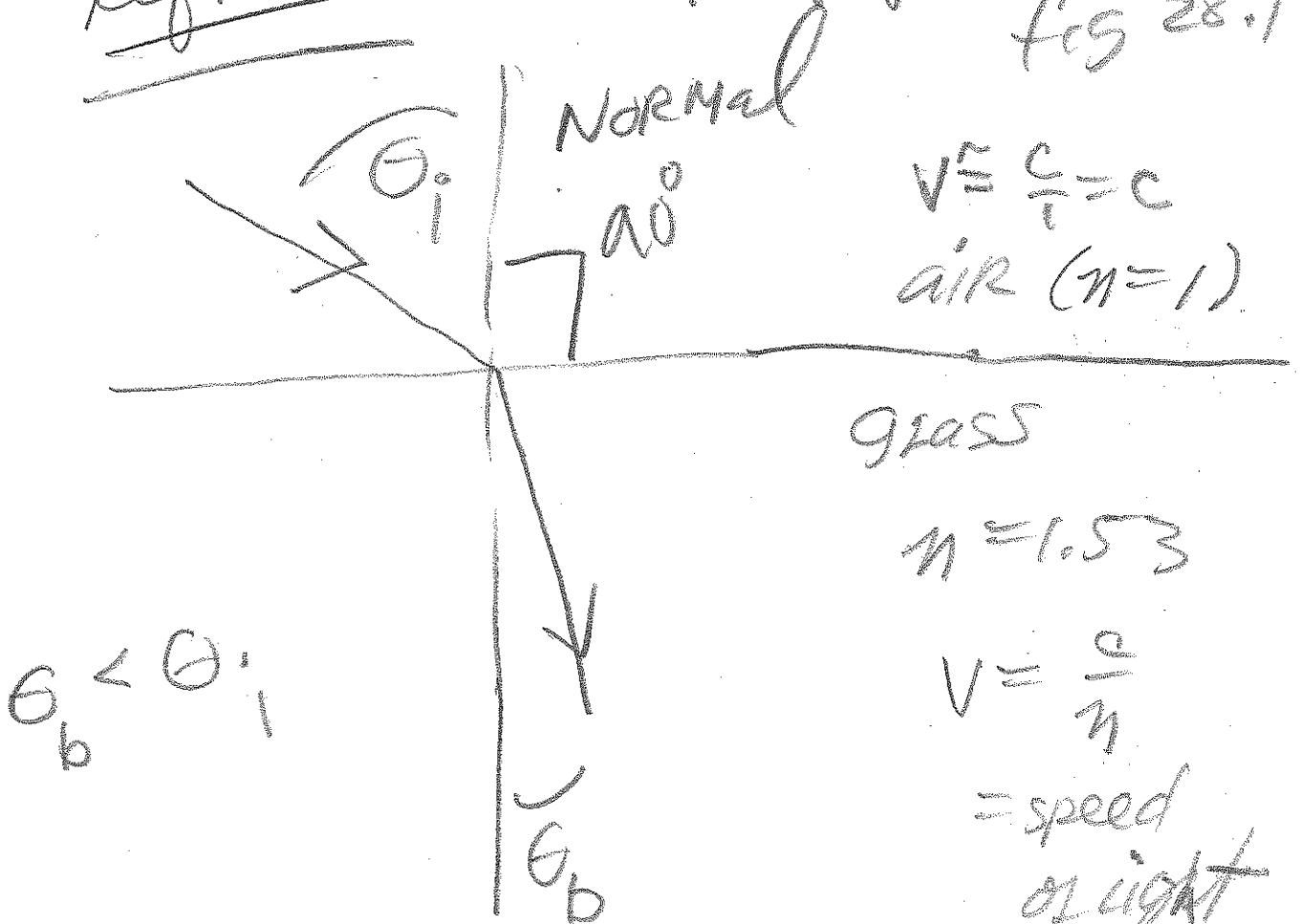


Fig 28.9
(b)

