



THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
OBSERVER'S CALENDAR
































2006



JANUARY

The Rosette's Palette

The majestic variations of colour in clouds of excited hydrogen and oxygen surround the open cluster NGC 2244. Brighter regions near the centre shade into petalled folds of darker reds and entwining traces of yet-unlighted fingers of dust. The darkest patches, also known as Bok Globules, are probably the locations of forming protostars. Photo by David Lane and Greg Palman

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 <p>40°N 50°N Rise 9:04 9:47 Set 18:33 17:53</p> <p>1</p> <p><i>New Year's Day</i></p>	 <p>40°N 50°N Rise 9:43 10:15 Set 19:53 19:25</p> <p>2</p>	 <p>40°N 50°N Rise 10:15 10:35 Set 21:11 20:54</p> <p>3</p> <p><i>Quadrantid meteors peak</i> 1 pm</p>	 <p>40°N 50°N Rise 10:41 10:52 Set 22:25 22:20</p> <p>4</p> <p><i>Charles Jasper Joly, Astronomer Royal of Ireland, dies 100 years ago</i> <i>Earth at perihelion (147,103,600 km) 10 am</i></p>	 <p>40°N 50°N Rise 11:05 11:06 Set 23:37 23:42</p> <p>5</p> <p><i>Vesta at opposition</i></p>	 <p>40°N 50°N Rise 11:29 11:20 Set -- -- First Quarter 13:56</p> <p>6</p>	 <p>40°N 50°N Set 0:48 1:03 Rise 11:53 11:34</p> <p>7</p> <p>Sunrise 7:22 7:57 Sunset 16:51 16:16</p>
 <p>40°N 50°N Set 1:58 2:23 Rise 12:20 11:51</p> <p>8</p> <p><i>Mars 1.8° SW of Moon best in E of N. America</i> 5 pm</p>	 <p>40°N 50°N Set 3:08 3:43 Rise 12:51 12:13</p> <p>9</p> <p><i>2 shadows on Jupiter visible in most of N. America except E</i> 6:02 am <i>Moon occults the Pleiades best in S of N. America</i> 9 pm</p>	 <p>40°N 50°N Set 4:17 5:02 Rise 13:28 12:42</p> <p>10</p> <p><i>Robert Wilson 70th birthday co-discoverer cosmic microwaves</i></p>	 <p>40°N 50°N Set 5:22 6:14 Rise 14:13 13:21</p> <p>11</p>	 <p>40°N 50°N Set 6:21 7:16 Rise 15:06 14:12</p> <p>12</p>	 <p>40°N 50°N Set 7:12 8:04 Rise 16:05 15:14</p> <p>13</p> <p><i>Venus in inferior conjunction</i></p>	 <p>40°N 50°N Set 7:54 8:39 Rise 17:08 16:24 Full Moon 4:48 Sunrise 7:20 7:53 Sunset 16:58 16:25</p> <p>14</p>
 <p>40°N 50°N Set 8:28 9:05 Rise 18:11 17:36</p> <p>15</p>	 <p>40°N 50°N Set 8:55 9:24 Rise 19:14 18:48</p> <p>16</p> <p><i>Martin Luther King Jr. Day (USA)</i> <i>2 shadows on Jupiter visible in NW of N. America</i> 8:54 am</p>	 <p>40°N 50°N Set 9:19 9:39 Rise 20:14 19:58</p> <p>17</p> <p><i>Mechain discovers Comet Encke for the 1st time, 220 years ago</i> <i>Regulus near Moon best in NE of N. America</i> 5 am</p>	 <p>40°N 50°N Set 9:40 9:51 Rise 21:14 21:06</p> <p>18</p>	 <p>40°N 50°N Set 9:59 10:03 Rise 22:13 22:14</p> <p>19</p>	 <p>40°N 50°N Set 10:19 10:14 Rise 23:13 23:23</p> <p>20</p>	 <p>40°N 50°N Set 10:39 10:25 Rise -- --</p> <p>21</p> <p>Sunrise 7:17 7:47 Sunset 17:06 16:36</p>
 <p>40°N 50°N Rise 0:15 0:34 Set 11:01 10:39 Last Quarter 10:14</p> <p>22</p>	 <p>40°N 50°N Rise 1:21 1:49 Set 11:27 10:56</p> <p>23</p>	 <p>40°N 50°N Rise 2:30 3:08 Set 12:00 11:19</p> <p>24</p> <p><i>Voyager 2's flyby of Uranus, 20 years ago</i></p>	 <p>40°N 50°N Rise 3:41 4:29 Set 12:42 11:52</p> <p>25</p> <p><i>Joseph Louis Lagrange born 270 years ago, Turin, Italy</i></p>	 <p>40°N 50°N Rise 4:51 5:46 Set 13:37 12:41</p> <p>26</p>	 <p>40°N 50°N Rise 5:56 6:51 Set 14:44 13:50</p> <p>27</p> <p><i>Saturn at opposition</i></p>	 <p>40°N 50°N Rise 6:51 7:39 Set 16:02 15:16</p> <p>28</p> <p>Sunrise 7:12 7:39 Sunset 17:14 16:47</p> <p><i>Space Shuttle Challenger disaster, 20 years ago</i></p>
 <p>40°N 50°N Rise 7:35 8:13 Set 17:25 16:50 New Moon 9:15</p> <p>29</p> <p><i>Chinese New Year</i></p>	 <p>40°N 50°N Rise 8:11 8:37 Set 18:46 18:24</p> <p>30</p>	 <p>40°N 50°N Rise 8:41 8:56 Set 20:05 19:55</p> <p>31</p> <p><i>Islamic New Year</i> <i>Saturn 0.9° S of Beehive Cl. (M44) 11 pm</i></p>	<p>The planets this month</p> <p><i>Mercury: very low in SE in morning twilight very early in month</i></p> <p><i>Venus: very low in SW in evening twilight early in month and low in ESE in morning twilight late in month</i></p> <p><i>Mars: high in SSE after dark, sets in WNW near 2:30 am</i></p> <p><i>Jupiter: rises in ESE near 2 am, in SSE at dawn</i></p> <p><i>Saturn: rises in ENE near sunset, in W at dawn</i></p>		<p><i>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</i></p> <p><i>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</i></p> <p><i>Please see back pages for photo details and additional information about this Calendar.</i></p>	<p>DECEMBER S M T W T F S</p> <p>1 2 3</p> <p>4 5 6 7 8 9 10</p> <p>11 12 13 14 15 16 17</p> <p>18 19 20 21 22 23 24</p> <p>25 26 27 28 29 30 31</p> <p>FEBRUARY S M T W T F S</p> <p>1 2 3 4</p> <p>5 6 7 8 9 10 11</p> <p>12 13 14 15 16 17 18</p> <p>19 20 21 22 23 24 25</p> <p>26 27 28</p>































FEBRUARY

A Comet Visits the Sisters

Just over a year ago, Comet Machholz streamed past the Pleiades. Its long plasma and stubby dust tails, at right angles to each other, emanate from the comet's iridescent green nuclear region. The darker blue reflection nebulas of the Pleiades scatter light from one of the closest and most brilliant open clusters in our galaxy.

