



THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

OBSERVER'S CALENDAR

2007


































JANUARY

Hide-and-Seek Galaxy

IC 342 is an exquisite face-on barred spiral tucked away in the stars of Camelopardalis. At 12th magnitude it lies only ten degrees from the plane of the Milky Way, so it appears buried under foreground stars. This nearby member of the Local Group of galaxies is large at 21 minutes of arc in diameter and a challenge to observe visually.

Photo by Serge Théberge

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: very low in WSW in evening twilight in last week of month</p> <p>Venus: very low in WSW in evening twilight</p> <p>Mars: very low in SE in morning twilight</p> <p>Jupiter: rises in ESE near 4 am, very low in SE at dawn</p> <p>Saturn: rises in ENE after dark, low in W in morning twilight</p>	 <p>40°N 50°N Set 5:46 6:38 Rise 14:40 13:47</p> <p>1</p> <p><i>New Year's Day</i></p>	 <p>40°N 50°N Set 6:51 7:46 Rise 15:39 14:45</p> <p>2</p>	 <p>40°N 50°N Set 7:46 8:37 Rise 16:45 15:55 Full Moon 8:57</p> <p>3</p> <p><i>Earth at perihellion (147,093,600 km) 3 pm</i> <i>Quadrantid meteors peak 8 pm</i></p>	 <p>40°N 50°N Set 8:30 9:14 Rise 17:54 17:13</p> <p>4</p> <p><i>John Draper, known for Draper's law, died 125 years ago</i></p>	 <p>40°N 50°N Set 9:05 9:39 Rise 19:02 18:31</p> <p>5</p>	 <p>40°N 50°N Set 9:33 9:58 Rise 20:08 19:46</p> <p>6</p> <p>Sunrise 7:22 7:58 Sunset 16:50 16:14</p> <p><i>Moon 1° N of Regulus Saturn nearby best in E of N. America 11 pm</i></p>
 <p>40°N 50°N Set 9:57 10:13 Rise 21:10 20:58</p> <p>7</p>	 <p>40°N 50°N Set 10:17 10:25 Rise 22:11 22:07</p> <p>8</p> <p><i>Physicist Stephen Hawking, born 65 years ago</i></p>	 <p>40°N 50°N Set 10:37 10:36 Rise 23:10 23:15</p> <p>9</p>	 <p>40°N 50°N Set 10:56 10:47 Rise -- --</p> <p>10</p>	 <p>40°N 50°N Rise 0:09 0:23 Set 11:16 10:59 Last Quarter 7:45</p> <p>11</p>	 <p>40°N 50°N Rise 1:10 1:33 Set 11:39 11:13</p> <p>12</p> <p><i>The HAL 9000 computer, of 2001: A Space Odyssey, born 10 years ago</i></p>	 <p>40°N 50°N Rise 2:13 2:45 Set 12:06 11:31</p> <p>13</p> <p>Sunrise 7:21 7:54 Sunset 16:57 16:23</p>
 <p>40°N 50°N Rise 3:18 3:59 Set 12:38 11:55</p> <p>14</p>	 <p>40°N 50°N Rise 4:24 5:14 Set 13:19 12:28</p> <p>15</p> <p><i>Martin Luther King Jr. Day (USA)</i> <i>Crescent Moon 1° to right of Antares best in S of N. America 6 am</i></p>	 <p>40°N 50°N Rise 5:28 6:22 Set 14:11 13:16</p> <p>16</p>	 <p>40°N 50°N Rise 6:26 7:20 Set 15:14 14:20</p> <p>17</p>	 <p>40°N 50°N Rise 7:16 8:04 Set 16:25 15:39 New Moon 23:01</p> <p>18</p>	 <p>40°N 50°N Rise 7:57 8:36 Set 17:41 17:05</p> <p>19</p>	 <p>40°N 50°N Rise 8:31 8:59 Set 18:57 18:33</p> <p>20</p> <p>Sunrise 7:18 7:48 Sunset 17:05 16:34</p> <p><i>Islamic New Year</i></p>
 <p>40°N 50°N Rise 9:00 9:17 Set 20:13 20:00</p> <p>21</p>	 <p>40°N 50°N Rise 9:25 9:32 Set 21:27 21:25</p> <p>22</p> <p><i>Roberta Bondar, first Canadian woman in space, 15 years ago</i></p>	 <p>40°N 50°N Rise 9:50 9:47 Set 22:40 22:49</p> <p>23</p>	 <p>40°N 50°N Rise 10:14 10:01 Set 23:54 --</p> <p>24</p>	 <p>40°N 50°N Set -- 0:13 Rise 10:41 10:18 First Quarter 18:01</p> <p>25</p>	 <p>40°N 50°N Set 1:08 1:39 Rise 11:11 10:38</p> <p>26</p>	 <p>40°N 50°N Set 2:23 3:04 Rise 11:48 11:05</p> <p>27</p> <p>Sunrise 7:13 7:41 Sunset 17:13 16:45</p>
 <p>40°N 50°N Set 3:35 4:26 Rise 12:34 11:42</p> <p>28</p>	 <p>40°N 50°N Set 4:42 5:37 Rise 13:28 12:34</p> <p>29</p>	 <p>40°N 50°N Set 5:40 6:33 Rise 14:31 13:39</p> <p>30</p>	 <p>40°N 50°N Set 6:26 7:13 Rise 15:38 14:53</p> <p>31</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 and changes to/from daylight savings time, 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>DECEMBER S M T W T F S</p> <p>1 2</p> <p>3 4 5 6 7 8 9</p> <p>10 11 12 13 14 15 16</p> <p>17 18 19 20 21 22 23</p> <p>24 25 26 27 28 29 30</p> <p>31</p> <p>FEBRUARY 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</p>