REFRACTION

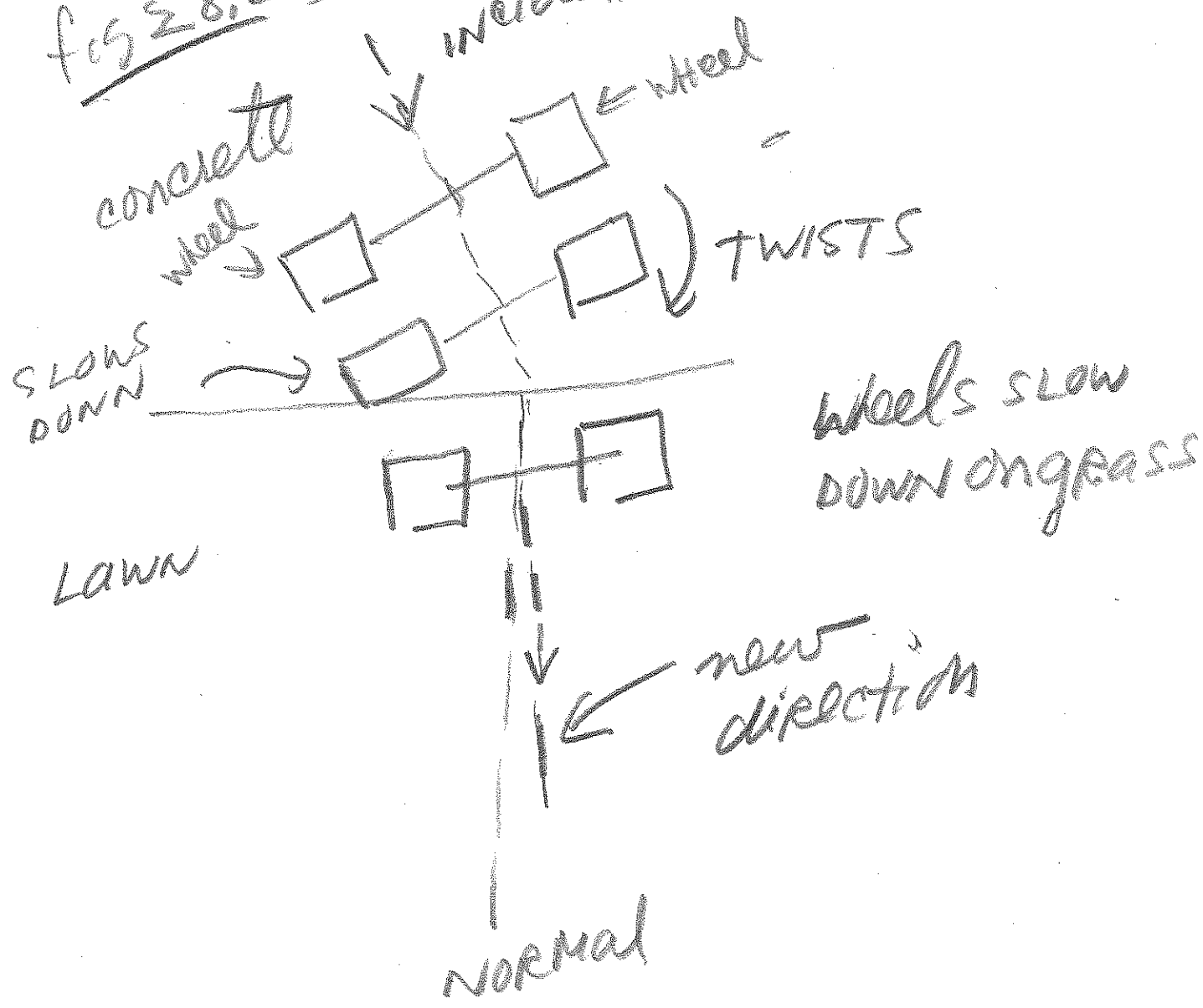
$c = 3 \times 10^8 \text{ m/s}$ (in vacuum)
= speed of light

fig 28.17



Light bends closer
TO NORMAL in glass.