Photo by Jack Newton

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: very low in WSW in evening twilight in second half of month</i></p> <p><i>Venus: low in ESE in morning twilight</i></p> <p><i>Mars: high in SW after dark, sets in WNW near 1:30 am</i></p> <p><i>Jupiter: rises in ESE after midnight, in S at dawn</i></p> <p><i>Saturn: in E after dark, sets in WNW in morning twilight</i></p>	<p><i>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</i></p> <p><i>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</i></p> <p><i>Please see back pages for photo details and additional information about this Calendar.</i></p>	<p>JANUARY S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</p> <p>MARCH S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</p>	 <p>Rise 40°N 50°N 9:06 9:11 Set 21:21 21:22</p> <p>1</p>	 <p>Rise 40°N 50°N 9:31 9:25 Set 22:35 22:46</p> <p>2</p>	 <p>Rise 40°N 50°N 9:56 9:40 Set 23:47 --</p> <p>3</p>	 <p>Set 40°N 50°N -- 0:09 Rise 10:22 9:56</p> <p>4</p> <p>Sunrise 7:06 7:29 Sunset 17:23 16:59</p> <p><i>Clyde Tombaugh, discoverer of Pluto, born 100 years ago</i></p>
 <p>Set 40°N 50°N 0:59 1:32 Rise 10:52 10:17 First Quarter 1:29</p> <p>5</p>	 <p>Set 40°N 50°N 2:09 2:52 Rise 11:28 10:43</p> <p>6</p>	 <p>Set 40°N 50°N 3:16 4:07 Rise 12:10 11:19</p> <p>7</p>	 <p>Set 40°N 50°N 4:17 5:12 Rise 13:01 12:06</p> <p>8</p>	 <p>Set 40°N 50°N 5:10 6:03 Rise 13:58 13:05</p> <p>9</p>	 <p>Set 40°N 50°N 5:54 6:42 Rise 14:59 14:12</p> <p>10</p>	 <p>Set 40°N 50°N 6:30 7:10 Rise 16:02 15:24</p> <p>11</p> <p>Sunrise 6:58 7:18 Sunset 17:31 17:12</p>
<p><i>First Quarter Moon between Mars and the Pleiades</i> 8 pm</p>	<p><i>Alan Shepard hits first golf ball on Moon, 35 years ago</i></p>			<p><i>Halley's Comet reaches perihelion, 20 years ago</i></p>		
 <p>Set 40°N 50°N 6:59 7:30 Rise 17:05 16:36 Full Moon 23:44</p> <p>12</p>	 <p>Set 40°N 50°N 7:24 7:46 Rise 18:07 17:47</p> <p>13</p>	 <p>Set 40°N 50°N 7:45 7:59 Rise 19:07 18:56</p> <p>14</p>	 <p>Set 40°N 50°N 8:05 8:11 Rise 20:06 20:04</p> <p>15</p>	 <p>Set 40°N 50°N 8:24 8:21 Rise 21:06 21:12</p> <p>16</p>	 <p>Set 40°N 50°N 8:43 8:32 Rise 22:06 22:22</p> <p>17</p>	 <p>Set 40°N 50°N 9:04 8:45 Rise 23:10 23:35</p> <p>18</p> <p>Sunrise 6:49 7:05 Sunset 17:39 17:24</p>
		<p><i>Valentine's Day</i></p>	<p><i>Zodiacal Light visible in W after evening twilight for next two weeks</i></p>	<p><i>Mars 2.3° S of the Pleiades</i> 8 pm</p>	<p><i>Venus at greatest brilliancy Moon Occults Spica visible in E of N. America best in NE of N. America</i> 11 pm</p>	
 <p>Set 40°N 50°N 9:28 9:00 Rise -- --</p> <p>19</p>	 <p>Rise 40°N 50°N 0:16 0:51 Set 9:57 9:20</p> <p>20</p>	 <p>Rise 40°N 50°N 1:24 2:09 Set 10:34 9:47 Last Quarter 2:17</p> <p>21</p>	 <p>Rise 40°N 50°N 2:33 3:26 Set 11:21 10:27</p> <p>22</p>	 <p>Rise 40°N 50°N 3:39 4:35 Set 12:21 11:25</p> <p>23</p>	 <p>Rise 40°N 50°N 4:37 5:29 Set 13:32 12:41</p> <p>24</p>	 <p>Rise 40°N 50°N 5:25 6:09 Set 14:51 14:10</p> <p>25</p> <p>Sunrise 6:39 6:51 Sunset 17:47 17:35</p>
<p><i>MIR is launched 20 years ago</i></p>	<p><i>Presidents' Day (USA)</i></p> <p><i>Winter Star Party, Florida Keys www.scas.org (through Feb. 25)</i></p>				<p><i>Mercury at greatest elongation E (18°) best evening view in 2006</i></p>	
 <p>Rise 40°N 50°N 6:04 6:37 Set 16:13 15:44</p> <p>26</p>	 <p>Rise 40°N 50°N 6:37 6:57 Set 17:34 17:18 New Moon 19:31</p> <p>27</p>	 <p>Rise 40°N 50°N 7:04 7:14 Set 18:53 18:48</p> <p>28</p>				
	<p><i>Closest Lunar Perigee of 2006</i></p>					



MARCH

A Double Take on Star Trails

A brief exposure sets the stars in their patterns. Then, in a long exposure over the next several hours, star trails develop around Polaris at upper left. The Big Dipper is at lower left, riding above an auroral glow. The bright trail of Jupiter, in Gemini, dominates the upper right. Red Betelgeuse, in Orion, is at the far right.

Photo by Alan Dyer

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: very low in W in evening twilight, lost early in month</p> <p>Venus: low in ESE in morning twilight</p> <p>Mars: high in WSW after dark, sets in NW near 1 am</p> <p>Jupiter: rises in ESE near 10:30 pm, low in SSW at dawn</p> <p>Saturn: high in SE after dark, sets in WNW near 4:30 am</p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>FEBRUARY S M T W T F S</p> <p>1 2 3 4</p> <p>5 6 7 8 9 10 11</p> <p>12 13 14 15 16 17 18</p> <p>19 20 21 22 23 24 25</p> <p>26 27 28</p> <p>APRIL S M T W T F S</p> <p>1</p> <p>2 3 4 5 6 7 8</p> <p>9 10 11 12 13 14 15</p> <p>16 17 18 19 20 21 22</p> <p>23 24 25 26 27 28 29</p> <p>30</p>	<p>40°N 50°N</p> <p>Rise 7:30 7:29</p> <p>Set 20:11 20:17</p> <p>1</p>	<p>40°N 50°N</p> <p>Rise 7:55 7:44</p> <p>Set 21:26 21:44</p> <p>2</p>	<p>40°N 50°N</p> <p>Rise 8:21 8:00</p> <p>Set 22:42 23:10</p> <p>3</p>	<p>40°N 50°N</p> <p>Rise 8:51 8:19</p> <p>Set 23:55 --</p> <p>4</p> <p>Sunrise 6:29 6:37</p> <p>Sunset 17:55 17:47</p>
<p>40°N 50°N</p> <p>Set -- 0:35</p> <p>Rise 9:25 8:44</p> <p>5</p>	<p>40°N 50°N</p> <p>Set 1:06 1:55</p> <p>Rise 10:06 9:16</p> <p>First Quarter 15:16</p> <p>6</p>	<p>40°N 50°N</p> <p>Set 2:11 3:05</p> <p>Rise 10:55 10:00</p> <p>7</p>	<p>40°N 50°N</p> <p>Set 3:07 4:02</p> <p>Rise 11:51 10:56</p> <p>8</p>	<p>40°N 50°N</p> <p>Set 3:54 4:44</p> <p>Rise 12:51 12:02</p> <p>9</p>	<p>40°N 50°N</p> <p>Set 4:32 5:15</p> <p>Rise 13:54 13:13</p> <p>10</p>	<p>40°N 50°N</p> <p>Set 5:03 5:37</p> <p>Rise 14:57 14:25</p> <p>11</p> <p>Sunrise 6:18 6:22</p> <p>Sunset 18:03 17:59</p>
<p>Mars 2.9° to left of Moon best in W of N. America 11 pm</p>	<p>Vega 1 and Giotto fly by Halley's Comet, 20 years ago</p>					
<p>40°N 50°N</p> <p>Set 5:29 5:54</p> <p>Rise 15:59 15:36</p> <p>12</p>	<p>40°N 50°N</p> <p>Set 5:51 6:08</p> <p>Rise 16:59 16:46</p> <p>13</p>	<p>40°N 50°N</p> <p>Set 6:11 6:19</p> <p>Rise 17:59 17:54</p> <p>Full Moon 18:35</p> <p>14</p>	<p>40°N 50°N</p> <p>Set 6:30 6:30</p> <p>Rise 18:59 19:03</p> <p>15</p>	<p>40°N 50°N</p> <p>Set 6:49 6:41</p> <p>Rise 19:59 20:13</p> <p>16</p>	<p>40°N 50°N</p> <p>Set 7:10 6:53</p> <p>Rise 21:02 21:25</p> <p>17</p>	<p>40°N 50°N</p> <p>Set 7:32 7:07</p> <p>Rise 22:07 22:39</p> <p>18</p> <p>Sunrise 6:07 6:07</p> <p>Sunset 18:10 18:10</p>
	<p>William Herschel discovers Uranus, 225 years ago</p>	<p>Penumbral Lunar Eclipse Moon rises during eclipse in most of N. America</p>		<p>Goddard launches first liquid-propelled rocket, 80 years ago</p>	<p>Spica 0.5° N of Moon best in W of N. America 6 am</p>	<p>Zodiacal Light visible in W after evening twilight for next two weeks</p>
<p>40°N 50°N</p> <p>Set 8:00 7:25</p> <p>Rise 23:14 23:57</p> <p>19</p>	<p>40°N 50°N</p> <p>Set 8:33 7:49</p> <p>Rise -- --</p> <p>20</p>	<p>40°N 50°N</p> <p>Rise 0:22 1:13</p> <p>Set 9:15 8:23</p> <p>21</p>	<p>40°N 50°N</p> <p>Rise 1:26 2:24</p> <p>Set 10:09 9:12</p> <p>Last Quarter 14:10</p> <p>22</p>	<p>40°N 50°N</p> <p>Rise 2:27 3:22</p> <p>Set 11:13 10:19</p> <p>23</p>	<p>40°N 50°N</p> <p>Rise 3:17 4:05</p> <p>Set 12:27 11:41</p> <p>24</p>	<p>40°N 50°N</p> <p>Rise 3:59 4:37</p> <p>Set 13:45 13:10</p> <p>25</p> <p>Sunrise 5:55 5:52</p> <p>Sunset 18:17 18:21</p>
	<p>Spring Equinox 1:26 pm</p>					<p>Venus at greatest elongation W (47°)</p>
<p>40°N 50°N</p> <p>Rise 4:33 5:00</p> <p>Set 15:04 14:41</p> <p>26</p>	<p>40°N 50°N</p> <p>Rise 5:02 5:18</p> <p>Set 16:23 16:12</p> <p>27</p>	<p>40°N 50°N</p> <p>Rise 5:28 5:33</p> <p>Set 17:41 17:41</p> <p>28</p>	<p>40°N 50°N</p> <p>Rise 5:53 5:48</p> <p>Set 18:58 19:09</p> <p>New Moon 5:15</p> <p>29</p>	<p>40°N 50°N</p> <p>Rise 6:19 6:03</p> <p>Set 20:15 20:38</p> <p>30</p>	<p>40°N 50°N</p> <p>Rise 6:47 6:21</p> <p>Set 21:32 22:06</p> <p>31</p>	<p>2 shadows on Jupiter visible in most of N. America 12:53 am</p> <p>Total Solar Eclipse partial phase visible in Europe, most of Africa, and W of Asia</p>

