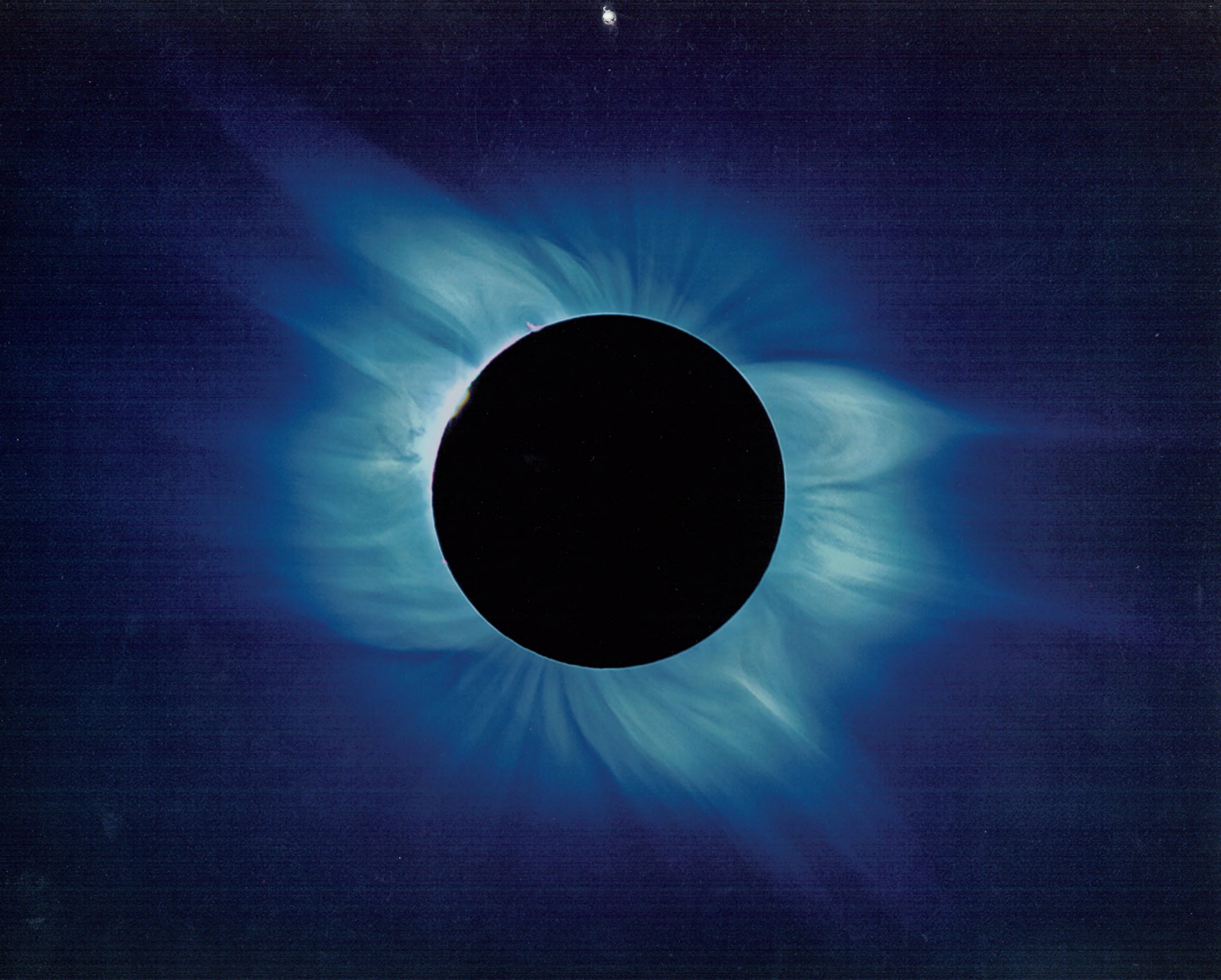
FEBRUARY

Showcase in Monoceros

This brilliant complex features open clusters, emission, reflection, and dark nebulae. The downward-pointing triangular clump of stars on the left is sometimes called the "Christmas Tree," whose point touches the dark Cone Nebula. In the centre of the image is the star cluster Trumpler 4. At right is the blue reflection nebula IC 2169.

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 first half of month</i></p> <p><i>Venus: very low in WSW after dark</i></p> <p><i>Mars: very low in SE in morning twilight</i></p> <p><i>Jupiter: rises in ESE near 2:30 am, low in SSE at dawn</i></p> <p><i>Saturn: low in E after dark, very low in WNW in morning 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 and changes to/from daylight savings time, 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>JANUARY 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>MARCH 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>40°N 50°N</p> <p>Set 7:04 7:42</p> <p>Rise 16:47 16:11</p> <p>1</p>	<p>40°N 50°N</p> <p>Set 7:34 8:03</p> <p>Rise 17:53 17:27</p> <p>Full Moon 0:45</p> <p>2</p>	<p>40°N 50°N</p> <p>Set 7:59 8:19</p> <p>Rise 18:57 18:41</p> <p>Sunrise 7:07 7:31</p> <p>Sunset 17:21 16:57</p> <p>3</p>
<p>40°N 50°N</p> <p>Set 8:21 8:32</p> <p>Rise 19:58 19:51</p> <p>4</p>	<p>40°N 50°N</p> <p>Set 8:40 8:43</p> <p>Rise 20:58 21:00</p> <p>5</p>	<p>40°N 50°N</p> <p>Set 9:00 8:54</p> <p>Rise 21:58 22:08</p> <p>6</p>	<p>40°N 50°N</p> <p>Set 9:19 9:05</p> <p>Rise 22:58 23:17</p> <p>7</p>	<p>40°N 50°N</p> <p>Set 9:41 9:18</p> <p>Rise 23:59 --</p> <p>8</p>	<p>40°N 50°N</p> <p>Rise -- 0:28</p> <p>Set 10:05 9:34</p> <p>9</p>	<p>40°N 50°N</p> <p>Rise 1:02 1:40</p> <p>Set 10:34 9:54</p> <p>Last Quarter 4:51</p> <p>Sunrise 6:59 7:20</p> <p>Sunset 17:30 17:09</p> <p>10</p>
<p>40°N 50°N</p> <p>Rise 2:07 2:54</p> <p>Set 11:11 10:22</p> <p>11</p>	<p>40°N 50°N</p> <p>Rise 3:11 4:04</p> <p>Set 11:56 11:02</p> <p>12</p>	<p>40°N 50°N</p> <p>Rise 4:11 5:07</p> <p>Set 12:53 11:58</p> <p>13</p>	<p>40°N 50°N</p> <p>Rise 5:05 5:56</p> <p>Set 14:00 13:09</p> <p>14</p>	<p>40°N 50°N</p> <p>Rise 5:50 6:33</p> <p>Set 15:14 14:33</p> <p>15</p>	<p>40°N 50°N</p> <p>Rise 6:27 7:00</p> <p>Set 16:31 16:01</p> <p>16</p>	<p>40°N 50°N</p> <p>Rise 6:58 7:21</p> <p>Set 17:49 17:31</p> <p>New Moon 11:14</p> <p>Sunrise 6:51 7:07</p> <p>Sunset 17:38 17:21</p> <p>17</p>
<p>40°N 50°N</p> <p>Rise 7:26 7:37</p> <p>Set 19:06 18:59</p> <p>18</p>	<p>40°N 50°N</p> <p>Rise 7:51 7:52</p> <p>Set 20:23 20:27</p> <p>19</p>	<p>40°N 50°N</p> <p>Rise 8:16 8:07</p> <p>Set 21:39 21:54</p> <p>20</p>	<p>40°N 50°N</p> <p>Rise 8:43 8:23</p> <p>Set 22:56 23:23</p> <p>21</p>	<p>40°N 50°N</p> <p>Rise 9:13 8:42</p> <p>Set -- --</p> <p>22</p>	<p>40°N 50°N</p> <p>Set 0:12 0:51</p> <p>Rise 9:48 9:07</p> <p>23</p>	<p>40°N 50°N</p> <p>Set 1:27 2:15</p> <p>Rise 10:31 9:42</p> <p>First Quarter 2:56</p> <p>Sunrise 6:41 6:54</p> <p>Sunset 17:46 17:33</p> <p>24</p>
<p><i>Chinese New Year</i></p> <p><i>Enterprise shuttle was first flown piggy-back, 30 years ago</i></p> <p><i>Henry Norris Russell, known for diagram of stellar evolution, died 50 years ago</i></p>	<p><i>Winter Star Party, Florida Keys</i> www.scas.org (through Feb. 17)</p> <p><i>Presidents' Day (USA)</i></p>		<p><i>Venus 0.7° to left of Uranus visible soon after dark</i></p> <p><i>Mercury at greatest elongation E (18°) favourable evening view, best observed during about the past week</i></p> <p><i>Valentine's Day</i></p>		<p><i>Moon 0.8° E of Saturn best in E of N. America 6 pm</i></p>	<p><i>Moon occults Regulus visible in NW of N. America 10 am</i></p> <p><i>Saturn at opposition</i></p>
<p>40°N 50°N</p> <p>Set 2:36 3:30</p> <p>Rise 11:23 10:28</p> <p>25</p>	<p>40°N 50°N</p> <p>Set 3:36 4:31</p> <p>Rise 12:23 11:29</p> <p>26</p>	<p>40°N 50°N</p> <p>Set 4:26 5:15</p> <p>Rise 13:29 12:41</p> <p>27</p>	<p>40°N 50°N</p> <p>Set 5:05 5:46</p> <p>Rise 14:36 13:57</p> <p>28</p>		<p>40°N 50°N</p> <p>Set 0:12 0:51</p> <p>Rise 9:48 9:07</p> <p>23</p>	<p>40°N 50°N</p> <p>Set 1:27 2:15</p> <p>Rise 10:31 9:42</p> <p>First Quarter 2:56</p> <p>Sunrise 6:41 6:54</p> <p>Sunset 17:46 17:33</p> <p>24</p>



MARCH

Almost as Good as Being There

The Sun's million-degree corona reveals intricate magnetically structured details during the March 29, 2006 total solar eclipse in this image made with many different exposures. Our Moon punches a dark black hole in the sky, but moves aside enough to show a hint of pink chromosphere, a prominence, and the start of the "diamond ring."
Photo by Leslie Marczi

