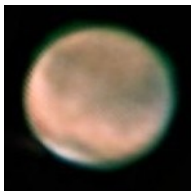
Hampstead Scientific Society
Astronomy Section

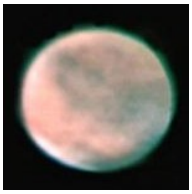
Special report 2005:

Mars opposition

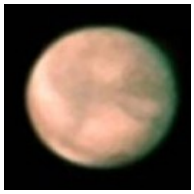
Although not quite so close as the 2003 opposition, the opposition of 2005 was far better for northern hemisphere observers. The planet was to be found in the constellations of Aries and Taurus well above the horizon and consequently out of the murk. The disk size at opposition on November 7th was a good 20 seconds of arc, large enough to reveal much surface detail given calm atmospheric conditions.



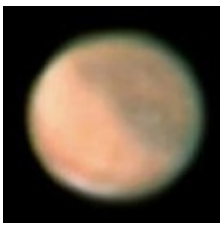
I had looked forward to this opposition, as I was anxious to try the "new" method of planetary imaging. This method involves the use of a "webcam" in conjunction with RegiStax software. The planet is imaged directly on to the chip in the webcam using my 16.5-inch Cassegrain and a short video stream is taken. This is then read into RegiStax in the computer.



This wonderful *free* software allows every single frame of the video to be examined. When a sharp one is found it is used as a reference. RegiStax will then align and stack all the good frames to produce a final image. Personally, I found the webcam difficult to use, even getting the large image centered on the chip was quite difficult and focussing with the exposure delay was irritating in the extreme!



I experimented using an ordinary Canon Camcorder as it occurred to me that as it could work at 1/50th of a second exposure, this ought to capture some steady moments and produce a lot of frames in a short video sequence, some of which should be reasonably sharp. I set it up to work afocally, fitted on to a bracket and imaging straight through the telescope eyepiece. I was then able to take fairly long videos which I then processed with RegiStax. Some of the results obtained are shown here.



On many occasions the atmosphere was very unsteady which severely limited resolution, but despite this, much of the detail seen visually was recorded. Each of the images were built up after selecting the best of over 500 individual frames. The images clearly show the nights when definition was better. In the image taken on the 6th of Nov. the darkest marking is the Mare Sirenum with Solis Lacus on the south-eastern limb. In the Amazonis desert below, the pale circle of Olympus Mons can be discerned The night of the 20th of November was particularly good with high atmospheric pressure and slight mist producing calmer seeing. This image shows Sinus Meridiani approaching the Central Meridian with a haze over the western limb, which might be evidence of the dust storm currently in progress along the Valles Marineris. The southern polar cap had, by this time melted away but the northern cap was still very much in evidence. On Nov. 29th Sinus Meridiani is on the western limb and Syrtis Major is approaching the CM with the pale oval of Hellas evident above. By early December, the disk size was already becoming noticeably smaller at

16.1 seconds of arc in diameter on the 6th where the Mare Cimmerium is featured with the dark spot of Trivium Charontis just visible in the desert region below.

By December 17th, the disk size was down to 14.4 arc secs. and although it was a stunningly clear cold night, the atmosphere was very unsteady. The image shows Mare Cimmerium close to the western limb and some vague mottling in the Amazonis desert below. I had few further opportunities to observe the planet at the end of December and by early January 2006 its diameter had decreased to about 11 arc secs. The weather continued to be poor until the 11th of January, but despite a clear night, the seeing was bad and the disk was just about 10 arc secs. in diameter, half the diameter at opposition, too small for me to record any significant detail.

Doug Daniels