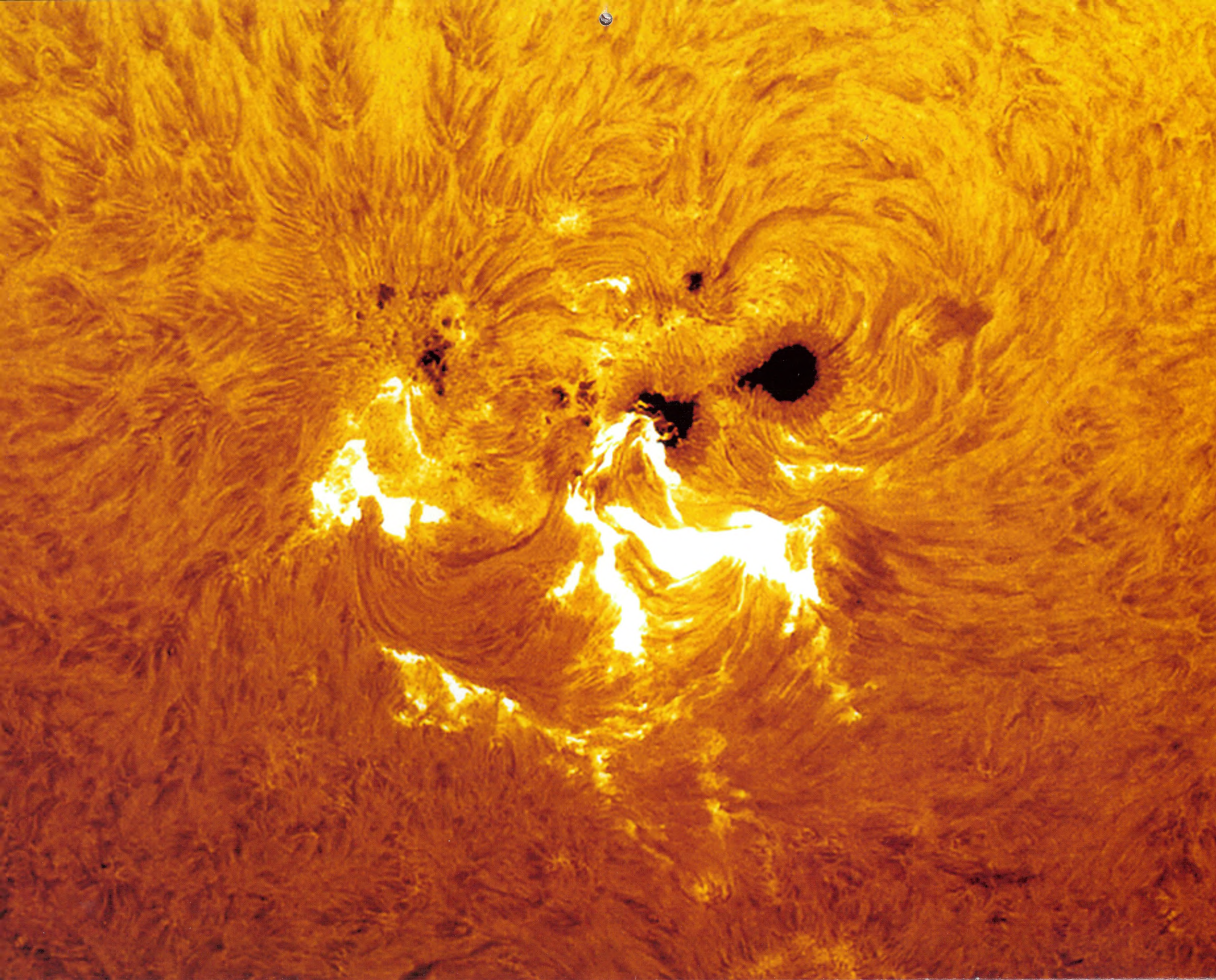
APRIL

Saturn's Shadows and Colours

The planet throws a dark shadow on the rings behind it. The rings in the foreground cast a gentler, greyer shadow on the planet itself, whose lower orb washes out the black Cassini's division passing over it. In contrast to the icy hues of the rings, bands of yellow, russet browns, reds, and even greens complete Saturn's warm range of pastels.

Photo by Mike Wirths

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																				
<p>The planets this month</p> <p>Mercury: very low in E in morning twilight, lost by mid-month</p> <p>Venus: low in ESE in morning twilight</p> <p>Mars: in W after dark, sets in NW near 1:30 am</p> <p>Jupiter: rises in ESE after dark, in SSW at dawn</p> <p>Saturn: high in SW after dark, sets in WNW near 3:30 am</p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>MARCH</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td></tr> <tr><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr> <tr><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td></tr> </table> <p>MAY</p> <table border="1"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr> <tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr> <tr><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td></tr> </table>	S	M	T	W	T	F	S				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		S	M	T	W	T	F	S		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							<p> ^{40°N 50°N} Rise 7:20 6:43 Set 22:47 23:32</p> <p>Sunrise 5:44 5:37 Sunset 18:24 18:32</p> <p>1</p> <p>Moon occults the Pleiades best in E of N. America 8 pm</p>
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<p> ^{40°N 50°N} Rise 9:00 8:13 Set -- --</p> <p>2</p> <p>Daylight Saving Time Begins 2 am</p>	<p> ^{40°N 50°N} Set 0:57 1:49 Rise 9:46 8:53</p> <p>3</p>	<p> ^{40°N 50°N} Set 1:58 2:54 Rise 10:41 9:46</p> <p>4</p> <p>Luna X first spacecraft to orbit Moon, 40 years ago</p>	<p> ^{40°N 50°N} Set 2:50 3:42 Rise 11:41 10:49 First Quarter 8:01</p> <p>5</p> <p>2 shadows on Jupiter visible in all of N. America except extreme NE 5:30 am First Quarter Moon near Pollux best in SE of N. America 9 pm</p>	<p> ^{40°N 50°N} Set 3:32 4:18 Rise 12:44 12:00</p> <p>6</p>	<p> ^{40°N 50°N} Set 4:05 4:43 Rise 13:47 13:12</p> <p>7</p>	<p> ^{40°N 50°N} Set 4:33 5:01 Rise 14:50 14:24</p> <p>Sunrise 6:33 6:22 Sunset 19:31 19:43</p> <p>8</p> <p>Mercury at greatest elongation W (28°)</p>																																																																																				
<p> ^{40°N 50°N} Set 4:56 5:16 Rise 15:51 15:34</p> <p>9</p> <p>Regulus 2.3° S of Moon 12 am</p>	<p> ^{40°N 50°N} Set 5:16 5:28 Rise 16:51 16:43</p> <p>10</p>	<p> ^{40°N 50°N} Set 5:36 5:39 Rise 17:50 17:51</p> <p>11</p>	<p> ^{40°N 50°N} Set 5:55 5:50 Rise 18:51 19:01</p> <p>12</p> <p>1st space shuttle, Columbia, is launched, 25 years ago Yuri Gagarin first person in space, 45 years ago</p>	<p> ^{40°N 50°N} Set 6:15 6:01 Rise 19:53 20:13 Full Moon 12:40</p> <p>13</p> <p>First Day of Passover</p>	<p> ^{40°N 50°N} Set 6:37 6:15 Rise 20:58 21:27</p> <p>14</p> <p>Good Friday</p>	<p> ^{40°N 50°N} Set 7:03 6:31 Rise 22:06 22:45</p> <p>Sunrise 6:22 6:07 Sunset 19:38 19:54</p> <p>15</p>																																																																																				
<p> ^{40°N 50°N} Set 7:35 6:53 Rise 23:14 --</p> <p>16</p> <p>Easter Sunday Mars 0.8° to right of M35 11 pm</p>	<p> ^{40°N 50°N} Rise -- 0:03 Set 8:14 7:24</p> <p>17</p>	<p> ^{40°N 50°N} Rise 0:21 1:16 Set 9:04 8:09</p> <p>18</p> <p>Venus 0.3° N of Uranus best in S of N. America 6 am</p>	<p> ^{40°N 50°N} Rise 1:22 2:17 Set 10:04 9:09</p> <p>19</p>	<p> ^{40°N 50°N} Rise 2:14 3:05 Set 11:14 10:25 Last Quarter 23:28</p> <p>20</p>	<p> ^{40°N 50°N} Rise 2:57 3:39 Set 12:29 11:50</p> <p>21</p>	<p> ^{40°N 50°N} Rise 3:32 4:03 Set 13:45 13:17</p> <p>Sunrise 6:12 5:53 Sunset 19:46 20:05</p> <p>22</p> <p>Lyrid meteors peak 12 pm</p>																																																																																				
<p> ^{40°N 50°N} Rise 4:02 4:22 Set 15:01 14:45</p> <p>23</p> <p>Texas Star Party, Fort Davis www.texasstarparty.org (through Apr. 30)</p>	<p> ^{40°N 50°N} Rise 4:28 4:38 Set 16:17 16:12</p> <p>24</p> <p>Venus 2.2° to left of Crescent Moon best in S of N. America 6 am</p>	<p> ^{40°N 50°N} Rise 4:53 4:52 Set 17:32 17:38</p> <p>25</p>	<p> ^{40°N 50°N} Rise 5:18 5:07 Set 18:48 19:05</p> <p>26</p>	<p> ^{40°N 50°N} Rise 5:44 5:23 Set 20:04 20:33 New Moon 15:44</p> <p>27</p>	<p> ^{40°N 50°N} Rise 6:15 5:43 Set 21:21 22:01</p> <p>28</p> <p>Bart Bok, galactic astronomer, born 100 years ago</p>	<p> ^{40°N 50°N} Rise 6:51 6:09 Set 22:35 23:24</p> <p>Sunrise 6:03 5:40 Sunset 19:53 20:16</p> <p>29</p>																																																																																				
<p> ^{40°N 50°N} Rise 7:35 6:45 Set 23:43 --</p> <p>30</p>																																																																																										





JUNE

The Prancing Horse

The rope-like strands of dark nebulas just above the centre of this image collectively suggest the "Prancing Horse," with its head at the top and its legs pointing to dusky Antares in Scorpius at the right. To the left of the horse's haunch is the bright red emission nebula M8 (the Lagoon), and the Sagittarius Star Cloud is at the upper left.