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: visible with difficulty very low in ESE in morning twilight near mid-month</p> <p>Venus: low in W after dark</p> <p>Mars: very low in ESE in morning twilight</p> <p>Jupiter: rises in ESE near 2 am, low in SSE before dawn</p> <p>Saturn: high in ESE after dark, sets in WNW near 6 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 and changes to/from daylight savings time, 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 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28</p> <p>APRIL S M T W T F S</p> <p>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</p>		<p>40°N 50°N Set 5:37 6:09 Rise 15:42 15:13</p> <p>1</p> <p>Moon 0.7° N of Saturn best in NE of N. America 8 pm</p>	<p>40°N 50°N Set 6:03 6:26 Rise 16:46 16:27</p> <p>2</p> <p>Pioneer 10, first flyby of Jupiter, 35 years ago</p>	<p>40°N 50°N Set 6:25 6:39 Rise 17:48 17:38 Full Moon 18:17 Sunrise 6:31 6:40 Sunset 17:54 17:45</p> <p>3</p> <p>Total Lunar Eclipse Moon rises during eclipse in N. America, best in E 6:21 pm</p>
<p>40°N 50°N Set 6:45 6:51 Rise 18:48 18:47</p> <p>4</p>	<p>40°N 50°N Set 7:05 7:02 Rise 19:48 19:55</p> <p>5</p>	<p>40°N 50°N Set 7:24 7:13 Rise 20:48 21:04</p> <p>6</p>	<p>40°N 50°N Set 7:45 7:25 Rise 21:49 22:14</p> <p>7</p> <p>Moon 2° below Spica 5 am</p>	<p>40°N 50°N Set 8:08 7:40 Rise 22:51 23:25</p> <p>8</p>	<p>40°N 50°N Set 8:35 7:58 Rise 23:54 --</p> <p>9</p> <p>Zodiacal Light visible in W after evening twilight for next two weeks</p>	<p>40°N 50°N Rise -- 0:38 Set 9:07 8:22</p> <p>10</p> <p>Sunrise 6:20 6:25 Sunset 18:01 17:56</p>
<p>40°N 50°N Rise 0:58 1:49 Set 10:48 9:56 Last Quarter 23:54</p> <p>11</p> <p>Stellar occultation revealed rings of Uranus, 30 years ago</p> <p>Daylight Saving Time begins Moon 1.8° below Antares best in NE of N. America 2 am 3 am</p>	<p>40°N 50°N Rise 2:58 3:54 Set 11:39 10:43</p> <p>12</p>	<p>40°N 50°N Rise 3:53 4:48 Set 12:39 11:46</p> <p>13</p> <p>Eugene Delporte discovered Amor, a near-Earth asteroid, 75 years ago</p>	<p>40°N 50°N Rise 4:41 5:29 Set 13:49 13:02</p> <p>14</p>	<p>40°N 50°N Rise 5:21 5:59 Set 15:03 14:27</p> <p>15</p>	<p>40°N 50°N Rise 5:54 6:22 Set 16:20 15:55</p> <p>16</p>	<p>40°N 50°N Rise 6:23 6:41 Set 17:37 17:24</p> <p>17</p> <p>Sunrise 7:09 7:10 Sunset 19:09 19:08</p>
<p>40°N 50°N Rise 6:50 6:56 Set 18:55 18:53 New Moon 22:43</p> <p>18</p>	<p>40°N 50°N Rise 7:15 7:11 Set 20:13 20:23</p> <p>19</p> <p>Partial Solar Eclipse visible in E of Asia and NW of Alaska</p>	<p>40°N 50°N Rise 7:42 7:27 Set 21:32 21:54</p> <p>20</p> <p>Spring Equinox 8:07 pm</p>	<p>40°N 50°N Rise 8:11 7:45 Set 22:52 23:26</p> <p>21</p> <p>Mercury at greatest elongation W (28°)</p>	<p>40°N 50°N Rise 8:45 8:09 Set -- --</p> <p>22</p>	<p>40°N 50°N Set 0:11 0:56 Rise 9:27 8:40</p> <p>23</p> <p>Cr. Moon occults the Pleiades visible in extreme W of N. America 3 am</p>	<p>40°N 50°N Set 1:25 2:18 Rise 10:17 9:23</p> <p>24</p> <p>Sunrise 6:57 6:55 Sunset 19:16 19:19</p>
<p>40°N 50°N Set 2:30 3:25 Rise 11:16 10:21 First Quarter 14:16</p> <p>25</p>	<p>40°N 50°N Set 3:24 4:15 Rise 12:21 11:30</p> <p>26</p>	<p>40°N 50°N Set 4:06 4:50 Rise 13:28 12:46</p> <p>27</p>	<p>40°N 50°N Set 4:40 5:15 Rise 14:34 14:02</p> <p>28</p>	<p>40°N 50°N Set 5:08 5:33 Rise 15:39 15:16</p> <p>29</p> <p>Moon 0.6° N of Saturn 1 am</p>	<p>40°N 50°N Set 5:31 5:48 Rise 16:41 16:27</p> <p>30</p> <p>HST photographed all of Mars in one Martian day, 10 years ago</p> <p>Moon 0.3° above Regulus best in NE of N. America 12 am</p>	<p>40°N 50°N Set 5:52 6:00 Rise 17:41 17:36</p> <p>31</p> <p>Sunrise 6:46 6:40 Sunset 19:23 19:30</p>

































APRIL

Hail, Bopp!

Hale-Bopp, one of the greatest comets in living memory, graced the skies ten years ago this month. Visible even from light-polluted urban skies, Hale-Bopp was seen and celebrated by millions of people. This image shows well the comet's broad, feathery dust tail as well as rippled structure in its blue ion tail.

Photo by John Mirtle

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 40°N 50°N Set 6:11 6:11 Rise 18:40 18:45 1	 40°N 50°N Set 6:30 6:22 Rise 19:40 19:53 Full Moon 13:15 2	 40°N 50°N Set 6:50 6:34 Rise 20:40 21:02 3 <i>First Day of Passover</i>	 40°N 50°N Set 7:12 6:47 Rise 21:42 22:13 4 <i>Joseph Lalande, noted for 18th century planetary tables, died 200 years ago</i>	 40°N 50°N Set 7:38 7:04 Rise 22:45 23:26 5	 40°N 50°N Set 8:09 7:26 Rise 23:48 -- 6 <i>Good Friday</i>	 40°N 50°N Rise -- 0:37 Set 8:46 7:56 7 Sunrise 6:35 6:24 Sunset 19:30 19:41 <i>Moon 1.5° SW of Antares best in W of N. America 7 am</i>
 40°N 50°N Rise 0:49 1:44 Set 9:33 8:38 8 <i>Easter Sunday</i> <i>David Rittenhouse, noted for 1st telescope in America, born 275 years ago</i>	 40°N 50°N Rise 1:46 2:41 Set 10:28 9:34 9	 40°N 50°N Rise 2:35 3:25 Set 11:32 10:43 Last Quarter 14:04 10 <i>Juno at opposition</i>	 40°N 50°N Rise 3:16 3:59 Set 12:42 12:02 11 <i>Venus 2.6° S of Pleiades visible soon after dark</i>	 40°N 50°N Rise 3:51 4:24 Set 13:56 13:26 12	 40°N 50°N Rise 4:21 4:43 Set 15:10 14:52 13	 40°N 50°N Rise 4:48 5:00 Set 16:26 16:18 14 Sunrise 6:24 6:10 Sunset 19:37 19:52
 40°N 50°N Rise 5:13 5:15 Set 17:42 17:46 15 <i>International Astronomy Week</i> <i>E. Manfredi, noted for term aberration, published banned book, 250 years ago</i> <i>John Hadley, inventor of 1st practical reflector, born 325 years ago</i>	 40°N 50°N Rise 5:39 5:30 Set 19:01 19:16 16	 40°N 50°N Rise 6:07 5:47 Set 20:21 20:49 New Moon 7:36 17	 40°N 50°N Rise 6:39 6:08 Set 21:43 22:23 18	 40°N 50°N Rise 7:18 6:36 Set 23:03 23:52 19	 40°N 50°N Rise 8:06 7:15 Set -- -- 20 <i>Edmond Halley married Mary Tooke, 325 years ago</i>	 40°N 50°N Set 0:15 1:09 Rise 9:03 8:09 21 Sunrise 6:14 5:56 Sunset 19:44 20:03 <i>International Astronomy Day</i> www.rasc.ca/astroday www.astroleague.org/astroday/astroday.html
 40°N 50°N Set 1:16 2:08 Rise 10:08 9:16 22 <i>Chris Hadfield was first Canadian to walk in space, 5 years ago</i> <i>Lyrid meteors peak 6 pm</i>	 40°N 50°N Set 2:04 2:50 Rise 11:17 10:32 23	 40°N 50°N Set 2:41 3:19 Rise 12:25 11:50 First Quarter 2:36 24	 40°N 50°N Set 3:11 3:40 Rise 13:31 13:05 25 <i>Encke discovered gap in Saturn's A Ring, 170 years ago</i> <i>Moon 1.2° to right of Saturn visible in W of N. America 5 am</i>	 40°N 50°N Set 3:36 3:55 Rise 14:34 14:18 26 <i>Moon occults Regulus visible in extreme W of N. America 6 am</i>	 40°N 50°N Set 3:57 4:08 Rise 15:34 15:27 27 <i>Harvard Observatory took first double star photo, 150 years ago</i>	 40°N 50°N Set 4:17 4:19 Rise 16:34 16:35 28 Sunrise 6:04 5:42 Sunset 19:51 20:14
 40°N 50°N Set 4:36 4:31 Rise 17:33 17:43 29	 40°N 50°N Set 4:56 4:42 Rise 18:33 18:52 30			The planets this month Mercury: not easily observed Venus: low in WNW after dark Mars: very low in ESE in morning twilight Jupiter: rises in ESE near midnight, low in S at dawn Saturn: high in SSW after dark, sets in WNW near 4 am	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. Eastern time is used, except for rise and set events and changes to/from daylight savings time, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages. Please see back pages for photo details and additional information about this Calendar.	MARCH 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 31 MAY 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



MAY

Wanted: One Broomstick!

