

## DARK SKIES for February 2021:

M/T Feb.	1/2	6:50 p.m.	-	9:52 p.m.
T/W Feb.	2/3	6:51 p.m.	-	11:05 p.m.
W/T Feb.	3/4	6:52 p.m.	-	12:19 a.m.
T/F Feb.	4/5	6:53 p.m.	-	1:34 a.m.
F/S Feb.	5/6	6:55 p.m.	-	2:48 a.m.
S/S Feb.	6/7	6:56 p.m.	-	4:00 a.m.
S/M Feb.	7/8	6:57 p.m.	-	5:05 a.m.
<b>M/T Feb.</b>	<b>8/9</b>	<b>6:58 p.m.</b>	-	<b>5:30 a.m.</b>
<b>T/W Feb.</b>	<b>9/10</b>	<b>6:59 p.m.</b>	-	<b>5:29 a.m.</b>
<b>W/T Feb.</b>	<b>10/11</b>	<b>7:01 p.m.</b>	-	<b>5:28 a.m.</b>
<b>T/F Feb.</b>	<b>11/12</b>	<b>7:02 p.m.</b>	-	<b>5:26 a.m.</b>
<b>F/S Feb.</b>	<b>12/13</b>	<b>7:03 p.m.</b>	-	<b>5:25 a.m.</b>
S/S Feb.	13/14	7:36 p.m.	-	5:24 a.m.
S/M Feb.	14/15	8:39 p.m.	-	5:23 a.m.
M/T Feb.	15/16	9:41 p.m.	-	5:21 a.m.
T/W Feb.	16/17	10:42 p.m.	-	5:20 a.m.
W/T Feb.	17/18	11:42 p.m.	-	5:19 a.m.
T/F Feb.	18/19	12:44 a.m.	-	5:17 a.m.
F/S Feb.	19/20	1:45 a.m.	-	5:16 a.m.
S/S Feb.	20/21	2:46 a.m.	-	5:15 a.m.
S/M Feb.	21/22	3:45 a.m.	-	5:13 a.m.
M/T Feb.	22/23	4:40 a.m.	-	5:12 a.m.
T/W Feb.	23/24	none		
W/T Feb.	24/25	none		
T/F Feb.	25/26	none		
F/S Feb.	26/27	none		
S/S Feb.	27/28	none		
S/M Feb.	28/1	7:22 p.m.	-	7:37 p.m.

Times listed are for Dodgeville, Wisconsin when

- (1) Moon is below the horizon
- (2) Sun is  $> 18^\circ$  below the horizon  
(astronomical twilight)

Please minimize your use of outdoor lighting during these times to give everyone the best possible view of the night sky.

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## Time Travel

conducted by David Oesper

*Continued from last month...*

### Hunting for Comets and Planets\*

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As a consequence of this sociological revolution, there is now a network of amateur astronomers capable of doing good quantitative measurements, with a precision and sophistication previously available only to professionals. These people are also capable of processing large amounts of data and shipping it around the world at electronic speeds. They have already paid out of their own pockets the costs of adequate computers and software. The main reason why I am enthusiastic about occultation astronomy

is that it could engage the resources of the modern amateur community in an enterprise of major scientific importance. It is an activity well suited to the fruitful collaboration of amateurs and professionals. Amateurs can provide small telescopes and local data-processing equipment, with operation and maintenance at no cost to the public. Professionals can provide overall guidance, central computing facilities, and funds for items such as multichannel photometers which amateurs may not be able to make for themselves.

One of the leaders in the new wave of amateur astronomy is Russ Genet, who operates the Fairborn Observatory in Arizona. Genet began as an amateur but has now turned professional, running his observatory as a commercial enterprise. He calls it MTRO, Multiple Telescope Robotic Observatory. He has published a book with the title, *Robotic Observatories* (Genet & Hayes 1990). To give you the flavour of it, I quote a passage from the first chapter, 'Astronomy While You Sleep'.

Observational astronomy is entering a new era which we call Remote-Access Personal-Computer Astronomy. Soon research astronomers, faculty, students and amateurs will have direct access to unattended fully-automatic telescopes at prime sites around the world. Access to these telescopes will require only a personal computer, a modem, and a phone connection. Using only a few minutes of telephone time, they will send a request for observations to be made for all or part of a night, and they will be able to sleep while the request is executed. Their personal computer will automatically retrieve the results for them the following morning, again in a couple of minutes over the phone. When desired, they will be able, with their personal computers and ordinary phone lines, to take direct, real-time control of these same telescopes. The cost of this will be so low that astronomers will be able to conduct certain research programs that would heretofore have been totally impractical. Undergraduate college students will be able to get sufficient observing time on telescopes located at excellent sites to be able to do first-class science projects. Even high-school students and amateurs will be able to use these facilities to explore the world of astronomy.

Since Russ Genet is running the MTRO as a profit-making venture, we must excuse him for talking like a salesman. I do not believe that his claims are exaggerated. He put the first MTRO into commercial operation in 1985 with a simple photometry service which he called Rent-a-star. The fee was \$2 per observation. The service was used extensively by variable-star observers who had grown tired of sitting up all night to obtain a single light-curve. The next level of service is a system called ATIS, Automatic Telescope Instruction Set. With the ATIS software package, the customer can telephone instructions to the observatory for a wider variety of photometric observations. The ATIS service is now in operation. The third level of service is coming soon and will include CCD imaging and spectroscopy.

\* The text of the Milne Lecture, delivered 1991 October 24.

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*To be continued next month...*