Photo by Jack Newton

SUNDAY

MONDAY































TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: very low in WNW in evening twilight, lost late in month</i></p> <p><i>Venus: very low in ENE in morning twilight</i></p> <p><i>Mars: very low in W in evening twilight</i></p> <p><i>Jupiter: in SSW after dark, sets in WSW near 3 am</i></p> <p><i>Saturn: very low in WNW in evening twilight</i></p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>MAY</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6</p> <p>7 8 9 10 11 12 13</p> <p>14 15 16 17 18 19 20</p> <p>21 22 23 24 25 26 27</p> <p>28 29 30 31</p> <p>JULY</p> <p>S M T W T F S</p> <p>1</p> <p>2 3 4 5 6 7 8</p> <p>9 10 11 12 13 14 15</p> <p>16 17 18 19 20 21 22</p> <p>23 24 25 26 27 28 29</p> <p>30 31</p>		 <p>40°N 50°N</p> <p>Set -- 1:09</p> <p>Rise 10:25 9:52</p> <p>1</p>	 <p>40°N 50°N</p> <p>Set 1:00 1:27</p> <p>Rise 11:28 11:05</p> <p>2</p>	 <p>40°N 50°N</p> <p>Set 1:23 1:41</p> <p>Rise 12:29 12:15</p> <p>First Quarter 19:06</p> <p>Sunrise 5:33 4:55</p> <p>Sunset 20:24 21:02</p> <p>3</p>
 <p>40°N 50°N</p> <p>Set 1:44 1:53</p> <p>Rise 13:28 13:23</p> <p>4</p>	 <p>40°N 50°N</p> <p>Set 2:03 2:04</p> <p>Rise 14:28 14:31</p> <p>5</p>	 <p>40°N 50°N</p> <p>Set 2:22 2:15</p> <p>Rise 15:28 15:41</p> <p>6</p>	 <p>40°N 50°N</p> <p>Set 2:43 2:27</p> <p>Rise 16:31 16:53</p> <p>7</p>	 <p>40°N 50°N</p> <p>Set 3:06 2:42</p> <p>Rise 17:37 18:09</p> <p>8</p>	 <p>40°N 50°N</p> <p>Set 3:34 3:00</p> <p>Rise 18:46 19:27</p> <p>9</p>	 <p>40°N 50°N</p> <p>Set 4:08 3:25</p> <p>Rise 19:56 20:46</p> <p>Sunrise 5:31 4:51</p> <p>Sunset 20:28 21:08</p> <p>10</p>
<p>Saturn 0.8° S of Beehive Cluster (M44) best in S of N. America 11 pm</p>			<p>Spica 1.5° E of Moon best in W of N. America 2 am</p>		<p>Robert Goddard patents 1st rocket-powered aircraft design, 75 years ago</p>	
 <p>40°N 50°N</p> <p>Set 4:52 4:01</p> <p>Rise 21:03 21:58</p> <p>Full Moon 14:03</p> <p>11</p>	 <p>40°N 50°N</p> <p>Set 5:47 4:52</p> <p>Rise 22:04 22:57</p> <p>12</p>	 <p>40°N 50°N</p> <p>Set 6:53 6:00</p> <p>Rise 22:54 23:41</p> <p>13</p>	 <p>40°N 50°N</p> <p>Set 8:07 7:22</p> <p>Rise 23:34 --</p> <p>14</p>	 <p>40°N 50°N</p> <p>Rise -- 0:11</p> <p>Set 9:24 8:50</p> <p>15</p>	 <p>40°N 50°N</p> <p>Rise 0:07 0:34</p> <p>Set 10:40 10:17</p> <p>16</p>	 <p>40°N 50°N</p> <p>Rise 0:35 0:51</p> <p>Set 11:54 11:43</p> <p>Sunrise 5:31 4:50</p> <p>Sunset 20:31 21:12</p> <p>17</p>
				<p>Mars 0.3° S of Beehive Cluster (M44) Saturn nearby best in S of N. America 11 pm</p>	<p>Pluto at opposition</p>	<p>Mars 0.6° N of Saturn best in S of N. America 11 pm</p>
 <p>40°N 50°N</p> <p>Rise 1:00 1:06</p> <p>Set 13:07 13:06</p> <p>Last Quarter 10:08</p> <p>18</p>	 <p>40°N 50°N</p> <p>Rise 1:23 1:19</p> <p>Set 14:18 14:28</p> <p>19</p>	 <p>40°N 50°N</p> <p>Rise 1:48 1:34</p> <p>Set 15:31 15:51</p> <p>20</p>	 <p>40°N 50°N</p> <p>Rise 2:14 1:50</p> <p>Set 16:44 17:15</p> <p>21</p>	 <p>40°N 50°N</p> <p>Rise 2:45 2:11</p> <p>Set 17:57 18:39</p> <p>22</p>	 <p>40°N 50°N</p> <p>Rise 3:21 2:38</p> <p>Set 19:08 19:59</p> <p>23</p>	 <p>40°N 50°N</p> <p>Rise 4:06 3:15</p> <p>Set 20:14 21:08</p> <p>Sunrise 5:32 4:51</p> <p>Sunset 20:33 21:13</p> <p>24</p>
<p>Father's Day</p>		<p>Mercury at greatest elongation E (25°)</p>	<p>Summer Solstice 8:26 am</p>			<p>St. Jean Baptiste Day (Quebec)</p> <p>William Huggins discovers CN in comet, 125 years ago</p>
 <p>40°N 50°N</p> <p>Rise 5:00 4:05</p> <p>Set 21:10 22:02</p> <p>New Moon 12:05</p> <p>25</p>	 <p>40°N 50°N</p> <p>Rise 6:01 5:08</p> <p>Set 21:55 22:42</p> <p>26</p>	 <p>40°N 50°N</p> <p>Rise 7:06 6:20</p> <p>Set 22:32 23:10</p> <p>27</p>	 <p>40°N 50°N</p> <p>Rise 8:11 7:35</p> <p>Set 23:01 23:31</p> <p>28</p>	 <p>40°N 50°N</p> <p>Rise 9:15 8:48</p> <p>Set 23:26 23:46</p> <p>29</p>	 <p>40°N 50°N</p> <p>Rise 10:17 10:00</p> <p>Set 23:47 23:59</p> <p>30</p>	
			<p>Mars 1.7° S of Crescent Moon Saturn and Mercury nearby best in SE of N. America 9 pm</p>			



JULY

Cepheus's "Rosette"

This huge, annular region of excited hydrogen (IC1396) in Cepheus is much larger than its brighter namesake, the Rosette in Monoceros (see January). Although here colour variations are more subdued, there is great contrast between the glowing annulus and dark clouds which reach out like fingers. Especially striking is *vdB142*, just to right of centre.

Photo by Alan Dyer

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: not easily observed</i></p> <p><i>Venus: very low in ENE in morning twilight</i></p> <p><i>Mars: very low in W after sunset, lost by month's end</i></p> <p><i>Jupiter: low in SW after dark, sets in WSW near 1 am</i></p> <p><i>Saturn: very low in WNW in evening twilight, early in month</i></p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>JUNE S M T W T F S 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30</p> <p>AUGUST S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</p>				<p>40°N 50°N Rise 11:17 11:08 Set -- --</p> <p>1</p> <p>Sunrise 5:35 4:55 Sunset 20:33 21:12</p> <p>Canada Day</p> <p>Air and Space Museum opens in Washington D.C., 30 years ago</p> <p>Pallas at opposition</p>
<p>40°N 50°N Set 0:06 0:11 Rise 12:16 12:16</p> <p>2</p>	<p>40°N 50°N Set 0:25 0:21 Rise 13:16 13:24 First Quarter 12:37</p> <p>3</p>	<p>40°N 50°N Set 0:45 0:33 Rise 14:17 14:35</p> <p>4</p>	<p>40°N 50°N Set 1:07 0:46 Rise 15:20 15:48</p> <p>5</p>	<p>40°N 50°N Set 1:32 1:02 Rise 16:27 17:05</p> <p>6</p>	<p>40°N 50°N Set 2:03 1:23 Rise 17:37 18:23</p> <p>7</p>	<p>40°N 50°N Set 2:42 1:54 Rise 18:46 19:39</p> <p>8</p> <p>Sunrise 5:39 5:00 Sunset 20:31 21:09</p>
	<p>Earth at aphelion (152,095,700 km) 7 pm</p>	<p>Independence Day (USA)</p>				<p>Antares 0.9° N of Moon best in W of N. America 4 am</p>
<p>40°N 50°N Set 3:32 2:38 Rise 19:50 20:45</p> <p>9</p>	<p>40°N 50°N Set 4:35 3:40 Rise 20:45 21:35 Full Moon 23:02</p> <p>10</p>	<p>40°N 50°N Set 5:47 4:59 Rise 21:30 22:11</p> <p>11</p>	<p>40°N 50°N Set 7:05 6:27 Rise 22:07 22:37</p> <p>12</p>	<p>40°N 50°N Set 8:24 7:58 Rise 22:37 22:56</p> <p>13</p>	<p>40°N 50°N Set 9:42 9:27 Rise 23:03 23:12</p> <p>14</p>	<p>40°N 50°N Set 10:56 10:52 Rise 23:28 23:26</p> <p>15</p> <p>Sunrise 5:44 5:08 Sunset 20:28 21:04</p>
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				<p>Crescent Moon occults the Pleiades best in Central N. America 4 am</p>	<p>1st direct photo of Sun's corona is made without a solar eclipse, 75 years ago</p> <p>Mars 0.7° N of Regulus best in S of N. America 10 pm</p>	
<p>40°N 50°N Rise 3:50 2:56 Set 19:52 20:41</p> <p>23</p>	<p>40°N 50°N Rise 4:53 4:05 Set 20:31 21:13</p> <p>24</p>	<p>40°N 50°N Rise 5:59 5:19 Set 21:02 21:35 New Moon 0:31</p> <p>25</p>	<p>40°N 50°N Rise 7:04 6:33 Set 21:28 21:52</p> <p>26</p>	<p>40°N 50°N Rise 8:06 7:46 Set 21:51 22:06</p> <p>27</p>	<p>40°N 50°N Rise 9:07 8:55 Set 22:11 22:18</p> <p>28</p>	<p>40°N 50°N Rise 10:07 10:03 Set 22:30 22:28</p> <p>29</p> <p>Sunrise 5:56 5:25 Sunset 20:17 20:47</p>
<p>40°N 50°N Rise 11:05 11:11 Set 22:49 22:39</p> <p>30</p>	<p>40°N 50°N Rise 12:05 12:20 Set 23:09 22:51</p> <p>31</p>					<p>Stellafane Convention, Springfield, VT www.stellafane.com (through Jul. 29)</p> <p>S. δ-Aquarid meteors peak 3 am</p>
	<p>Spica 1.3° N of Moon 11 pm</p>					


