cause of refraction:
fig 28.23



MIRAGE =

COLDER AIR

eye



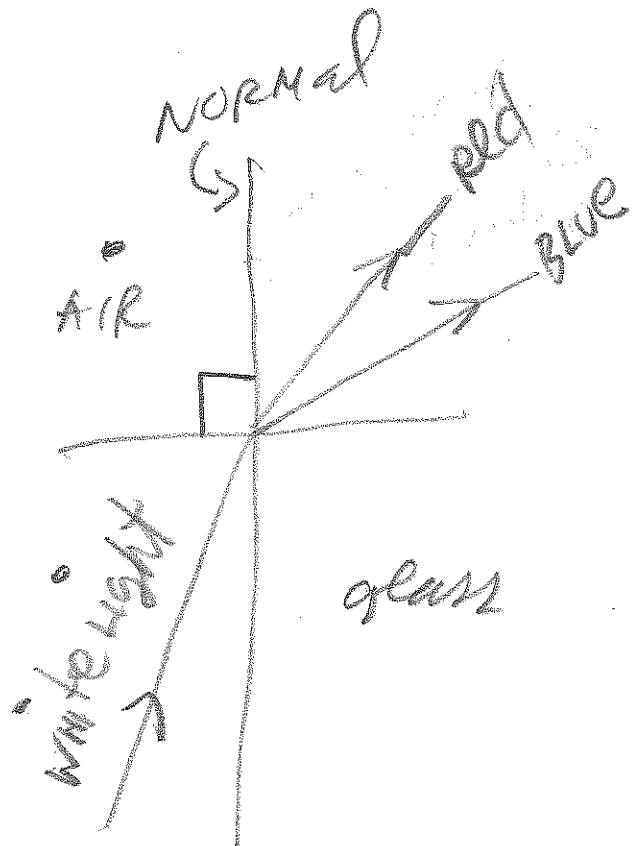
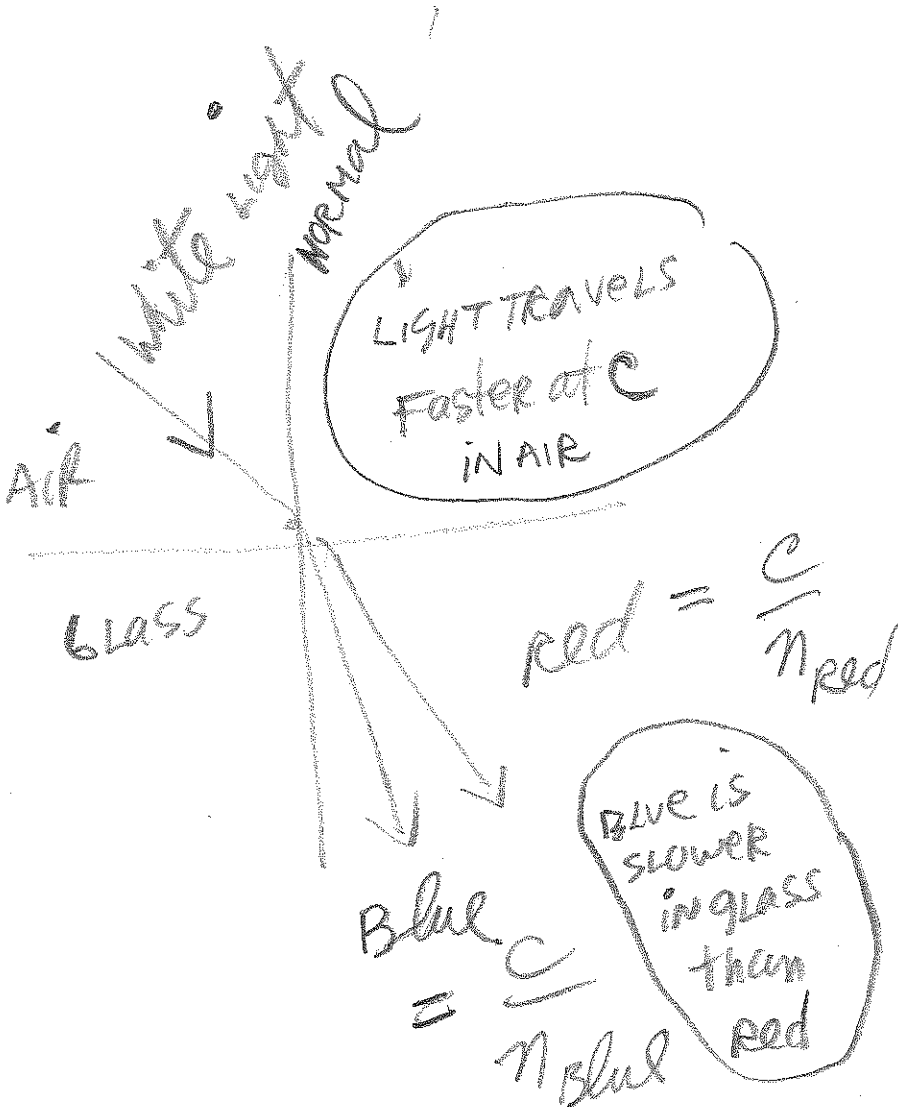
HOT AIR

