Lesson 11

TELESCOPES

OBJECTIVES:

* To learn the features of the Moon and planets that can be seen with the help of binoculars or a small telescope.
* To review the stars and planets as learned in previous observational homework.

GRADES: 4 and up.

SCHEDULING:

This unit requires an evening or overnight field trip on a clear night. It is preferable to get as far away from city lights as possible. Do it a few days after the New Moon. The small crescent Moon sets early, leaving a dark sky.

MATERIALS:

You will need a pair of binoculars on a tripod, or preferably a small telescope. Of course more instruments are better if you have enough adults to supervise their use.

If you don't have access to any such equipment, contact the closest planetarium and inquire about groups of amateur astronomers in your area. Such groups are usually eager to introduce new people to their hobby and show off their equipment.

PREPARATION:

Practice finding the planets in the telescope or binoculars in the days preceding the outing.

Duplicate a star chart that includes both familiar and new

material.

ACTIVITY:

Start out by finding the constellations studied previously. Use this opportunity to help any student who has not yet found the Zodiac constellations or the naked-eye planets. Introduce any new objects you want to.

Aim the telescope or binoculars towards the objects that are visible this evening. Warn the students not to kick the tripods. In fact it is best for them not to touch the instruments, so that these remain aimed to their targets. You will need to periodically adjust the aim, since everything is constantly moving westward.

With good binoculars, you can usually see one or two of Jupiter's moons, and craters on the Moon.

With almost any telescope, you can see up to four of Jupiter's moons, stripes on Jupiter's surface, the rings of Saturn, the phases of Venus, and a lot of detail on the Moon's surface.

CONCLUSIONS:

It is by looking in a telescope that was probably not as good as the one your class used that Galileo concluded:

* The Moon has mountains and "seas" (flat areas). In some ways, it is a world like the Earth.

* Venus has phases like the Moon.

* Jupiter has moons that orbit around it. (Therefore, since some heavenly-bodies travel around another world than the Earth, the Earth can no longer be considered the center of the

Universe.)

* Saturn has ears (at least that's what they look like in a tiny telescope.)

* The planets are much closer than the stars. Stars just look like stars in the telescope. Planets actually look closer, revealing an actual disk to the telescope.

~~COMMENTS:~~