AUGUST

The Pelican Contemplates North America

Despite being side by side, these two emission nebulas have distinctly different colours. Note the darker and fainter reds of the Pelican in contrast to the intense magentas of its large neighbour. The North America Nebula shows up in binoculars, even to the naked eye, but the Pelican requires a nebula filter for visual observation.

Photo by Rajiv Gupta

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																																								
<p>The planets this month</p> <p>Mercury: very low in ENE in morning twilight, lost by mid-month</p> <p>Venus: very low in ENE in morning twilight</p> <p>Mars: not easily observed</p> <p>Jupiter: very low in WSW after dark, sets in the WSW near 11 pm</p> <p>Saturn: very low in ENE in morning twilight late in month</p>		 <p>Rise 40°N 50°N 13:07 13:31 Set 23:32 23:05</p> <p>1</p>	 <p>Rise 40°N 50°N 14:11 14:45 Set -- 23:24 First Quarter 4:46</p> <p>2</p>	 <p>Set 40°N 50°N 0:00 23:49 Rise 15:18 16:01</p> <p>3</p>	 <p>Set 40°N 50°N 0:34 -- Rise 16:26 17:18</p> <p>4</p>	 <p>Set 40°N 50°N 1:18 0:26 Rise 17:32 18:28</p> <p>5</p> <p>Sunrise 6:02 5:35 Sunset 20:09 20:36</p>																																																																																																								
 <p>Set 40°N 50°N 2:14 1:18 Rise 18:31 19:25</p> <p>6</p>	 <p>Set 40°N 50°N 3:22 2:29 Rise 19:21 20:07</p> <p>7</p> <p>Civic Holiday (Canada)</p> <p>2 shadows on Jupiter, visible in extreme W of N. America 1:08 am</p> <p>Saturn in conjunction with the Sun</p>	 <p>Set 40°N 50°N 4:38 3:55 Rise 20:02 20:37</p> <p>8</p>	 <p>Set 40°N 50°N 5:59 5:27 Rise 20:35 21:00 Full Moon 6:54</p> <p>9</p>	 <p>Set 40°N 50°N 7:19 6:59 Rise 21:04 21:17</p> <p>10</p>	 <p>Set 40°N 50°N 8:37 8:29 Rise 21:30 21:32</p> <p>11</p>	 <p>Set 40°N 50°N 9:54 9:56 Rise 21:54 21:47</p> <p>12</p> <p>Sunrise 6:09 5:45 Sunset 20:01 20:24</p> <p>Hebe at opposition</p>																																																																																																								
<p>Mercury at greatest elongation W (19°)</p>  <p>Set 40°N 50°N 11:09 11:23 Rise 22:20 22:02</p> <p>13</p>	 <p>Set 40°N 50°N 12:24 12:49 Rise 22:48 22:20</p> <p>14</p>	 <p>Set 40°N 50°N 13:38 14:15 Rise 23:21 22:42 Last Quarter 21:51</p> <p>15</p>	 <p>Set 40°N 50°N 14:51 15:37 Rise -- 23:13</p> <p>16</p> <p>Moon near the Pleiades best in SW of N. America 8 am</p>	 <p>Rise 40°N 50°N 0:01 23:54 Set 15:59 16:52</p> <p>17</p>	 <p>Rise 40°N 50°N 0:48 -- Set 17:00 17:55</p> <p>18</p>	 <p>Rise 40°N 50°N 1:43 0:49 Set 17:51 18:42</p> <p>19</p> <p>Sunrise 6:15 5:56 Sunset 19:51 20:11</p> <p>Neptune at opposition Mercury 2.1° below Venus best in S of N. America 6 am</p> <p>Ceres at opposition Perseid meteors peak 7 pm</p>																																																																																																								
 <p>Rise 40°N 50°N 2:45 1:54 Set 18:32 19:17</p> <p>20</p>	 <p>Rise 40°N 50°N 3:50 3:07 Set 19:05 19:41</p> <p>21</p>	 <p>Rise 40°N 50°N 4:54 4:21 Set 19:32 19:59</p> <p>22</p>	 <p>Rise 40°N 50°N 5:58 5:33 Set 19:56 20:14 New Moon 15:10</p> <p>23</p>	 <p>Rise 40°N 50°N 6:59 6:44 Set 20:16 20:26</p> <p>24</p>	 <p>Rise 40°N 50°N 7:59 7:53 Set 20:35 20:37</p> <p>25</p>	 <p>Rise 40°N 50°N 8:58 9:00 Set 20:54 20:47</p> <p>26</p> <p>Sunrise 6:22 6:06 Sunset 19:41 19:57</p> <p>Starfest, Mount Forest, ON www.nyaa-starfest.com (through Aug. 26)</p> <p>Saskatchewan Star Party, Cypress Hills www.rasc.ca/saskatoon (through Aug. 27)</p> <p>Nova East, Smiley's Provincial Park, NS halifax.rasc.ca/ne (through Aug. 27)</p> <p>Venus to right of Crescent Moon Saturn and Mercury nearby (difficult observation) best in E of N. America 4 am</p> <p>Mount Kobau Star Party, Osoyoos, BC www.mksp.ca (through Aug. 27)</p> <p>Venus 0.6° above Saturn best in S of N. America 6 am</p>																																																																																																								
 <p>Rise 40°N 50°N 9:57 10:08 Set 21:13 20:58</p> <p>27</p>	 <p>Rise 40°N 50°N 10:57 11:18 Set 21:35 21:12</p> <p>28</p>	 <p>Rise 40°N 50°N 12:00 12:30 Set 22:00 21:28</p> <p>29</p>	 <p>Rise 40°N 50°N 13:05 13:45 Set 22:31 21:49</p> <p>30</p>	 <p>Rise 40°N 50°N 14:11 15:00 Set 23:10 22:20 First Quarter 18:56</p> <p>31</p> <p>2 shadows on Jupiter visible in NE of N. America 8:22 pm</p> <p>Antares 1.2° N of Moon best in E of N. America 10 pm</p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p> <table border="1"> <tr> <td>JULY</td> <td>S</td> <td>M</td> <td>T</td> <td>W</td> <td>T</td> <td>F</td> <td>S</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td></td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td></td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> </tr> <tr> <td></td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> <td>21</td> <td>22</td> </tr> <tr> <td></td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> <td>28</td> <td>29</td> </tr> <tr> <td></td> <td>30</td> <td>31</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SEPTEMBER</td> <td>S</td> <td>M</td> <td>T</td> <td>W</td> <td>T</td> <td>F</td> <td>S</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td></td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> </tr> <tr> <td></td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td>16</td> </tr> <tr> <td></td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> <td>21</td> <td>22</td> <td>23</td> </tr> <tr> <td></td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> <td>28</td> <td>29</td> <td>30</td> </tr> </table>		JULY	S	M	T	W	T	F	S								1		2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22		23	24	25	26	27	28	29		30	31						SEPTEMBER	S	M	T	W	T	F	S								1		3	4	5	6	7	8	9		10	11	12	13	14	15	16		17	18	19	20	21	22	23		24	25	26	27	28	29	30
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<p>Voyager 2 makes its closest approach to Saturn, 25 years ago</p>																																																																																																														

































SEPTEMBER

A Symphony of Galaxies

The spiral galaxy NGC 7331 in Pegasus is often compared to our own Milky Way. It has older yellow stars (Population II) huddling around its nucleus, and younger, bluer stars (Population I) streaming along its arms. Above it are four small companion galaxies. Dozens of much more distant galaxies permeate the image.

