INTRODUCTION

This booklet contains complete instructions for constructing a Sidewalk (Dobsonian) telescope using an eight inch (diameter) or ten inch (diameter) purchased objective mirror.

You will need to purchase one objective ("primary") mirror and one diagonal flat, ("secondary") mirror, in order to build the telescope. Mirrors may be purchased from mail-order telescope supply houses. Coulter Optical is an excellent, dependable source for good-quality, inexpensive mirrors, so we have included their address in the "Sources" list on page 5.

REMEMBER! TELESCOPE MIRRORS ARE POWERFUL CONCENTRATORS OF LIGHT. READ THE SAFETY PRECAUTIONS AND WARNINGS ON PAGE ONE BEFORE ORDERING YOUR MIRROR.

The plywood cutout patterns on pages 6 through 9 are for the construction of telescopes with 8 and 10 inch objective mirrors, but you can use the same design for telescopes with objective mirrors up to 15" in diameter. Just remember that the tube of your telescope needs to be at least 1 1/2" wider than the diameter of the objective mirror. Then increase the tube box and and rocker dimensions proportionately.

For telescopes with mirror diameters 16" and larger, a different tube box design and mirror support system is necessary. (John Dobson's telescope-making video--listed in "Sources" on page 5--shows the construction of a 16" telescope with this modified tube box and support system)

If you:
1) Have questions;
2) Need additional assistance;
3) Want more information about our organization (membership, activities, programs, etc.);
4) Are interested in having John Dobson give talks or classes in your area:

Please write to
The Sidewalk Astronomers
1946 Vedanta Place
Hollywood, CA 90068

OBJECTIVE AND DIAGONAL MIRRORS

What we describe as a Sidewalk Telescope, or Dobsonian Telescope, is a simple Newtonian reflecting telescope in a sturdy, wooden alt-azimuth mount or rocker. The telescope consists of a concave *objective* (or *primary)* mirror, which is usually mounted in the bottom of the tube. This objective gathers light from the object under observation and brings the light to a focus, forming an image of the object in what is called the focal plane or image plane, at the upper end of the tube.

A small, flat, front-surface mirror called the *diagonal* (or *secondary)* mirror is mounted inside the telescope tube near the front end. This mirror is mounted at a 45 degree angle to the tube's axis--hence its name. It deflects light from the objective to the side of the tube where the image may be more easily examined with an eyepiece.

The size of the diagonal mirror is dependent on the size and focal ratio of the objective mirror. So, when you order your mirrors, make sure to ask your supplier to tell you the correct size diagonal mirror to order. Specify that you will be using a low-profile focuser.

A WORD ABOUT FOCAL LENGTH AND FOCAL RATIO

The focal ratio of the mirror you select determines how long your telescope will be. A 10" objective mirror with an f/7 focal ratio will give you a telescope with a 70" focal length. (Multiply the "f-number" by the diameter of the objective mirror to get the focal length.) Your tube will need to be cut to the length of the focal length, so you would have a 70" long tube. An 8" objective mirror with an f/7 focal ratio would have a 56" focal length, and a 56" long tube

(John Dobson recommends a focal ratio around f/6 or f/7.)

FORMULA FOR FINDING THE FOCAL LENGTH OF YOUR MIRROR (which is also the length to cut your telescope tube):
FOCAL RATIO (f-number) x MIRROR DIAMETER = FOCAL LENGTH = LENGTH OF TUBE.

When you get your mirror, the focal ratio may be exactly what you ordered, or it may be a little more or a little less. So don't cut your tube till you receive your mirror.

TUBE DIAMETER

The telescope tube should be about 2 inches wider in diameter than your objective
A 10" in diameter objective mirror requires a 12" in diameter tube
An 8" in diameter objective mirror requires a 10" in diameter tube