

Lecture on 8/12/48

Trip to the moon (Holiday on the Moon)

Summary

- (1) 59% of moon visible - Tourist Agency
- (2) Things to see - seas, craters, mountains, rays, canyons, ray-systems.
- (3) Equipment - temp $< -200^{\circ}\text{F}$ - no air - scorching heat - vacuum of space.
- Patent suit - oxygen apparatus - dark blue glasses.
- (4) Reach \odot at full moon - sun high in heavens
- (5) Valley at foot of Apennines - Horizon quite near only $\frac{1}{2}$ on Earth - rock, waste & detritate rock, death like silence, no sound, no air - no movement - silence of death - ash, volcanic ash - stones of lava - Lyot's theory of moonlight being sunlight reflected by volcanic ash & stones of lava. His theory of real volcanic craters justified - ash scorchingly hot, sun burning for 7 days (one lunar day = 14 terrestrial days - full moon is midnight i.e. 7 days from sunrise) - Brush aside ash 4 ft to bare rock which is icy cold below freezing point (ash a bad vol. ash a very bad conductor of heat).
- (6) mount the peak to get good view - oddest sensation - feel light as a feather in spite of heavy luggage - floating along - easy jump 5 yds & stride 20 yds & land easily ($g = \frac{1}{8}$ on \oplus) - Heavy tread useful for ash is soft & sandy - sides of mountain - hard rock - no water & no weathering - no stones coming down - $5\frac{1}{2}$ hrs to climb 16,000 ft - survey

landscape - death like silence - horizon sharp against sky - no mist, no haze, no vapour - Archimedes crater 120 miles away, a deep plain, 50 miles wide to wide - cleft on left side, depth perhaps miles - land rugged & mountainous - aspect of landscape, no words to describe.

(7) Looking at sky - vault a great black dome - sun shining & stars shining with white light, no blue sky, no ~~blue~~ twilight - some old familiar stars & constellations - Milky way a silver path against inky black ground, Venus near the sun, no need for glasses, a tiny little half moon - sun shining fiercely & more dazzling than on Earth - to the left & right, the zodiacal light - cover up disc by holding a coin, I see corona distinctly.

(8) What about the Earth? Cannot be seen because of 'new Earth' - can't be seen in spite of electric lights on Earth - Earth also seen in phases but exactly reverse.

(9) New Earth, exact moment of full moon - sun has reached zenith - to \odot 's right, a black pt. a strip, a dark cap suddenly appears - An eclipse of sun has begun - \odot seen passing behind Earth & disappearing - Earth invisible but silhouetted against \odot 's disc - gets darker & darker - totality sets in - rock around quickly cools - large dark sphere

(4 times \odot 's disc) with a thin halo of reddish light round it, the Earth's atmosphere is seen & this weird reddish light is thrown all around - icy cold, thermometer fallen to -200° F (just before eclipse $+200^{\circ}$ F)

Petit & Nicholson measured this with perfect accuracy - total eclipse lasts an hour - little of corona seen, Earth covers most of it - Easy to see corona when no eclipse! Corona outshone by reddish light - Total eclipse over - temp. goes up by leaps & bounds -

(10) Earth receiving light from full moon - Earthshine & Moonshine!

(10) tired - descend & sleep - sleeps a long time perhaps used to lunar conditions where day & night are each 15 days - got up & saw sun so below horizon, 'half Earth' at first quarter in the sky - went to sleep again & awoke till Earth was 'full' i.e. I had slept nearly a fortnight from 'new' to 'full' Earth - but only a lunar night half a day (waked at lunar midday & got up at lunar midnight) - icy cold all round - -270° F! Earth superb & brilliant - 4 times as big as moon - see a dark patch on it, an Ocean - In N. a white patch, snow at poles - Spring time on Earth & I see both poles - γ I see Antarctic (white mass of ice), Japan, Philippines, East Indies, Eastern Siberia still under snow - clouds obscure - watching spectacle sometime, see the Earth actually rotating, a sensation indeed \odot (W to E)! Pacific ocean slips round & disappears into Earth night, fresh piece, Indian ocean, India, Central Siberia, the Peruvia, Arabia, Africa & last Europe - marvellous night shell born for hours - Atlantic ocean & then America; no Columbus need to discover from here -

(11) Moment of full Earth - At left rim of Earth, in the Atlantic

at time Sunday is breaking there, a small round black spot (diam 2')
appears. It moves rapidly over E to N. East, quicker than Earth's rotation -
this is course of a total eclipse of the sun ϕ on the Earth as seen by from
the moon - watched the small round shadow of moon on which I am
standing travel over the Earth.

- (12) Again slept - After waking day has dawned - already hot though
early morning - Again ascend Apennine peak - mountains
throw sharp, black shadows which completely alter look of things -
lunar landscape as seen at edge of illuminated crescent -
- (13) Return journey - aft