Glowing a faint and ghostly blue, the Witch Head Nebula is a dusty gas cloud lying in the constellation Eridanus, just west of its likely illuminating star, Rigel, in Orion. By a process similar to the one that makes Earth's daytime sky blue, tiny dust particles in IC 2118 selectively reflect short, blue wavelengths of light.

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, except early in month</i></p> <p><i>Venus: low in WNW after dark</i></p> <p><i>Mars: very low in ESE in morning twilight</i></p> <p><i>Jupiter: rises in ESE at dusk, in SSW at dawn</i></p> <p><i>Saturn: in WSW after dark, sets in WNW near 2 am</i></p>		 <p>40°N 50°N Set 5:17 4:55 Rise 19:34 20:02</p> <p>1</p>	 <p>40°N 50°N Set 5:42 5:11 Rise 20:37 21:15 Full Moon 6:09</p> <p>2</p>	 <p>40°N 50°N Set 6:11 5:31 Rise 21:41 22:27</p> <p>3</p>	 <p>40°N 50°N Set 6:47 5:59 Rise 22:43 23:35</p> <p>4</p>	 <p>40°N 50°N Set 7:30 6:37 Rise 23:40 --</p> <p>5</p> <p>Sunrise 5:56 5:30 Sunset 19:58 20:24</p>
						<p>η-Aquarid meteors peak 7 am</p>
 <p>40°N 50°N Rise -- 0:35 Set 8:23 7:29</p> <p>6</p>	 <p>40°N 50°N Rise 0:31 1:23 Set 9:24 8:34</p> <p>7</p>	 <p>40°N 50°N Rise 1:15 2:00 Set 10:32 9:48</p> <p>8</p>	 <p>40°N 50°N Rise 1:51 2:27 Set 11:42 11:09</p> <p>9</p>	 <p>40°N 50°N Rise 2:21 2:47 Set 12:54 12:31 Last Quarter 0:27</p> <p>10</p>	 <p>40°N 50°N Rise 2:48 3:04 Set 14:06 13:54</p> <p>11</p>	 <p>40°N 50°N Rise 3:13 3:19 Set 15:19 15:18</p> <p>12</p> <p>Sunrise 5:48 5:19 Sunset 20:05 20:35</p>
			<p>Venus 1.6° N of M35 visible soon after dark</p>			
 <p>40°N 50°N Rise 3:38 3:34 Set 16:34 16:44</p> <p>13</p>	 <p>40°N 50°N Rise 4:04 3:50 Set 17:52 18:13</p> <p>14</p>	 <p>40°N 50°N Rise 4:33 4:08 Set 19:12 19:45</p> <p>15</p>	 <p>40°N 50°N Rise 5:08 4:32 Set 20:33 21:18 New Moon 15:27</p> <p>16</p>	 <p>40°N 50°N Rise 5:52 5:06 Set 21:51 22:43</p> <p>17</p>	 <p>40°N 50°N Rise 6:46 5:53 Set 22:59 23:53</p> <p>18</p>	 <p>40°N 50°N Rise 7:50 6:56 Set 23:54 --</p> <p>19</p> <p>Sunrise 5:42 5:09 Sunset 20:12 20:45</p>
<p>Mother's Day</p> <p>Texas Star Party, Fort Davis www.texasstarparty.org (through May 20)</p>						<p>Crescent Moon 1° N of Venus 11 pm</p>
 <p>40°N 50°N Set -- 0:43 Rise 8:59 8:12</p> <p>20</p>	 <p>40°N 50°N Set 0:37 1:18 Rise 10:10 9:31</p> <p>21</p>	 <p>40°N 50°N Set 1:11 1:43 Rise 11:19 10:50</p> <p>22</p>	 <p>40°N 50°N Set 1:38 2:01 Rise 12:24 12:05 First Quarter 17:03</p> <p>23</p>	 <p>40°N 50°N Set 2:01 2:15 Rise 13:26 13:16</p> <p>24</p>	 <p>40°N 50°N Set 2:21 2:27 Rise 14:26 14:25</p> <p>25</p>	 <p>40°N 50°N Set 2:41 2:38 Rise 15:25 15:33</p> <p>26</p> <p>Sunrise 5:37 5:01 Sunset 20:18 20:53</p>
	<p>Victoria Day (Canada)</p>				<p>Riverside Telescope Makers Conference, Big Bear, CA, www.rtmcastronomyexpo.org (through May 28)</p>	
 <p>40°N 50°N Set 3:00 2:49 Rise 16:25 16:41</p> <p>27</p>	 <p>40°N 50°N Set 3:21 3:02 Rise 17:25 17:51</p> <p>28</p>	 <p>40°N 50°N Set 3:45 3:17 Rise 18:28 19:02</p> <p>29</p>	 <p>40°N 50°N Set 4:13 3:36 Rise 19:32 20:15</p> <p>30</p>	 <p>40°N 50°N Set 4:46 4:02 Rise 20:35 21:25 Full Moon 21:04</p> <p>31</p>		<p>APRIL 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</p> <p>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</p>
	<p>Memorial Day (USA)</p> <p>Moon 2° below Spica best in S of N. America 12 am</p>		<p>Vesta at opposition</p>	<p>Today's Full Moon is a Blue Moon</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 and changes to/from daylight savings time, 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>



JUNE

Summer's Supernova Remnant

This colourful image of the Veil Nebula's eastern portion shows glowing clouds of shocked interstellar gas, piled up into filamentous shells from the blast of a supernova that occurred over 5000 years ago — part of a larger, supernova remnant also called the Cygnus Loop, a favourite summer hunting ground for amateur astronomers.