light from SKY

NORMAL

light travels FASTER

HOT concrete (Route 66, HOT DAY!)



Dispersion, Rainbows

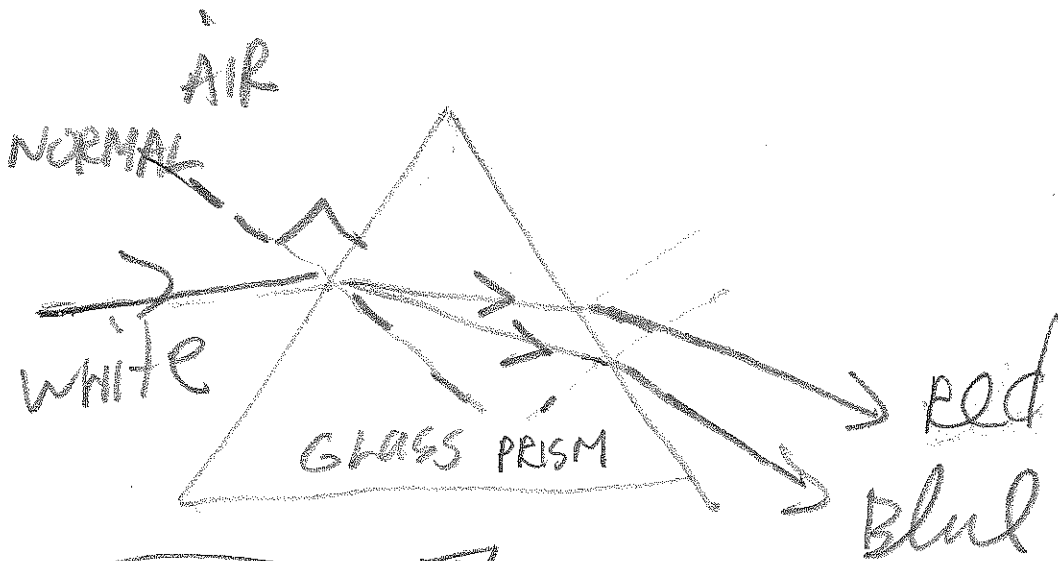


fig 28.29

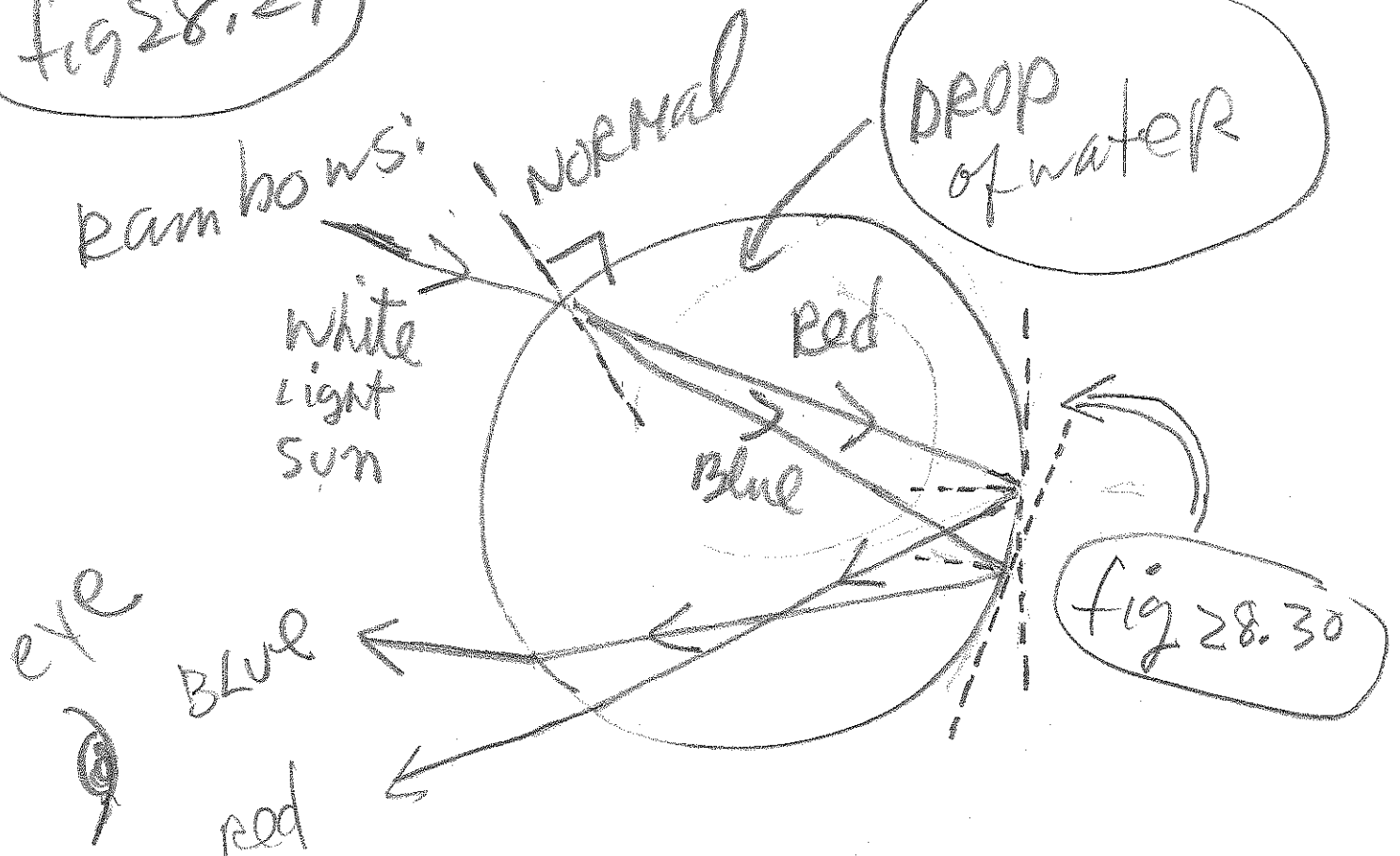