Photo by Tony Hallas

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: not easily observed</p> <p>Venus: very low in ENE in morning twilight, lost by month's end</p> <p>Mars: not observable</p> <p>Jupiter: very low in WSW in evening twilight</p> <p>Saturn: in E before dawn</p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>AUGUST S M T W T F S</p> <p>1 2 3 4 5</p> <p>6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19</p> <p>20 21 22 23 24 25 26</p> <p>27 28 29 30 31</p> <p>OCTOBER S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30 31</p>			 <p>Rise 40°N 50°N 15:16 16:11</p> <p>Set 23:59 23:04</p> <p>1</p>	 <p>Rise 40°N 50°N 16:17 17:13</p> <p>Set -- --</p> <p>2</p> <p>Sunrise 6:29 6:16</p> <p>Sunset 19:30 19:42</p>
 <p>Set 40°N 50°N 1:00 0:04</p> <p>Rise 17:10 18:01</p> <p>3</p>	 <p>Set 40°N 50°N 2:11 1:22</p> <p>Rise 17:54 18:35</p> <p>4</p>	 <p>Set 40°N 50°N 3:29 2:50</p> <p>Rise 18:31 19:01</p> <p>5</p>	 <p>Set 40°N 50°N 4:49 4:22</p> <p>Rise 19:01 19:20</p> <p>6</p>	 <p>Set 40°N 50°N 6:09 5:54</p> <p>Rise 19:28 19:36</p> <p>Full Moon 14:42</p> <p>7</p>	 <p>Set 40°N 50°N 7:28 7:25</p> <p>Rise 19:54 19:51</p> <p>8</p>	 <p>Set 40°N 50°N 8:46 8:54</p> <p>Rise 20:20 20:06</p> <p>9</p> <p>Sunrise 6:35 6:27</p> <p>Sunset 19:19 19:27</p>
	<p>Labour Day</p>	<p>Heinrich Schwabe sketches Jupiter's Red Spot, 175 years ago</p> <p>Uranus at opposition</p>	<p>Star Trek begins 40 years ago</p>	<p>Christian Peters, who calculated stellar distance by parallax, born 200 years ago</p> <p>Largest Full Moon of 2006</p>		
 <p>Set 40°N 50°N 10:03 10:24</p> <p>Rise 20:48 20:24</p> <p>10</p>	 <p>Set 40°N 50°N 11:21 11:53</p> <p>Rise 21:20 20:45</p> <p>11</p>	 <p>Set 40°N 50°N 12:38 13:20</p> <p>Rise 21:58 21:13</p> <p>12</p>	 <p>Set 40°N 50°N 13:50 14:41</p> <p>Rise 22:43 21:51</p> <p>13</p>	 <p>Set 40°N 50°N 14:54 15:50</p> <p>Rise 23:37 22:42</p> <p>Last Quarter 7:15</p> <p>14</p>	 <p>Set 40°N 50°N 15:49 16:42</p> <p>Rise -- 23:45</p> <p>15</p>	 <p>Rise 40°N 50°N 0:38 --</p> <p>Set 16:33 17:20</p> <p>16</p> <p>Sunrise 6:42 6:37</p> <p>Sunset 19:07 19:11</p>
 <p>Rise 40°N 50°N 1:42 0:56</p> <p>Set 17:08 17:47</p> <p>17</p>	 <p>Rise 40°N 50°N 2:46 2:10</p> <p>Set 17:37 18:07</p> <p>18</p>	 <p>Rise 40°N 50°N 3:50 3:23</p> <p>Set 18:01 18:22</p> <p>19</p>	 <p>Rise 40°N 50°N 4:52 4:34</p> <p>Set 18:22 18:35</p> <p>20</p>	 <p>Rise 40°N 50°N 5:52 5:43</p> <p>Set 18:41 18:46</p> <p>21</p>	 <p>Rise 40°N 50°N 6:51 6:51</p> <p>Set 19:00 18:56</p> <p>New Moon 7:45</p> <p>22</p>	 <p>Rise 40°N 50°N 7:50 7:59</p> <p>Set 19:19 19:07</p> <p>23</p> <p>Sunrise 6:48 6:48</p> <p>Sunset 18:56 18:56</p>
		<p>Saturn 2.7° W of Crescent Moon best in NE of N. America 3 am</p>	<p>Zodiacal Light visible in E before morning twilight for next two weeks</p>	<p>Alberta Star Party, Caroline, AB www.syz.com/rasc/asp.htm (through Sep. 24)</p>	<p>Farthest Lunar Apogee of 2006</p> <p>Annular Solar Eclipse partial phase visible in parts of S. America, Africa, and Antarctica</p>	<p>Rosh Hashanah</p> <p>Fall Equinox 12:03 am</p>
 <p>Rise 40°N 50°N 8:50 9:08</p> <p>Set 19:40 19:20</p> <p>24</p>	 <p>Rise 40°N 50°N 9:52 10:19</p> <p>Set 20:04 19:34</p> <p>25</p>	 <p>Rise 40°N 50°N 10:56 11:32</p> <p>Set 20:33 19:54</p> <p>26</p>	 <p>Rise 40°N 50°N 12:01 12:47</p> <p>Set 21:08 20:21</p> <p>27</p>	 <p>Rise 40°N 50°N 13:06 13:59</p> <p>Set 21:52 20:58</p> <p>28</p>	 <p>Rise 40°N 50°N 14:07 15:03</p> <p>Set 22:47 21:51</p> <p>29</p>	 <p>Rise 40°N 50°N 15:02 15:55</p> <p>Set 23:52 23:00</p> <p>First Quarter 7:04</p> <p>Sunrise 6:55 6:58</p> <p>Sunset 18:44 18:41</p> <p>30</p>
<p>First day of Ramadan</p>						



































NOVEMBER

M33: A Naked-Eye Challenge

At approximately two lunar diameters, M33 in Triangulum is large enough to be seen naked-eye, under the best conditions, with averted vision. Its low surface brightness, however, discloses spiral arms and HII regions only to large backyard telescopes. When those details emerge, M33 earns its name as "The Pinwheel Galaxy."

Photo by Alan Dyer

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: very low in ESE in morning twilight in second half of month Venus: not easily observed Mars: not observable Jupiter: not observable Saturn: rises in ENE near 11 pm, high in SSE at dawn</p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>OCTOBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</p> <p>DECEMBER S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</p>	 <p>40°N 50°N Set 1:34 1:20 Rise 14:51 14:59</p> <p>1</p>	 <p>40°N 50°N Set 2:49 2:46 Rise 15:16 15:14</p> <p>2</p>	 <p>40°N 50°N Set 4:05 4:13 Rise 15:42 15:29</p> <p>3</p>	 <p>40°N 50°N Set 5:23 5:43 Rise 16:10 15:47</p> <p>4</p> <p>Sunrise 6:32 6:55 Sunset 16:54 16:32</p>
 <p>40°N 50°N Set 6:42 7:14 Rise 16:43 16:09 Full Moon 7:58</p> <p>5</p>	 <p>40°N 50°N Set 8:02 8:45 Rise 17:24 16:39</p> <p>6</p>	 <p>40°N 50°N Set 9:18 10:10 Rise 18:13 17:21</p> <p>7</p>	 <p>40°N 50°N Set 10:26 11:21 Rise 19:12 18:17</p> <p>8</p>	 <p>40°N 50°N Set 11:21 12:13 Rise 20:17 19:26</p> <p>9</p>	 <p>40°N 50°N Set 12:06 12:50 Rise 21:24 20:41</p> <p>10</p>	 <p>40°N 50°N Set 12:40 13:16 Rise 22:30 21:57</p> <p>11</p> <p>Sunrise 6:40 7:06 Sunset 16:47 16:21</p>
<p>Fred Whipple, known for dirty snowball theory of comets, born 100 years ago</p> <p>S. Taurid meteors peak 11 am</p>		<p>Pierre Gassendi 1st observes a transit of Mercury, 375 years ago</p>	<p>Mercury Transits the Sun entire transit visible in far W of N. America, beginning visible before sunset in rest of N. and S. America</p>			<p>Remembrance Day (Canada) Veterans Day (USA)</p>
 <p>40°N 50°N Set 13:08 13:35 Rise 23:34 23:10 Last Quarter 12:45</p> <p>12</p>	 <p>40°N 50°N Set 13:32 13:50 Rise -- --</p> <p>13</p>	 <p>40°N 50°N Rise 0:35 0:21 Set 13:52 14:02</p> <p>14</p>	 <p>40°N 50°N Rise 1:35 1:29 Set 14:11 14:13</p> <p>15</p>	 <p>40°N 50°N Rise 2:34 2:36 Set 14:30 14:24</p> <p>16</p>	 <p>40°N 50°N Rise 3:33 3:45 Set 14:50 14:35</p> <p>17</p>	 <p>40°N 50°N Rise 4:34 4:55 Set 15:13 14:49</p> <p>18</p> <p>Sunrise 6:49 7:18 Sunset 16:41 16:12</p>
<p>N. Taurid meteors peak 10 am</p>	<p>Moon near Saturn and Regulus 3 am</p>	<p>Iris at opposition</p>			<p>Leonid meteors peak 4 pm</p>	
 <p>40°N 50°N Rise 5:37 6:07 Set 15:38 15:06</p> <p>19</p>	 <p>40°N 50°N Rise 6:43 7:23 Set 16:10 15:28 New Moon 17:18</p> <p>20</p>	 <p>40°N 50°N Rise 7:49 8:37 Set 16:49 16:00</p> <p>21</p>	 <p>40°N 50°N Rise 8:53 9:48 Set 17:38 16:43</p> <p>22</p>	 <p>40°N 50°N Rise 9:52 10:47 Set 18:37 17:43</p> <p>23</p>	 <p>40°N 50°N Rise 10:43 11:33 Set 19:44 18:55</p> <p>24</p>	 <p>40°N 50°N Rise 11:25 12:06 Set 20:55 20:16</p> <p>25</p> <p>Sunrise 6:56 7:28 Sunset 16:37 16:05</p>
		<p>Jupiter in conjunction with the Sun</p>		<p>Thanksgiving Day (USA)</p>		<p>Mercury at greatest elongation W (20°) best morning view in 2006</p>
 <p>40°N 50°N Rise 11:59 12:30 Set 22:08 21:40</p> <p>26</p>	 <p>40°N 50°N Rise 12:28 12:49 Set 23:21 23:04</p> <p>27</p>	 <p>40°N 50°N Rise 12:54 13:05 Set -- -- First Quarter 1:29</p> <p>28</p>	 <p>40°N 50°N Set 0:34 0:27 Rise 13:18 13:19</p> <p>29</p>	 <p>40°N 50°N Set 1:46 1:50 Rise 13:42 13:33</p> <p>30</p>		



DECEMBER

Vibrant Colours and Contrasts in Orion's Belt

In this portrait of the region around Zeta Orionis, the vividness of colours attains an exceptional standard. Dark clouds of dust and hydrogen, muted red emissions glowing behind the Horsehead, intense fuschias blazing around the dark trunk of the Flaming Tree, and the blue reflection nebula just below centre dramatize the essential stages of star formation.