Photo by Serge Théberge

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 early in month</i></p> <p><i>Venus: very low in W after dark</i></p> <p><i>Mars: very low in E at dawn</i></p> <p><i>Jupiter: low in SSE after dark, low in SW at dawn</i></p> <p><i>Saturn: very low in W after dark, sets in WNW near midnight</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 and changes to/from daylight savings time, 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> <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>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </table> <p>JULY</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>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr> <tr><td>29</td><td>30</td><td>31</td><td></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</p> <p>Set 5:28 4:37</p> <p>Rise 21:35 22:29</p> <p>1</p>	<p>40°N 50°N</p> <p>Set 6:19 5:24</p> <p>Rise 22:28 23:21</p> <p>2</p> <p>Sunrise 5:33 4:55</p> <p>Sunset 20:23 21:01</p> <p><i>Mercury at greatest elongation E (23°) favourable evening view, best observed during about the past week</i></p>
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<p>40°N 50°N</p> <p>Set 7:18 6:26</p> <p>Rise 23:14 --</p> <p>3</p>	<p>40°N 50°N</p> <p>Set 8:24 7:39</p> <p>Rise 23:52 0:01</p> <p>4</p>	<p>40°N 50°N</p> <p>Rise -- 0:30</p> <p>Set 9:34 8:58</p> <p>5</p> <p><i>Jupiter at opposition</i></p>	<p>40°N 50°N</p> <p>Rise 0:24 0:53</p> <p>Set 10:44 10:19</p> <p>6</p>	<p>40°N 50°N</p> <p>Rise 0:51 1:10</p> <p>Set 11:55 11:40</p> <p>7</p>	<p>40°N 50°N</p> <p>Rise 1:16 1:25</p> <p>Set 13:06 13:01</p> <p>Last Quarter 7:43</p> <p>8</p> <p><i>Venus at greatest elongation E (45°)</i></p>	<p>40°N 50°N</p> <p>Rise 1:40 1:39</p> <p>Set 14:18 14:23</p> <p>9</p> <p>Sunrise 5:31 4:52</p> <p>Sunset 20:28 21:07</p> <p><i>2 shadows on Jupiter easiest in W of N. America 5:17 am</i></p>																																																																																				
<p>40°N 50°N</p> <p>Rise 2:04 1:54</p> <p>Set 15:31 15:48</p> <p>10</p>	<p>40°N 50°N</p> <p>Rise 2:31 2:11</p> <p>Set 16:48 17:16</p> <p>11</p>	<p>40°N 50°N</p> <p>Rise 3:03 2:32</p> <p>Set 18:07 18:47</p> <p>12</p> <p><i>Venus 1° N of M44 visible soon after dark</i></p>	<p>40°N 50°N</p> <p>Rise 3:42 3:00</p> <p>Set 19:26 20:15</p> <p>13</p>	<p>40°N 50°N</p> <p>Rise 4:30 3:40</p> <p>Set 20:38 21:32</p> <p>New Moon 23:13</p> <p>14</p>	<p>40°N 50°N</p> <p>Rise 5:29 4:35</p> <p>Set 21:40 22:32</p> <p>15</p>	<p>40°N 50°N</p> <p>Rise 6:37 5:47</p> <p>Set 22:29 23:14</p> <p>16</p> <p>Sunrise 5:31 4:50</p> <p>Sunset 20:31 21:11</p>																																																																																				
<p>40°N 50°N</p> <p>Rise 7:49 7:06</p> <p>Set 23:07 23:43</p> <p>17</p> <p><i>Father's Day</i></p> <p>Werner von Braun, German space scientist, died 30 years ago</p>	<p>40°N 50°N</p> <p>Rise 9:01 8:26</p> <p>Set 23:38 --</p> <p>18</p> <p>Alexander Herschel, 3rd generation British astronomer, died 100 years ago</p> <p><i>Moon occults Venus in daylight visible in parts of the NE of N. America 9 am</i></p> <p><i>Crescent Moon between Saturn and Venus 8 pm</i></p>	<p>40°N 50°N</p> <p>Set -- 0:04</p> <p>Rise 10:09 9:46</p> <p>19</p> <p><i>Pluto at opposition Crescent Moon occults Regulus visible in parts of the SE of N. America 10 pm</i></p>	<p>40°N 50°N</p> <p>Set 0:03 0:20</p> <p>Rise 11:14 11:00</p> <p>20</p>	<p>40°N 50°N</p> <p>Set 0:24 0:33</p> <p>Rise 12:15 12:11</p> <p>21</p> <p><i>Summer Solstice 2:06 pm</i></p>	<p>40°N 50°N</p> <p>Set 0:45 0:44</p> <p>Rise 13:15 13:20</p> <p>First Quarter 9:15</p> <p>22</p>	<p>40°N 50°N</p> <p>Set 1:04 0:56</p> <p>Rise 14:15 14:28</p> <p>23</p> <p>Sunrise 5:32 4:51</p> <p>Sunset 20:33 21:13</p>																																																																																				
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JULY

Stellar Forges at Work

This richly detailed image centres on the heart of the Milky Way. Directly above the brilliant central core is the Prancing Horse dark nebula. Dark streamers radiate to the left of Antares. The galactic plane is delineated by many bright emission nebulae and dark, obscuring clouds of dust — the galaxy's star-making machinery.

Photo by Klaus Brasch
































SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
 40°N 50°N Set 6:14 5:26 Rise 21:52 22:33 1	 40°N 50°N Set 7:24 6:45 Rise 22:26 22:58 2	 40°N 50°N Set 8:35 8:07 Rise 22:55 23:16 3	 40°N 50°N Set 9:47 9:29 Rise 23:21 23:32 4	 40°N 50°N Set 10:58 10:50 Rise 23:44 23:46 5	 40°N 50°N Set 12:09 12:11 Rise -- -- 6	 40°N 50°N Rise 0:08 0:01 Set 13:21 13:34 Last Quarter 12:54 Sunrise 5:38 4:59 Sunset 20:31 21:10 7
Canada Day Jocelyn Bell discovered first pulsar, CP1919, 40 years ago International Geophysical Year began, 50 years ago			Independence Day (USA) Mars Pathfinder landed and deployed Sojourner rover, 10 years ago		Earth at aphelion (152,097,100 km) 8 pm	
 40°N 50°N Rise 0:33 0:16 Set 14:35 14:59 8	 40°N 50°N Rise 1:02 0:35 Set 15:51 16:26 9	 40°N 50°N Rise 1:37 0:59 Set 17:08 17:53 10	 40°N 50°N Rise 2:20 1:33 Set 18:21 19:14 11	 40°N 50°N Rise 3:14 2:21 Set 19:26 20:20 12	 40°N 50°N Rise 4:18 3:25 Set 20:20 21:08 13	 40°N 50°N Rise 5:28 4:41 Set 21:02 21:42 New Moon 8:04 Sunrise 5:43 5:06 Sunset 20:29 21:05 14
			Joseph Lalande, noted for 18th-century planetary tables, born 275 years ago	Venus at greatest brilliancy		
 40°N 50°N Rise 6:40 6:03 Set 21:36 22:06 15	 40°N 50°N Rise 7:51 7:24 Set 22:03 22:24 16	 40°N 50°N Rise 8:58 8:40 Set 22:27 22:38 17	 40°N 50°N Rise 10:01 9:54 Set 22:47 22:51 18	 40°N 50°N Rise 11:03 11:04 Set 23:07 23:02 19	 40°N 50°N Rise 12:03 12:13 Set 23:27 23:14 20	 40°N 50°N Rise 13:03 13:22 Set 23:49 23:27 Sunrise 5:48 5:14 Sunset 20:24 20:58 21
			Gene Shoemaker, co-discoverer of comet that hit Jupiter, died 10 years ago		Mercury at greatest elongation W (20°)	The Dam Star Party, Fredericton, NB www.rascmoncton.ca (through Jul. 22)
 40°N 50°N Rise 14:05 14:32 Set -- 23:43 First Quarter 2:29 22	 40°N 50°N Set 0:13 -- Rise 15:07 15:44 23	 40°N 50°N Set 0:42 0:03 Rise 16:10 16:56 24	 40°N 50°N Set 1:18 0:31 Rise 17:13 18:05 25	 40°N 50°N Set 2:02 1:09 Rise 18:12 19:06 26	 40°N 50°N Set 2:55 2:01 Rise 19:04 19:56 27	 40°N 50°N Set 3:58 3:07 Rise 19:49 20:33 Sunrise 5:54 5:23 Sunset 20:18 20:49 28
						S. δ-Aquarid meteors peak 9 am
 40°N 50°N Set 5:07 4:25 Rise 20:26 21:01 Full Moon 20:48 29	 40°N 50°N Set 6:20 5:48 Rise 20:57 21:22 30	 40°N 50°N Set 7:34 7:12 Rise 21:24 21:39 31		The planets this month Mercury: very low in ENE in morning twilight in second half of month Venus: very low in W in evening twilight, lost near month's end Mars: rises in ENE near 1:30 am, in E at dawn Jupiter: in S after dark, sets in WSW near 3 am Saturn: very low in W in evening twilight, early in month	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. Eastern time is used, except for rise and set events and changes to/from daylight savings time, which are given in local time. Detailed instructions on adjusting times for location are given in the back pages. Please see back pages for photo details and additional information about this Calendar.	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
						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



AUGUST

Sparkling Fossils

M92 is a brilliant swarm of a few hundred thousand stars discovered in 1777 by J.E. Bode and rediscovered in 1781 by Charles Messier. The globular cluster has a visual magnitude of 6.4 so it is just barely visible to the unaided eye. It lies 26,000 light years away and its age, 12-14 billion years, approaches that of the universe itself. Photo by Paul Mortfeld and Stef Cancelli