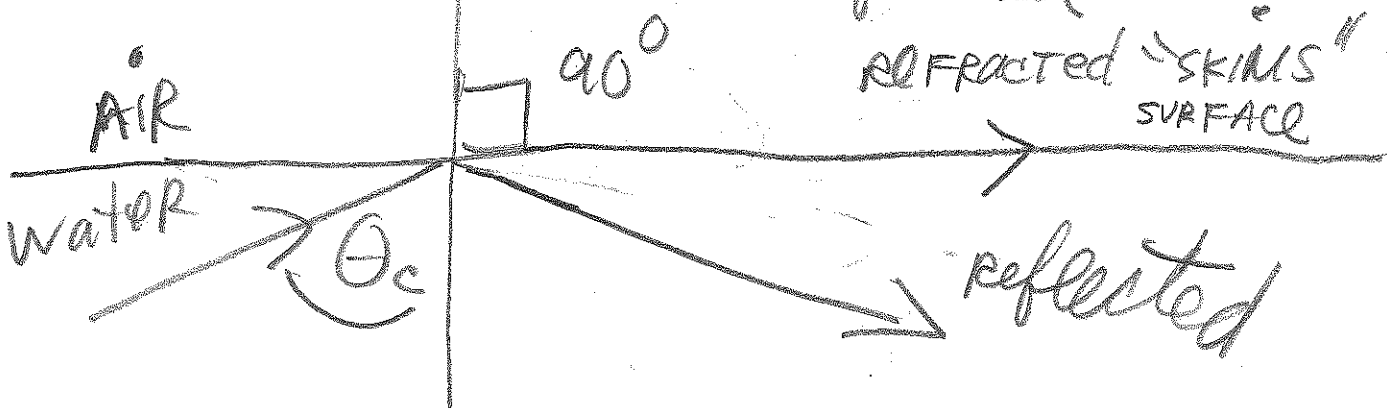
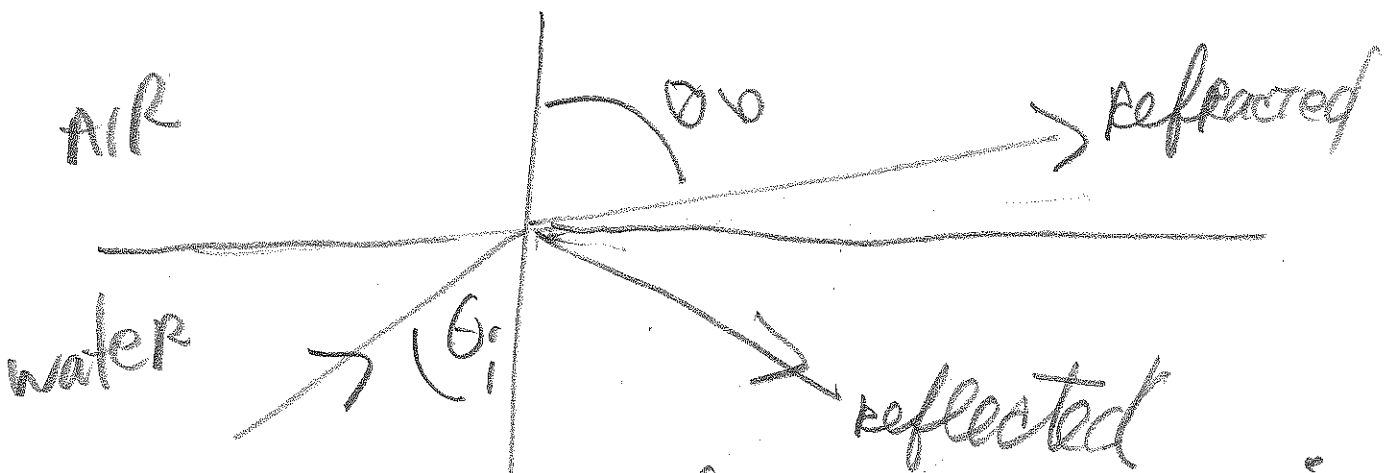
