

## N.A.C.A.A. 2002 Astrophotography

### Introduction

Do you look at the glossy pictures in the magazines and think that you'd like to do the same? Sure, some of those pictures required very expensive equipment, and years of experience. But, you too can take pictures that will highlight the splendour of our night skies, with very little expense and experience.

Do you want to capture star trails, moon craters, Jupiter, Saturn, Venus, the star clouds of the Milky Way, whole constellations, meteor trails and so on? The list is endless, and you can do that right now! All you need is a 35mm SLR camera, a tripod and access to a telescope. Let's take each of these in turn and then we'll cover films and techniques.

### The Camera

You don't need one of those new cameras that talks, tap dances, and takes the picture for you. An older SLR with no electronics at all is quite adequate. The beauty of an SLR is the low cost of 35mm film, interchangeability of lenses and the direct viewing of the subject on the focusing screen.

Because almost all astronomical objects are low brightness, the camera must have the ability to take time exposures. As long as the shutter has a B setting, the lens focuses on infinity, and you can set the aperture diaphragm yourself, you're ready to shoot the sky. Any of the older SLR cameras will meet all these conditions.

The standard 50mm focal length lens is quite sufficient to photograph wide fields of the sky, as required when shooting constellations, star trails, meteors etc. For more detailed views of certain areas of sky, then a lens in the focal range of 200-500mm is required.

### The Tripod

A sturdy camera tripod is required to allow pointing of the camera and proper sky orientation. Star and meteor trails can be obtained by simply pointing the

camera and opening the shutter from 10 to 60 minutes, depending on the length of the star trail you want.

Film technology has seen some amazing advances in recent years. With today's fast colour films, you can take constellation pictures showing details down to about magnitude 9 in less than 30 seconds. Which means that no tracking of any sort is required. Just point the camera at your subject and shoot. If you're using a 50mm focal length lens, then the star trails will be small enough that they will not be seen. Using a 35mm focal length lens to capture an even wider area of the sky, increases the exposure time to approximately 45 seconds before star trails become a problem. Films such as Konica 1600 and 3200 ASA offer incredible speed and acceptably fine grain.

### The Telescope

There are two ways that a telescope can be used. One way is to use the scope as a means of mounting the camera piggyback on the tube and using the scope as a tracking platform. The other is to transform the telescope into a long focal length camera lens.

Mounting the camera piggyback on a clock-driven telescope allows long exposure wide field photographs to be taken. Instead of using a telescope mounting for piggyback photography, you could construct a simple camera tracking platform, like the one described in *Sky & Telescope* magazine for February 1988. Essentially a hinged wooden platform, with a small motor that pulls the two hinged components away from each other at the rate which mimics the Earth's rotation. Constructing one of these is extremely simple, inexpensive and allows accurate tracking for periods as long as 20 minutes for lenses up to 210mm focal length.

Removing the telescope eyepiece and camera lens, and coupling the camera body to the telescope focusing unit allows close up views of the Moon and the brighter planets. Because of the large amount of light striking the film from these Solar System objects, use of fast films will allow short exposure photos which require no guiding and in some cases no tracking at all. Pictures such as this one can be taken easily, and with any telescope. And they yield results which serve as encouragement to try more complicated photos next time.

### Films and Techniques

One of the biggest disappointments a budding astrophotographer suffers is when he receives his first set of photos back from the film processor. Usually the sky turns out greenish-brown, and the colours of the stars and nebulae are all

wrong! Don't blame the film entirely; the photofinisher just doesn't know what your picture is supposed to look like. One way of overcoming this problem is to spend time with them and show them with books and magazines what your subject looks like. This can be very time consuming, assuming you've found a willing listener.

The better way is to use slide film instead. Not only does the use of slide film alleviate the problem of bad processing, it also allows viewing of your pictures on a large screen.

If you are going to use colour print film, use it only for the very short time exposures (up to 45 seconds) of very wide fields, such as those required for constellation photography. Good films for this activity are Konica SRV 3200, Fuji HR 1600 or Kodak VR 1000.

Photographing of star trails, the Moon, or long exposures of star fields, will be better served by the slower slide films such as Fuji 400 or Fuji 100. These films have a much finer grain and better colour balance.

### Comet Photography

If you are interested in photographing a comet, then simply follow the on-line guide which I have prepared.

So, there you are. Essentially, this has been a very quick and basic coverage of a subject which can yield stunning pictures of the night sky. Try the simple things first, and then when you try the more challenging photos you'll be better prepared. Our Gallery page has lots of examples of astrophotographs taken by members of the Astronomical Society of South Australia. Good shooting!

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