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p>Mercury: very low in ENE in morning twilight very early in month</p> <p>Venus: emerges in morning twilight in E, late in month</p> <p>Mars: rises in ENE near 12:30 am, in E at dawn</p> <p>Jupiter: low in SSW after dark, sets in WSW near 1 am</p> <p>Saturn: not easily observed</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 and changes to/from daylight savings time, 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>JULY 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>SEPTEMBER 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 Set 8:46 8:35 Rise 21:49 21:54</p> <p>1</p>	 <p>40°N 50°N Set 9:59 9:58 Rise 22:12 22:08</p> <p>2</p>	 <p>40°N 50°N Set 11:11 11:22 Rise 22:37 22:23</p> <p>3</p>	 <p>40°N 50°N Set 12:25 12:47 Rise 23:05 22:40</p> <p>4</p> <p>Sunrise 6:01 5:33 Sunset 20:11 20:38</p>
 <p>40°N 50°N Set 13:41 14:13 Rise 23:38 23:02 Last Quarter 17:20</p> <p>5</p>	 <p>40°N 50°N Set 14:57 15:40 Rise -- 23:32</p> <p>6</p> <p>Civic Holiday (Canada)</p>	 <p>40°N 50°N Rise 0:17 -- Set 16:10 17:01</p> <p>7</p>	 <p>40°N 50°N Rise 1:06 0:14 Set 17:17 18:11</p> <p>8</p>	 <p>40°N 50°N Rise 2:05 1:11 Set 18:14 19:05</p> <p>9</p> <p>Starfest, Mount Forest, ON www.nyaa-starfest.com (through Aug. 12)</p> <p>Saskatchewan Star Party, Cypress Hills www.rasc.ca/saskatoon (through Aug. 12)</p>	 <p>40°N 50°N Rise 3:13 2:23 Set 18:59 19:43</p> <p>10</p> <p>Stellafane Convention, Springfield, VT www.stellafane.com (through Aug. 12)</p>	 <p>40°N 50°N Rise 4:23 3:42 Set 19:35 20:09</p> <p>11</p> <p>Sunrise 6:07 5:43 Sunset 20:02 20:26</p> <p>Mount Kobau Star Party, Osoyoos, BC www.mksp.ca (through Aug. 19)</p> <p>Asaph Hall discovered Deimos, satellite of Mars, 130 years ago</p>
 <p>40°N 50°N Rise 5:34 5:02 Set 20:04 20:29 New Moon 19:02</p> <p>12</p> <p>Enterprise was first shuttle to fly free, 30 years ago</p>	 <p>40°N 50°N Rise 6:42 6:21 Set 20:29 20:44</p> <p>13</p> <p>Perseid meteors peak Neptune at opposition 1 am</p>	 <p>40°N 50°N Rise 7:47 7:35 Set 20:51 20:57</p> <p>14</p>	 <p>40°N 50°N Rise 8:50 8:47 Set 21:11 21:09</p> <p>15</p>	 <p>40°N 50°N Rise 9:51 9:57 Set 21:31 21:21</p> <p>16</p>	 <p>40°N 50°N Rise 10:51 11:06 Set 21:52 21:33</p> <p>17</p> <p>Nova East, Smiley's Provincial Park, NS halifax.rasc.ca/ne (through Aug. 19)</p> <p>Asaph Hall discovered Phobos, satellite of Mars, 130 years ago</p>	 <p>40°N 50°N Rise 11:52 12:16 Set 22:15 21:48</p> <p>18</p> <p>Sunrise 6:14 5:54 Sunset 19:53 20:13</p> <p>Venus in inferior conjunction</p>
 <p>40°N 50°N Rise 12:54 13:27 Set 22:42 22:06</p> <p>19</p>	 <p>40°N 50°N Rise 13:57 14:39 Set 23:14 22:30 First Quarter 19:54</p> <p>20</p> <p>Voyager 2 launched, 30 years ago</p>	 <p>40°N 50°N Rise 14:59 15:49 Set 23:53 23:02</p> <p>21</p> <p>Saturn in conjunction with the Sun Moon 1.5° S of Antares best in SE of N. America 9 pm</p>	 <p>40°N 50°N Rise 15:59 16:53 Set -- 23:47</p> <p>22</p>	 <p>40°N 50°N Set 0:42 -- Rise 16:54 17:48</p> <p>23</p>	 <p>40°N 50°N Set 1:40 0:47 Rise 17:41 18:30</p> <p>24</p>	 <p>40°N 50°N Set 2:46 2:00 Rise 18:21 19:01</p> <p>25</p> <p>Sunrise 6:21 6:04 Sunset 19:43 19:59</p>
 <p>40°N 50°N Set 3:58 3:21 Rise 18:55 19:25</p> <p>26</p>	 <p>40°N 50°N Set 5:12 4:45 Rise 19:24 19:44</p> <p>27</p>	 <p>40°N 50°N Set 6:26 6:11 Rise 19:50 20:00 Full Moon 6:35</p> <p>28</p> <p>Total Lunar Eclipse Moon sets during eclipse in N. America, best in W 6:37 am</p>	 <p>40°N 50°N Set 7:41 7:36 Rise 20:15 20:14</p> <p>29</p>	 <p>40°N 50°N Set 8:56 9:02 Rise 20:40 20:29</p> <p>30</p>	 <p>40°N 50°N Set 10:11 10:29 Rise 21:07 20:46</p> <p>31</p>	

































SEPTEMBER

In a Different Light

The familiar Dumbbell Nebula is seen here in a false colour composite image. The planetary nebula was imaged using three different narrowband filters to isolate the light emitted from sulphur, hydrogen, and oxygen. The images were combined to make a single image showing extensive structural detail in the nebula.

Photo by Paul Mortfield and Stef Cancelli

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: visible with difficulty very low in WSW in evening twilight in second half of month</i></p> <p><i>Venus: very low in E at dawn</i></p> <p><i>Mars: rises in ENE near 11:30 pm, high in ESE at dawn</i></p> <p><i>Jupiter: very low in SW after dark, sets in WSW near 11 pm</i></p> <p><i>Saturn: very low in E in morning twilight, in second half of 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 and changes to/from daylight savings time, 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>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 31</p> <p>OCTOBER 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> Set 11:28 11:57 Rise 21:39 21:07</p> <p>Sunrise 6:27 6:15 Sunset 19:32 19:44</p> <p>1</p>
<p> Set 12:46 13:26 Rise 22:17 21:34</p> <p>2</p>	<p> Set 14:02 14:51 Rise 23:03 22:12 Last Quarter 22:32</p> <p>3</p> <p>Labour Day</p> <p>Moon occults the Pleiades Pallas at opposition 2 am</p>	<p> Set 15:11 16:05 Rise 23:59 23:05</p> <p>4</p>	<p> Set 16:10 17:03</p> <p>5</p> <p>Voyager 1 launched, 30 years ago</p>	<p> Rise 1:03 0:11 Set 16:58 17:45</p> <p>6</p> <p>Alberta Star Party, Caroline, AB calgary.rasc.ca/asp.htm (through Sep. 9)</p>	<p> Rise 2:12 1:28 Set 17:36 18:14</p> <p>7</p> <p>Annual Algonquin Adventure Algonquin Park, ON www.toronto.rasc.ca (through Sep. 9)</p>	<p> Rise 3:22 2:47 Set 18:07 18:35</p> <p>Sunrise 6:34 6:25 Sunset 19:21 19:29</p> <p>8</p>
<p> Rise 4:30 4:05 Set 18:33 18:52</p> <p>9</p> <p>Uranus at opposition</p>	<p> Rise 5:35 5:20 Set 18:55 19:05</p> <p>10</p>	<p> Rise 6:38 6:32 Set 19:15 19:17 New Moon 8:44</p> <p>11</p> <p>Northern Prairie Starfest near Tofield, AB edmontonrasc.com/hps.html (through Sep. 17)</p> <p>Partial Solar Eclipse visible in S of S. America and parts of Antarctica</p>	<p> Rise 7:40 7:42 Set 19:35 19:28</p> <p>12</p>	<p> Rise 8:40 8:52 Set 19:56 19:41</p> <p>13</p> <p>First day of Ramadan Rosh Hashanah</p>	<p> Rise 9:41 10:02 Set 20:18 19:54</p> <p>14</p>	<p> Rise 10:42 11:12 Set 20:43 20:11</p> <p>Sunrise 6:41 6:35 Sunset 19:09 19:14</p> <p>15</p>
<p> Rise 11:45 12:24 Set 21:13 20:32</p> <p>16</p> <p>Saturn 2° E of Regulus visible at dawn, easier later in month</p>	<p> Rise 12:47 13:34 Set 21:49 21:00</p> <p>17</p> <p>Andrew Common detected the transit of a comet across the Sun, 125 years ago</p>	<p> Rise 13:47 14:40 Set 22:33 21:40</p> <p>18</p> <p>Voyager 1 took first photo of Earth and Moon in crescent phase, 30 years ago</p>	<p> Rise 14:43 15:38 Set 23:26 22:32 First Quarter 12:48</p> <p>19</p>	<p> Rise 15:33 16:24 Set -- 23:37</p> <p>20</p>	<p> Set 0:28 -- Rise 16:15 16:59</p> <p>21</p>	<p> Set 1:36 0:53 Rise 16:51 17:26</p> <p>Sunrise 6:47 6:46 Sunset 18:58 18:59</p> <p>22</p> <p>Yom Kippur</p>
<p> Set 2:47 2:15 Rise 17:22 17:46</p> <p>23</p> <p>Fall Equinox 5:51 am Venus at greatest brilliancy</p>	<p> Set 4:01 3:40 Rise 17:49 18:04</p> <p>24</p>	<p> Set 5:15 5:05 Rise 18:15 18:19</p> <p>25</p> <p>Atlantis shuttle launch was visible from N.S., 10 years ago</p>	<p> Set 6:30 6:31 Rise 18:40 18:34 Full Moon 15:45</p> <p>26</p> <p>Today's Full Moon is the Harvest Moon</p>	<p> Set 7:47 8:00 Rise 19:07 18:50</p> <p>27</p>	<p> Set 9:06 9:30 Rise 19:37 19:10</p> <p>28</p>	<p> Set 10:27 11:02 Rise 20:14 19:35</p> <p>Sunrise 6:54 6:56 Sunset 18:46 18:43</p> <p>29</p> <p>Mercury at greatest elongation E (26°)</p>
<p> Set 11:46 12:32 Rise 20:58 20:11</p> <p>30</p>						



