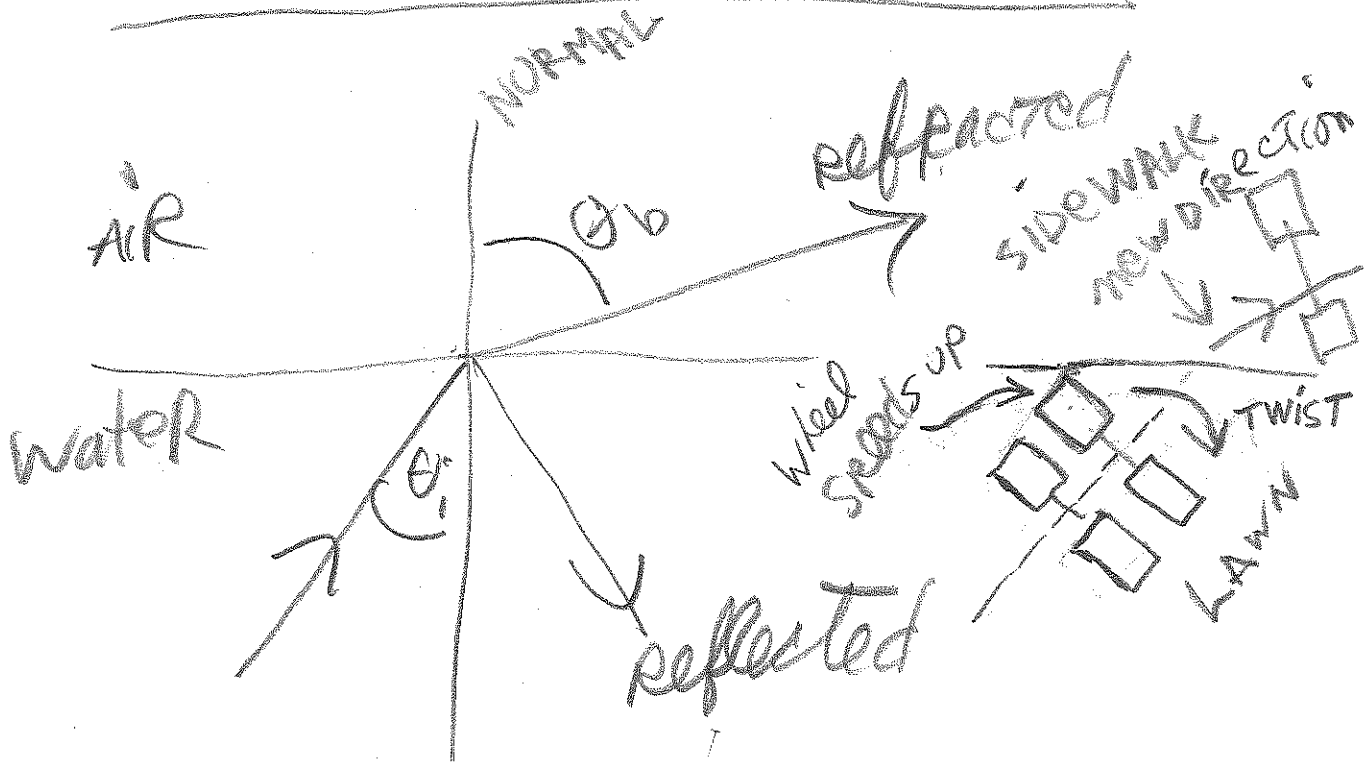
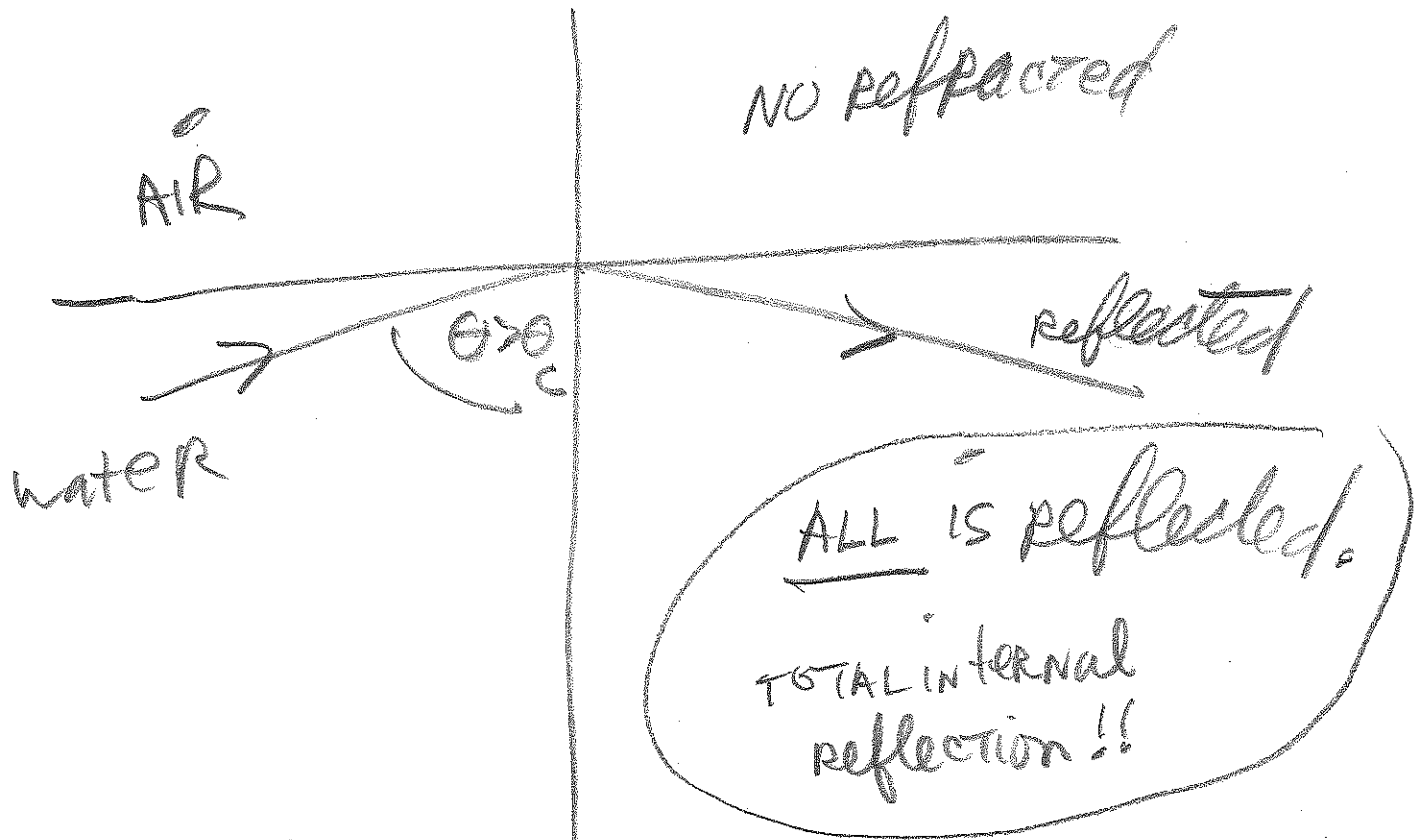


