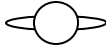


Topic A

"The Visible Sky"

(Web Version: 08-15-01)

1

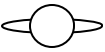


Topic A

"Appearance of the Night Sky"

(Observation in Science)

2



Topic A

Part 1. Introductory Remarks

3

In Topic A

- Want to understand . . .
 - "Role of observation (or experimentation)"*
- Goals
 - Become familiar with "what's up"
 - Learn basics of astronomical *nomenclature*
 - Discover how celestial objects "*appear to move*"
 - Understand the *relation of Sun & Moon* on sky

4

A Few Comments

A few items

- About this class
- A tip or two
- About astronomy

5

About AST 1002

Discovering the Universe (cred. 3)

Prereq: *None* — Gen. Ed. Physical Science (P) Course

Description (see UF Undergrad Catalog)

An elementary, largely nonmathematical survey of our universe of stars, planets and galaxies. Acquaints the student with the development of astronomy as a human activity — with how we know as well as what we know

6

Astronomy is . . .

- A physical science (others: ?)
- Oldest science
- Based both on observation and theory . . .

(Scientific study of all celestial phenomena & objects)

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About AST 1002

- Course work/exams
 - Emphasize thought processes which help scientists understand our natural world — procedures used to understand the powers and limitations of science*
- AST 1002
 - Not a “stargazing” or laboratory course
 - Primarily for non-physical science/math majors

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Overall Course Purpose

- Understand scientific process through interaction of:
 - Observation or experimentation (data collection)
 - Theory and model building (interpretation)
- Hence . . . *“How we know what we know”*

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About AST 1002

- Content & exams emphasize clear thinking
- Solving course problems illustrate . . . common sense thinking

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Tip: Course Requirements

- Only homework text reading but . . .
- Prepare to devote study time to
 - Concepts
 - Example exam questions (in *Study Guide*)

Don't fall behind!

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Tip: Don't Memorize Tables

Ask — What is table trying to tell me?

Names are Latin

Each has an abbreviation

Each has an English equivalent

Constellation (Latin name)	Abbreviation	English name or description
Andromeda	And	Princess of Ethiopia
Antila	Ant	Air Pump
Apus	Aps	Bird of Paradise
Aquarius	Aqr	Water Bearer

People, things & animals
 Leo Minor
Lepus

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Why Astronomy?

- Some data easily accessible — the sky (amateur astronomy very popular hobby)
- Interdisciplinary
- Historically based
- “Partially” understandable *without math*
- Inspirational, motivational, exciting . . . nifty!



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“One Night in a Thousand”

*“If the stars should appear one night in a thousand years,
how would men believe and adore;
and preserve for many generations the remembrance
of the city of God which had been shown!

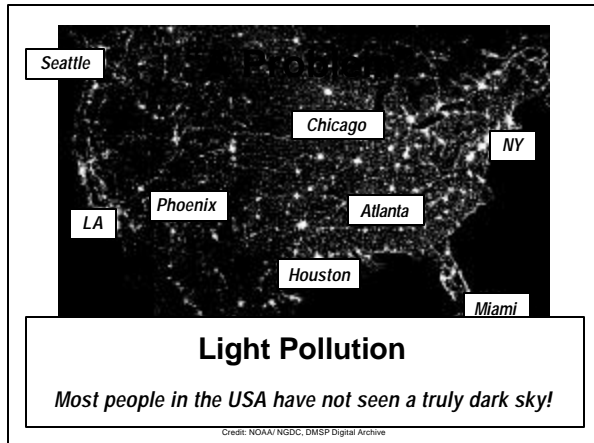
But every night come out these envoys of beauty,
and light the universe with their admonishing smile.”*