NOVEMBER

A Less-Observed Moon

"O, swear not by the moon, th' inconstant moon, That monthly changes in her circled orb, Lest that thy love prove likewise variable." So declared Shakespeare's Juliet in the early dawn to her Romeo. These strikingly crisp images present the late-rising lunar phases — last quarter to waning crescent — that are less-frequently observed.

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 all month, best near mid-month</p> <p>Venus: in ESE at dawn</p> <p>Mars: rises in NE near 7:30 pm, high in WSW at dawn</p> <p>Jupiter: very low in SW in evening twilight, early in month</p> <p>Saturn: rises in ENE near 12:30 am, high in SE 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 and changes to/from daylight savings time, 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 14:12 14:46 Rise -- 23:43 Last Quarter 17:18</p> <p>1</p>	 <p>40°N 50°N Rise 0:13 -- Set 14:41 15:05</p> <p>2</p>	 <p>40°N 50°N Rise 1:20 0:59 Set 15:05 15:21</p> <p>3</p> <p>Sunrise 7:31 7:53 Sunset 17:56 17:34</p> <p>Moon occults Regulus visible in parts of the SW of N. America 7 am</p>
 <p>40°N 50°N Rise 1:24 1:12 Set 14:27 14:33</p> <p>4</p> <p>Daylight Saving Time ends 2 am 2 shadows on Jupiter visible in W of N. America, best in SW 8:27 pm</p>	 <p>40°N 50°N Rise 2:25 2:22 Set 14:47 14:45</p> <p>5</p> <p>Cr. Moon 3° to right of Venus S. Taurid meteors peak 6 am 5 pm</p>	 <p>40°N 50°N Rise 3:25 3:31 Set 15:07 14:57</p> <p>6</p>	 <p>40°N 50°N Rise 4:25 4:40 Set 15:28 15:10</p> <p>7</p>	 <p>40°N 50°N Rise 5:26 5:49 Set 15:51 15:25</p> <p>8</p> <p>Zodiacal Light visible in E before morning twilight for next two weeks Mercury at greatest elongation W (19°) best morning view in 2007, best observed during about the next week</p>	 <p>40°N 50°N Rise 6:27 7:00 Set 16:18 15:43 New Moon 18:03</p> <p>9</p> <p>Ceres at opposition Farthest Lunar Apogee of 2007</p>	 <p>40°N 50°N Rise 7:29 8:11 Set 16:50 16:07</p> <p>10</p> <p>Sunrise 6:39 7:04 Sunset 16:48 16:23</p>
 <p>40°N 50°N Rise 8:31 9:19 Set 17:29 16:39</p> <p>11</p> <p>Remembrance Day (Canada) Veterans Day (USA)</p>	 <p>40°N 50°N Rise 9:29 10:22 Set 18:15 17:22</p> <p>12</p> <p>John Goodricke suggested Algol's dimming was due to orbiting body, 225 years ago N. Taurid meteors peak 4 pm</p>	 <p>40°N 50°N Rise 10:22 11:15 Set 19:10 18:18</p> <p>13</p> <p>2 shadows on Jupiter visible in SE of N. America 6:29 pm</p>	 <p>40°N 50°N Rise 11:08 11:56 Set 20:11 19:24</p> <p>14</p>	 <p>40°N 50°N Rise 11:47 12:27 Set 21:16 20:38</p> <p>15</p>	 <p>40°N 50°N Rise 12:19 12:51 Set 22:24 21:55</p> <p>16</p>	 <p>40°N 50°N Rise 12:48 13:10 Set 23:33 23:13 First Quarter 17:32 Sunrise 6:47 7:16 Sunset 16:42 16:14</p> <p>17</p> <p>Leonid meteors peak 11 pm</p>
 <p>40°N 50°N Rise 8:31 9:19 Set 13:13 13:26</p> <p>18</p>	 <p>40°N 50°N Set 0:42 0:33 Rise 13:37 13:41</p> <p>19</p>	 <p>40°N 50°N Set 1:53 1:54 Rise 14:02 13:56</p> <p>20</p>	 <p>40°N 50°N Set 3:07 3:19 Rise 14:28 14:12</p> <p>21</p>	 <p>40°N 50°N Set 4:24 4:48 Rise 14:59 14:32</p> <p>22</p> <p>Thanksgiving Day (USA) Asaph Hall, discoverer of Mars' satellites, died 100 years ago</p>	 <p>40°N 50°N Set 5:46 6:20 Rise 15:36 14:59</p> <p>23</p> <p>ESA launched its first satellite Meteosat 1, 30 years ago</p>	 <p>40°N 50°N Set 7:08 7:53 Rise 16:23 15:36 Full Moon 9:30 Sunrise 6:55 7:26 Sunset 16:38 16:06</p> <p>24</p> <p>Moon occults the Pleiades best in W of N. America 8 am</p>
 <p>40°N 50°N Set 8:25 9:18 Rise 17:22 16:29</p> <p>25</p>	 <p>40°N 50°N Set 9:33 10:25 Rise 18:30 17:39</p> <p>26</p>	 <p>40°N 50°N Set 10:27 11:13 Rise 19:44 19:00</p> <p>27</p> <p>Moon 1.4° N of Mars 12 am</p>	 <p>40°N 50°N Set 11:09 11:46 Rise 20:58 20:23</p> <p>28</p>	 <p>40°N 50°N Set 11:41 12:09 Rise 22:08 21:44</p> <p>29</p>	 <p>40°N 50°N Set 12:08 12:26 Rise 23:14 23:00</p> <p>30</p>	


































DECEMBER

Cosmic Christmas Tree

A northern conifer points to the North Celestial Pole as the silent stars wheel around the sky, revealing Earth's rotation. The stars of the Big Dipper head for the horizon behind the tree, while those of the Little Dipper trail over and to the upper left of the tree. Polaris is the bright star with no trail to the upper right of the treetop.