Photo by Albert Saikaley

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: very low in ESE in morning twilight, lost near mid-month</i></p> <p><i>Venus: very low in SW in evening twilight</i></p> <p><i>Mars: very low in ESE in morning twilight late in month</i></p> <p><i>Jupiter: very low in SE in morning twilight</i></p> <p><i>Saturn: rises in ENE near 9 pm, high in SW at dawn</i></p>	<p>Times in the upper half of the daily boxes are in the 24-hour clock; times in the lower half are given in the 12-hour clock.</p> <p>Eastern time is used, except for rise and set events, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages.</p> <p>Please see back pages for photo details and additional information about this Calendar.</p>	<p>NOVEMBER S M T W T F S</p> <p>5 6 7 8 9 10 11</p> <p>12 13 14 15 16 17 18</p> <p>19 20 21 22 23 24 25</p> <p>26 27 28 29 30</p> <p>JANUARY S M T W T F S</p> <p>7 8 9 10 11 12 13</p> <p>14 15 16 17 18 19 20</p> <p>21 22 23 24 25 26 27</p> <p>28 29 30 31</p>			<p>40°N 50°N</p> <p>Set 3:01 3:15</p> <p>Rise 14:08 13:49</p> <p>1</p>	<p>40°N 50°N</p> <p>Set 4:17 4:43</p> <p>Rise 14:38 14:09</p> <p>2</p> <p>Sunrise 7:04 7:38</p> <p>Sunset 16:35 16:01</p>
<p>40°N 50°N</p> <p>Set 5:35 6:12</p> <p>Rise 15:14 14:34</p> <p>3</p>	<p>40°N 50°N</p> <p>Set 6:52 7:40</p> <p>Rise 15:59 15:10</p> <p>Full Moon 19:25</p> <p>4</p>	<p>40°N 50°N</p> <p>Set 8:04 8:58</p> <p>Rise 16:54 16:00</p> <p>5</p>	<p>40°N 50°N</p> <p>Set 9:06 10:00</p> <p>Rise 17:57 17:04</p> <p>6</p>	<p>40°N 50°N</p> <p>Set 9:57 10:45</p> <p>Rise 19:05 18:18</p> <p>7</p>	<p>40°N 50°N</p> <p>Set 10:36 11:16</p> <p>Rise 20:13 19:36</p> <p>8</p>	<p>40°N 50°N</p> <p>Set 11:08 11:38</p> <p>Rise 21:20 20:52</p> <p>9</p> <p>Sunrise 7:10 7:46</p> <p>Sunset 16:35 15:58</p>
<p>Moon occults the Pleiades 10 pm</p>						
<p>40°N 50°N</p> <p>Set 11:33 11:54</p> <p>Rise 22:23 22:05</p> <p>10</p>	<p>40°N 50°N</p> <p>Set 11:55 12:08</p> <p>Rise 23:24 23:15</p> <p>11</p>	<p>40°N 50°N</p> <p>Set 12:15 12:19</p> <p>Rise -- --</p> <p>Last Quarter 9:32</p> <p>12</p>	<p>40°N 50°N</p> <p>Rise 0:23 0:23</p> <p>Set 12:34 12:30</p> <p>13</p>	<p>40°N 50°N</p> <p>Rise 1:22 1:30</p> <p>Set 12:53 12:42</p> <p>14</p>	<p>40°N 50°N</p> <p>Rise 2:22 2:39</p> <p>Set 13:15 12:54</p> <p>15</p>	<p>40°N 50°N</p> <p>Rise 3:24 3:50</p> <p>Set 13:39 13:10</p> <p>16</p> <p>Sunrise 7:15 7:53</p> <p>Sunset 16:36 15:59</p>
<p>Mercury 0.3° above Jupiter</p> <p>Mars to right best in S of N. America 5 am</p> <p>Saturn 0.7° S of Moon best in W of N. America 6 am</p>				<p>Donald Menzel, authority on Sun, dies 30 years ago</p> <p>Tycho Brahe born 460 years ago</p> <p>Geminid meteors peak 6 am</p>	<p>Spica 1.3° N of Crescent Moon best in NE of N. America 5 am</p>	
<p>40°N 50°N</p> <p>Rise 4:29 5:05</p> <p>Set 14:08 13:30</p> <p>17</p>	<p>40°N 50°N</p> <p>Rise 5:35 6:20</p> <p>Set 14:44 13:58</p> <p>18</p>	<p>40°N 50°N</p> <p>Rise 6:41 7:33</p> <p>Set 15:30 14:37</p> <p>19</p>	<p>40°N 50°N</p> <p>Rise 7:43 8:38</p> <p>Set 16:27 15:32</p> <p>New Moon 9:01</p> <p>20</p>	<p>40°N 50°N</p> <p>Rise 8:38 9:29</p> <p>Set 17:32 16:42</p> <p>21</p>	<p>40°N 50°N</p> <p>Rise 9:23 10:07</p> <p>Set 18:45 18:03</p> <p>22</p>	<p>40°N 50°N</p> <p>Rise 10:00 10:35</p> <p>Set 19:59 19:28</p> <p>23</p> <p>Sunrise 7:19 7:57</p> <p>Sunset 16:39 16:01</p>
			<p>Carl Sagan, astronomy popularizer, dies 10 years ago</p>	<p>Winter Solstice 7:22 pm</p>	<p>Ursid meteors peak 2 pm</p>	
<p>40°N 50°N</p> <p>Rise 10:31 10:55</p> <p>Set 21:13 20:53</p> <p>24</p>	<p>40°N 50°N</p> <p>Rise 10:58 11:11</p> <p>Set 22:25 22:16</p> <p>25</p>	<p>40°N 50°N</p> <p>Rise 11:22 11:26</p> <p>Set 23:37 23:38</p> <p>26</p>	<p>40°N 50°N</p> <p>Rise 11:46 11:40</p> <p>Set -- --</p> <p>First Quarter 9:48</p> <p>27</p>	<p>40°N 50°N</p> <p>Set 0:49 1:01</p> <p>Rise 12:10 11:55</p> <p>28</p>	<p>40°N 50°N</p> <p>Set 2:03 2:25</p> <p>Rise 12:38 12:12</p> <p>29</p>	<p>40°N 50°N</p> <p>Set 3:18 3:51</p> <p>Rise 13:11 12:34</p> <p>30</p> <p>Sunrise 7:22 7:59</p> <p>Sunset 16:44 16:07</p>
	<p>Christmas Day</p>	<p>Boxing Day (Canada)</p>				
<p>40°N 50°N</p> <p>Set 4:33 5:17</p> <p>Rise 13:51 13:05</p> <p>31</p>						
<p>Moon occults the Pleiades visible in NW of N. America 7 am</p>						

The Royal Astronomical Society of Canada Observer's Calendar

How to Use this Calendar

A graphical representation of the Moon's appearance in the late evening is given in each daily box. In addition to the varying phase, the depicted size of the Moon varies, reflecting the change in the apparent size of the Moon in the sky as it moves closer to or farther from Earth. The depicted face of the Moon also changes slightly to reflect lunar libration, the rocking motion of the Moon, which means that over time approximately 59% of the lunar surface can be seen from Earth. A small dot of size proportional to the amount of libration appears near the lunar limb that is librated. The daily lunar graphics were prepared using data provided by Roger Fell, who generated the data using the Lunar Calculator computer program written by Alister Ling (see www3.telus.net/public/aling/lunarcalfunarcalf.htm).

Daily Moon and weekly Sun rise and set times, and the times of Moon phases, are shown in the top portion of the boxes. If no Moon rise or set time is given, this event occurs the next day.

A summary of the position of the naked-eye planets is given each month. Descriptions are for approximate latitude 45° and unless otherwise stated apply to midmonth; rise and set times at the beginning or end of the month may vary by an hour or more from those given. Times and compass directions may also differ somewhat from the given ones at other latitudes.

Special astronomical events are given at the bottom of the daily boxes. Events observable in some part of Canada or the continental United States are listed. Days on which particularly interesting phenomena occur are highlighted with light-green shading. Detailed information on all events, including their visibility from particular locations, may be determined by consulting the *Observer's Handbook*, which is published annually by the RASC.

Adjustments for Actual Location

When it is in effect, times are adjusted for Daylight Saving Time. Moon phases and special events are given in Eastern time. The user's local time for events *other than* Moon and Sun rise and set may be determined by converting the given time to the user's time zone (e.g. Pacific time is Eastern time minus 3 hours). For occultations, a further adjustment of an hour or more may be needed for any particular geographical location because of parallax effects. Parallax also means that actual angular separations for events involving the Moon may vary by close to 1° from those given. Also, the Moon's rapid movement of approximately 0.5° per hour means that separations may be considerably larger at a time that is even a few hours away from the given time.