fig 28.30

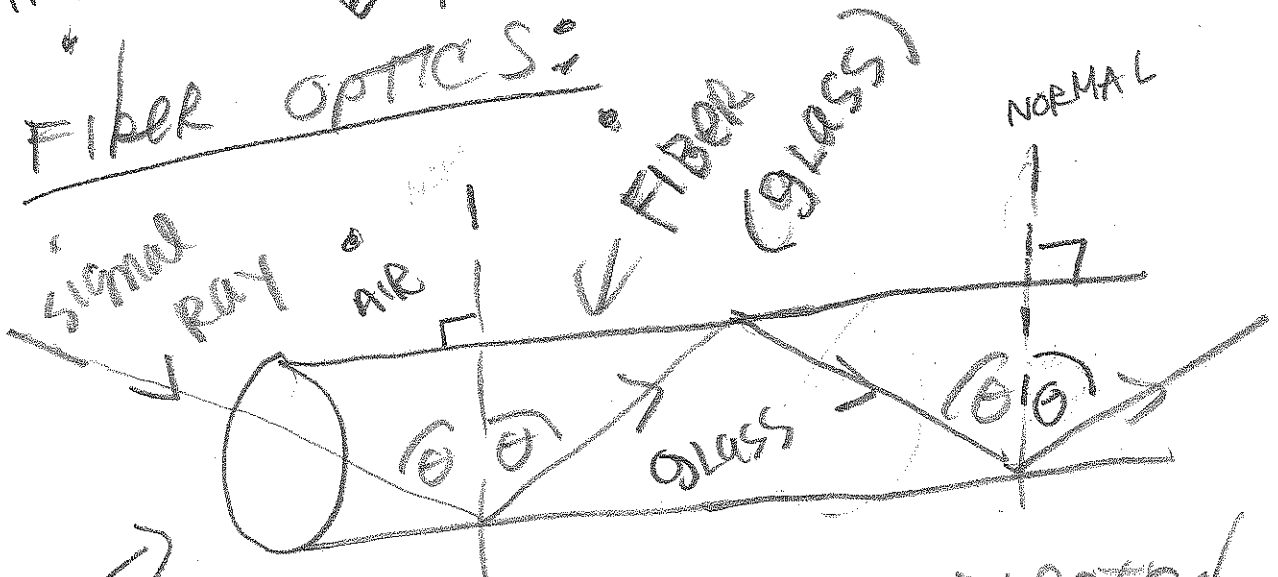
total internal reflection





APPLICATION

FIBER OPTICS:



NO LOSSES OF ENERGY THROUGH OUTSIDE REFRACTION

$\theta > \theta_c$: ALL REFLECTED INTERNALLY; NO LOSSES TO OUTSIDE! NO REFRACTED!