Photo by Ron Berard

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>The planets this month</p> <p><i>Mercury: not easily observed</i></p> <p><i>Venus: low in SE at dawn</i></p> <p><i>Mars: rises in NE in evening twilight, in W at dawn</i></p> <p><i>Jupiter: not easily observed</i></p> <p><i>Saturn: rises in ENE near 10:30 pm, high in SSW 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 and changes to/from daylight savings time, 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>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</p> <p>JANUARY S M T W T F S</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> Set 12:31 12:40 Rise -- -- Last Quarter 7:44 Sunrise 7:02 7:36 Sunset 16:35 16:01</p> <p>1</p>
<p> Rise 0:17 0:12 Set 12:52 12:52</p> <p>2</p>	<p> Rise 1:18 1:21 Set 13:12 13:04</p> <p>3</p>	<p> Rise 2:18 2:30 Set 13:32 13:17</p> <p>4</p>	<p> Rise 3:18 3:39 Set 13:55 13:31</p> <p>5</p>	<p> Rise 4:19 4:49 Set 14:21 13:48</p> <p>6</p>	<p> Rise 5:21 6:00 Set 14:51 14:10</p> <p>7</p>	<p> Rise 6:23 7:09 Set 15:28 14:40</p> <p>8</p> <p>Sunrise 7:09 7:45 Sunset 16:35 15:58</p>
<p> Rise 7:23 8:15 Set 16:12 15:20 New Moon 12:40</p> <p>9</p>	<p> Rise 8:18 9:11 Set 17:05 16:12</p> <p>10</p>	<p> Rise 9:06 9:56 Set 18:05 17:16</p> <p>11</p>	<p> Rise 9:47 10:30 Set 19:10 18:29</p> <p>12</p>	<p> Rise 10:21 10:56 Set 20:17 19:45</p> <p>13</p>	<p> Rise 10:50 11:16 Set 21:24 21:02</p> <p>14</p>	<p> Rise 11:16 11:32 Set 22:32 22:19</p> <p>15</p> <p>Sunrise 7:14 7:52 Sunset 16:36 15:58</p>
<p> Rise 11:40 11:46 Set 23:40 23:37</p> <p>16</p>	<p> Rise 12:03 12:01 Set -- -- First Quarter 5:17</p> <p>17</p>	<p> Set 0:50 0:57 Rise 12:27 12:15</p> <p>18</p>	<p> Set 2:02 2:21 Rise 12:55 12:33</p> <p>19</p>	<p> Set 3:19 3:48 Rise 13:28 12:55</p> <p>20</p>	<p> Set 4:38 5:19 Rise 14:09 13:26</p> <p>21</p>	<p> Set 5:57 6:46 Rise 15:01 14:10</p> <p>22</p> <p>Sunrise 7:19 7:56 Sunset 16:38 16:01</p>
<p>Edward Barnard, noted for rapid proper motion of Barnard's star, born 150 years ago</p> <p> Set 7:09 8:02 Rise 16:04 15:11 Full Moon 20:16</p> <p>23</p>	<p> Set 8:11 9:00 Rise 17:17 16:29</p> <p>24</p>	<p> Set 8:59 9:41 Rise 18:33 17:54</p> <p>25</p>	<p> Set 9:37 10:09 Rise 19:47 19:18</p> <p>26</p>	<p> Set 10:07 10:29 Rise 20:57 20:39</p> <p>27</p>	<p> Set 10:32 10:45 Rise 22:04 21:55</p> <p>28</p>	<p> Set 10:54 10:58 Rise 23:07 23:07</p> <p>29</p> <p>Sunrise 7:21 7:58 Sunset 16:43 16:06</p>
<p>Pierre Janssen, first to routinely do solar photography, died 100 years ago</p> <p>Jupiter in conjunction with the Sun</p> <p>Moon occults Mars visible in extreme NW of N. America 9 pm</p> <p> Set 11:15 11:10 Rise -- --</p> <p>30</p>	<p>Mars at opposition</p> <p> Rise 0:08 0:17 Set 11:36 11:23 Last Quarter 2:51</p> <p>31</p>	<p>Christmas Day</p>	<p>Boxing Day (Canada)</p>	<p>Moon 0.9° S of Regulus best in E of N. America 11 pm</p>	<p>Stellar astrophysicist, Arthur Eddington, born 125 years ago</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 RASC member Alister Ling (see www3.telus.net/public/aling/lunarcalf/lunarcalf.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 40° 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 or events 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 about 4500 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* (available in French as "Explorons") is an astronomy teacher's guide.

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 mostly generated using custom software written in the Fortran and PostScript programming languages and kindly provided to the editor by **Dr. Rajiv Gupta**. Some minor modifications to this software were made by the editor.

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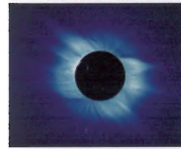
Cover/May (*Wanted: One Broomstick!*): Composite image formed using *Maxim DL* and *Photoshop* from fifteen 6-minute exposures at ISO 1600 on a Canon 20Da digital SLR camera using a 76-mm f/4 Borg refractor; taken on January 1, 2006 at the Arizona Sky Village, AZ, USA (Jack Newton).



January (*Hide-and-Seek Galaxy*): Composite image made from 6 exposures of 10 minutes in each of red, green, and blue filters on a SBIG ST-10XME CCD camera using a Vixen R200SS 8-inch f/4.6 Newtonian telescope (with coma-corrector); software used included *Maxim DL*, *CCDSoft*, *ImagesPlus*, *PixInsight*, *Registax*, *Photoshop CS*, and *NeatImage*; taken on Oct. 29, 2005 from Thornbury, ON (Serge Théberge).



February (*Showcase in Monoceros*): Composite image formed using *Maxim DL* and *Photoshop* from 19 six-minute exposures at ISO 1600 on a Canon 20Da digital SLR camera using a 77-mm f/4 Borg refractor; taken on Jan. 30, 2006 at the Arizona Sky Village, AZ, USA (Jack Newton).



March (*Almost as Good as Being There*): Composite image formed, using a technique described in the April 2006 issue of *Sky and Telescope magazine*, from about 45 images of varying exposures at ISO 100 on a Canon Digital Rebel XT digital SLR camera using a 90-mm f/5.6 Takahashi refractor; software used included *RegiStax*, *ImagesPlus*, and *Photoshop*; taken on Mar. 29, 2006 at El Sallum, Egypt (Leslie Marczi).



April (*Hail, Boppl!*): 90-second exposure on Kodak Elite 100 transparency film using an 8-inch f/1.5 Schmidt camera; taken on Apr. 1, 1997 from dark skies west of Calgary, Alberta (John Mirtle).



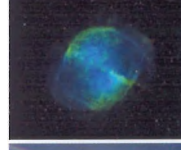
June (*Summer's Supernova Remnant*): Composite image made from 6, 5, and 5 exposures of 10 minutes in red, green, and blue filters respectively on a SBIG ST-10XME CCD camera using a Vixen R200SS 8-inch f/4.6 Newtonian telescope (with coma-corrector); software used included *Maxim DL*, *CCDSoft*, *ImagesPlus*, *PixInsight*, and *Photoshop CS*; taken on Oct. 1, 2005 from Thornbury, ON (Serge Théberge).



July (*Stellar Forges at Work*): 20-minute exposure on Kodak Ektachrome 200 transparency film using a 24-mm lens at f/4; taken in May 2000 from Siding Spring, Australia (Klaus Brasch).



August (*Sparkling Fossils*): Composite image made from 15 minutes exposures in each of red, green, and blue filters on a SBIG ST-10XME CCD camera using an RCOS 16-inch f/5.9 Ritchey-Chretien telescope; software used included *Maxim DL*, *CCDStack*, *PixInsight*, and *Photoshop*; taken on Jun. 7, 2005 from Toronto, ON (Paul Mortfield and Stef Cancelli).



September (*In a Different Light*): Composite image made from 1 hour exposures in each of SII (673nm), H α (656nm), and OIII (500nm) 6nm bandwidth filters on a SBIG ST-10XME CCD camera using an RCOS 16-inch f/5.9 Ritchey-Chretien telescope; the "Hubble" palette was used (Red=SII, Green=H α , Blue=OIII); software used included *Maxim DL*, *CCDStack*, *PixInsight*, and *Photoshop*; taken on Jul. 3 and 16, 2005 from Toronto, ON (Paul Mortfield and Stef Cancelli).



October (*Woolsthorpe Rainbow*): An exposure on Kodachrome 64 transparency film using a 28-mm lens; taken on Oct. 7, 1979 at Woolsthorpe Manor, Woolsthorpe-by-Colsterworth, Lincolnshire, England (Roy Bishop).



November (*A Less-Observed Moon*): Composite image formed using *Photoshop* from four exposures at ISO 100 on a Canon 20Da digital SLR camera using a 5-inch f/6 Astro-Physics refractor working at f/12; taken on successive mornings between Aug. 26 to 29, 2005 (Alan Dyer).



December (*Cosmic Christmas Tree*): 35-minute exposure on Fuji Provia F (ISO 400) transparency film using a 28-mm lens set at f/5.6; scene was illuminated with a photo flash and an LED flood lamp; taken in the Milne Ridge area, east of Beausejour, MB (Ron Berard).

2007

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



2008

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

<i>Saturn in conjunction with the Sun</i> <i>Moon 1.5° S of Antares</i> <i>best in SE of N. America</i>		9 pm	
	40°N 50°N	28	
	Set 6:26 6:11		
	Rise 19:50 20:00		
	Full Moon 6:35		
<i>Total Lunar Eclipse</i> <i>Moon sets during eclipse in N. America, best in W</i>		6:37 am	

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