Two sets of rise and set times are given to accommodate North American observers in midnorthern latitudes. Times are displayed for locations 40°N latitude and 75°W longitude and for 50°N, 75°W. The actual times for a given location must be calculated using the tables at the right.

The tables give (longitude) corrections in minutes to the tabulated rise and set times for selected Canadian and U.S. cities. In the column labelled **Correction**, an entry such as 50°N + 25 means add 25 minutes to the displayed 50°N time. This computed time is an approximation. In the column labelled **Accuracy**, the approximate maximum error in minutes for Moon rise and set using this method is indicated. The error for Sun rise and set is less. These errors can be substantially reduced by interpolating according to latitude, as explained in the following section.

Note that the rise and set times calculated using the above method *will be local times*. It is not necessary to adjust them for time zone.

Canadian Locations

City	Correction	Accuracy	Latitude
Calgary	50°N + 36	15	51
Charlottetown	40°N + 12	20	46
Edmonton	50°N + 34	25	54
Halifax	40°N + 14	25	45
Hamilton	40°N + 20	15	43
Kingston	40°N + 6	20	44
Kitchener	40°N + 22	15	43
London	40°N + 25	15	43
Moncton	40°N + 19	20	46
Montreal	50°N - 6	20	46
Niagara	40°N + 16	15	43
Kelowna	50°N - 3	10	50
Ottawa	50°N + 3	20	45
Prince George	50°N + 11	25	54
Quebec	50°N - 15	15	47
Regina	50°N + 58 ⁽¹⁾	10	50
St. John's	50°N + 1	20	48
Sarnia	40°N + 30	15	43
Saskatoon	50°N + 67 ⁽¹⁾	15	52
Thunder Bay	50°N + 57	10	48
Toronto	40°N + 18	20	44
Vancouver	50°N + 12	15	49
Victoria	50°N + 13	20	49
Windsor	40°N + 32	15	42
Winnipeg	50°N + 29	5	50

U.S. Locations

City	Correction	Accuracy	Latitude
Atlanta	40°N + 37	30	34
Boston	40°N - 16	10	42
Chicago	40°N - 10	15	42
Cincinnati	40°N + 38	10	39
Denver	40°N + 0	10	40
Flagstaff	40°N + 27 ⁽¹⁾	30	35
Kansas City	40°N + 18	10	39
Los Angeles	40°N - 7	35	34
Minneapolis	40°N + 13	25	45
New York	40°N - 4	5	41
San Francisco	40°N + 10	20	38
Seattle	50°N + 9	20	48
Tucson	40°N + 24 ⁽¹⁾	40	32
Washington	40°N + 8	5	39

⁽¹⁾ Subtract 60 minutes in the summer.

Other Locations, and Improving Accuracy

For locations not listed in the tables to the left, the user should calculate a correction factor. This amount is +4 minutes for each degree that the user's location is west of the central meridian of the user's time zone or -4 minutes for each degree that it is east. This correction factor should be added to the displayed 50°N or 40°N time for the location whose latitude is nearest that of the user's site. The accuracy in minutes for Moon rise and set can be calculated by multiplying the difference between the user's latitude and 50°N/40°N respectively by 4.5, and then adding 0.2 times the difference between the user's longitude and 75°W.

Improvement in accuracy may be obtained for many sites by interpolating or extrapolating the 50°N and 40°N times depending on the user's latitude. For example, the latitude of Ottawa is approximately midway between 50°N and 40°N. An observer in Ottawa can improve accuracy to better than 5 minutes by averaging the given 50°N and 40°N times and then adding the correction factor for Ottawa, which is 3 minutes. Western observers may gain additional accuracy by adding about 10% of the difference between the listed time and the next day's time.

The Royal Astronomical Society of Canada

Since it was founded in 1890, the RASC has filled a special role in both amateur and professional astronomy. Today, it has over 4800 members worldwide who share a passion for the night sky and make contributions to astronomy in many ways.

The RASC has a long tradition of high-quality, volunteer-produced publications. The *Observer's Handbook* has been published since 1907 and is recognized worldwide as the leading handbook of its type. The *Journal*, also published since 1907, contains articles of interest to amateur astronomers. The *Beginner's Observing Guide* is an introduction to the night sky for the novice observer, the *Observer's Calendar* is a forum for astrophotography by amateur astronomers, and *Skyways* is a teacher's guide in astronomy.

For information on joining the Society, or to order an RASC publication, visit www.rasc.ca or contact the national office at:

136 Dupont Street
 Toronto ON M5R 1V2
 Canada
 888-924-7272 (toll free in Canada) or 416-924-7973
 Email: nationaloffice@rasc.ca

The Photos and the Calendar

Details on the photos are given below and to the right. Monthly grids were generated using custom software written in the Fortran and PostScript programming languages.

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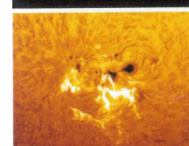
January (*The Rosette's Palette*): Composite RGB 2 x 2 mosaic formed using *MaxIm DL* from exposures of 15:10:10 minutes (12 exposures totalling 140 minutes) on an SBIG ST8-XME CCD camera using a 5-inch f/6 Astro-Physics refractor (David Lane and Greg Palman).



March (*A Double Take on Star Trails*): 4-hour fixed-tripod exposure on Fujichrome Provia 100F slide film using a 16-mm fisheye lens at f/8, begun with a 1-minute double exposure at f/2.8 followed by a 2-minute lag (Alan Dyer).



April (*Saturn's Shadows and Colours*): Composite image formed using *RegiStax 2* and *Images Plus* from 600 frames shot at 10 fps on a ToUCam 740 Pro webcam using a 5X Tele Vue Powermate Barlow on a Starmaster 18-inch Dobsonian telescope; taken Jan. 31, 2005 from Ottawa (Mike Wirths).



May (*Eruption on the Sun*): 2/100-second exposure on a Meade Pictor 1616XTE CCD camera through a Coronado H-alpha filter using a Meade 7-inch refractor at f/30, processed using *MaxIm DL* and *Photoshop*; taken Jul. 21, 2004 (Jack Newton).



June (*The Prancing Horse*): Composite image formed using *MaxIm DL* and *Photoshop* from four 5-minute exposures at ISO 800 on a Hutech-modified Canon Digital Rebel 300D digital SLR camera, piggyback using a 28-200 mm Tamron lens at 28-mm f/4 (Jack Newton).



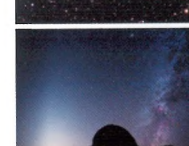
July (*Cepheus's "Rosette"*): 75-minute medium-format exposure on Kodak Ektachrome E200 slide film using a William Optics FLT110 f/6.5 refractor (Alan Dyer).



August (*The Pelican Contemplates North America*): Composite image formed using *RegiStar* and *Photoshop* from one 150-minute red-filtered exposure on medium-format gas-hypersensitized Kodak Technical Pan black-and-white negative film and nine 8-minute exposures at ISO 800 on an unmodified Canon 20D digital SLR camera, all taken using a 5-inch f/6 Astro-Physics refractor (Rajiv Gupta).



September (*A Symphony of Galaxies*): Composite image formed using *RegiStar* and *Photoshop* from nine 75-minute exposures on Kodak Royal Gold 200 colour negative film using a 14.5-inch f/8 classical Cassegrain (Tony Hallas).



October (*Zodiacal Light*): Composite image formed using *MaxIm DL* and *Photoshop* from two 5-minute exposures at ISO 800 on a Hutech-modified Canon Digital Rebel 300D SLR camera, piggyback using a 10-22 mm Canon EF lens at 10-mm f/3.5; taken Jan. 6, 2005 (Jack Newton).



November (*M33: A Naked-Eye Challenge*): Composite image formed using *Photoshop* from four 10-minute exposures at ISO 400 on a Hutech-modified Canon Digital Rebel 300D SLR camera using a 5-inch f/6 Astro-Physics refractor (Alan Dyer).



December (*Vibrant Colours and Contrasts In Orion's Belt*): LRGB composite image formed using *MaxIm DL* and *Photoshop* from total exposures of 64:12:12:18 minutes (all individual exposures 1 minute) on an SBIG ST10-XME CCD camera using an Orion 80ED refractor (Albert Saikaley).



Cover/February (*A Comet Visits the Sisters*): Composite image formed using *MaxIm DL* and *Photoshop* from three 5-minute exposures at ISO 800 on a Hutech-modified Canon Digital Rebel 300D SLR camera using a 78-mm f/4 Borg refractor; taken Jan. 7, 2005 (Jack Newton).

2006

January	February	March
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April	May	June
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	August	September
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
October	November	December
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

2007

January	February	March
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April	May	June
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	August	September
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
October	November	December
S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

New Moon dates are displayed in bold.

All photos in this unique Calendar were taken by amateur astronomers using backyard telescopes or ordinary cameras. It was produced by volunteer members of the Royal Astronomical Society of Canada.

This Calendar includes comprehensive listings of astronomical data such as lunar and planetary conjunctions, Sun and Moon rise and set times, eclipses, meteor showers, and Moon phases.



	40°N 50°N Set 10:26 11:21 Rise 19:12 18:17	8		Set Rise
<p><i>Mercury Transits the Sun</i> entire transit visible in far W of N. America, beginning visible before sunset in rest of N. and S. America</p>				
	40°N 50°N Rise 1:35 1:29 Set 14:11 14:13	15		Rise Set

Multiple print-competition award winner, including:

- 1999 *Award of Excellence*, Ontario Printing and Imaging Association
- 2001 *Silver*, International Gallery of Superb Printing
- 2003 *Gold*, Gallery of Superb Printing



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