Ralph Waldo Emerson

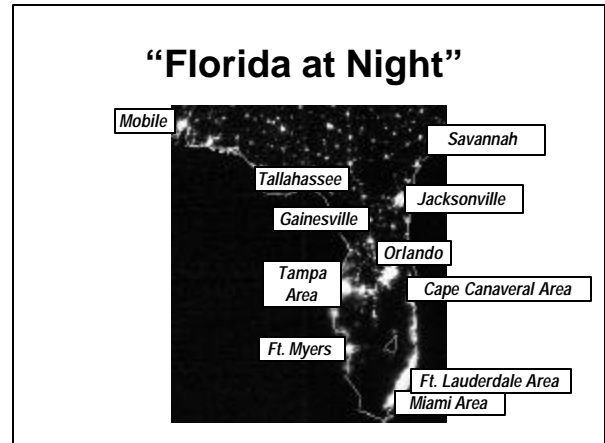
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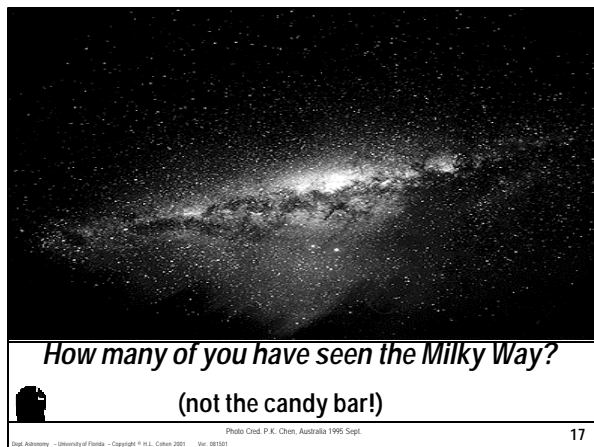


Photo Credit: P.K. Chen, Australia 1995 Sept.

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Product Names

Many products named after celestial objects!

- Milky Way candy bar
- Quasar and Pulsar TVs
- Constellation (ship)
- Cars: Eclipse, Galaxy, Mercury, Nova, Saturn, Taurus, Vega, Subaru, ...
- (Hollywood) star
- etc.

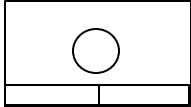


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Question

Question Approximately what direction should you face to see the Sun set?

- (1) North
- (2) East
- (3) South
- (4) West
- (5) Sometimes east & sometimes west

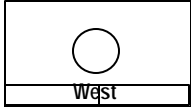


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Answer

Question Approximately what direction should you face to see the Sun set?

- (1) North
- (2) East
- (3) South
- (4) West
- (5) Sometimes east & sometimes west

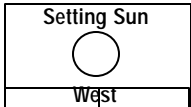


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“Observational Facts”

- 1) The Observation — *Sun sets in West*
- 2) Possible Explanation — *Sun circles Earth*

“Observational fact”



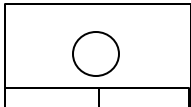
Until we have done #1 (obtained data), we can't propose #2 (a hypothesis)

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Question

Question Approximately what direction should you face to see the Moon set?


- (1) North
- (2) East
- (3) South
- (4) West
- (5) Sometimes east & sometimes west



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Low Moons

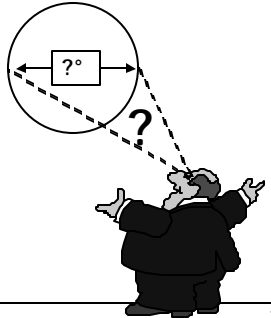
- A Low Moon (or Sun)
 - 1) Distorted (flattened)
 - 2) Colored (reddened)
 - 3) Looks enlarged
- ◆ Explanations
 - 1) *Refraction* (bending) of moonlight by Earth's air
 - 2) *Scattering* of bluer colors
 - 3) *Psychological illusion!*



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Angular Size of Moon

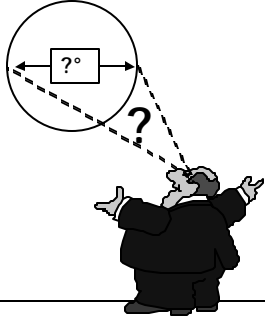
- How large does the Moon look?
- That is . . .
- What is the *apparent* or *angular* size of the Moon?
- Answer . . . ? degree



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Angular Size of Sun

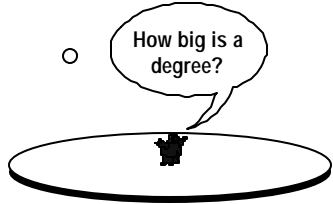
- How large does the Sun look?
- That is . . .
What is the *apparent* or *angular* size of the Sun?
- Answer . . . ? degree



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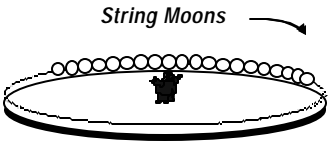
A Degree



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Moons on a String



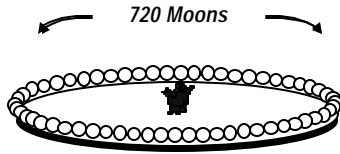
String Moons

How many Moons could you "string around" the horizon?

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Moons on a String



720 Moons

One could "string" 720 Moons around the horizon!

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