

## THE STROKE OF AN OAR GIVEN IN TRUE TIME'

Appendix B-A correlation between the Gregorian and Martian Calendars for the few years surrounding the composition of this article.

Table B. 1 - Julian Day, Gregorian Date, and UT at 0 h Airy-0 Time on the First Day of the Martian Month
MY 3572-3578

| Martian Year |  | Month | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Offset* | 0 | 56 | 112 | 168 | 224 | 280 | 336 | 392 | 458 | 504 | 560 | 616 |
| MY | 3572 | JD | 2453070.187 | 127.727 | 185.266 | 242.806 | 300.345 | 357.885 | 415.424 | 472.964 | 530.503 | 588.043 | 645.582 | 703.122 |
| ADM | 1067 | AD | 2004 | 2004 | 2004 | 2004 | 2005 | 2005 | 2005 | 2005 | 2005 | 2005 | 2005 | 2006 |
| Cyc / L | $1 / \mathrm{d}$ | Date | May 20 | July 17 | Sep 12 | Nov 9 | Jan 5 | Mar 4 | Apr 30 | Jun 27 | Aug 24 | Oct 20 | Dec 17 | Feb 12 |
| Day | Thu | UT | 16:29 | 5:26 | 18:23 | 7:20 | 20:16 | 9:13 | 22:10 | 11:07 | 0:04 | 13:01 | 1:58 | 14:55 |
| JDM* | 2387436.5 | Day | Fri | Sun | Mon | Wed | Thu | Sat | Sun | Tue | Thu | Fri | Sun | Mon |
| MY | 3573 | JD | 2453756.551 | 814.091 | 871.630 | 929.170 | 986.709 | 044.249 | 101.788 | 159.328 | 216.867 | 274.407 | 331.946 | 389.486 |
| ADM | 1068 | AD | 2006 | 2006 | 2006 | 2006 | 2006 | 2007 | 2007 | 2007 | 2007 | 2007 | 2007 | 2007 |
| Cyc / L | 2 / a | Date | Apr 7 | Jun 3 | Jul 31 | Sep 26 | Nov 23 | Jan 19 | Mar 18 | May 14 | Jul 11 | Sep 6 | Nov 3 | Dec 30 |
| Day | Sun | UT | 1:13 | 14:10 | 3:07 | 16:04 | 5:01 | 17:58 | 6:55 | 19:52 | 8:48 | 21:45 | 10:42 | 23:39 |
| JDM | 2388104.5 | Day | Sat | Sun | Tue | Wed | Fri | Sat | Mon | Tue | Thu | Fri | Sun | Mon |

Table B. 1 - Julian Day, Gregorian Date, and UT at 0 h Airy- 0 Time on the First Day of the Martian Month MY 3572-3578

| Martian Year |  | Month | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MY | 3574 | JD | 2454443.943 | 501.482 | 559.022 | 616.561 | 674.101 | 731.640 | 789.180 | 846.719 | 904.259 | 961.798 | 019.338 | 076.877 |
| ADM | 1069 | AD | 2008 | 2008 | 2008 | 2008 | 2008 | 2008 | 2009 | 2009 | 2009 | 2009 | 2009 | 2009 |
| Cyc / L | $3 / \mathrm{d}$ | Date | Feb 23 | Apr 20 | Jun 17 | Aug 14 | Oct 10 | Dec 7 | Feb 2 | Apr 1 | May 28 | Jul 25 | Sep 20 | Nov 17 |
| Day | Thu | UT | 10:37 | 23:34 | 12:31 | 1:28 | 14:25 | 3:22 | 16:19 | 5:15 | 18:12 | 7:09 | 20:06 | 9:03 |
| JDM | 2388773.5 | Day | Sun | Mon | Wed | Fri | Sat | Mon | Tue | Thu | Fri | Sun | Mon | Wed |
| MY | 3575 | JD | 2455130.307 | 187.847 | 245.386 | 302.926 | 360.465 | 418.005 | 475.544 | 533.084 | 590.623 | 648.163 | 705.702 | 763.242 |
| ADM | 1070 | AD | 2010 | 2010 | 2010 | 2010 | 2010 | 2010 | 2010 | 2011 | 2011 | 2011 | 2011 | 2011 |
| Cyc / L | 4 / A | Date | Jan 9 | Mar 8 | May 4 | Jul 1 | Aug 27 | Oct 24 | Dec 21 | Feb 16 | Apr 15 | Jun 11 | Aug 8 | Dec 4 |
| Day | Sun | UT | 19:22 | 8:18 | 21:15 | 10:12 | 23:09 | 12:06 | 1:03 | 14:00 | 2:57 | 15:54 | 4:51 | 17:47 |
| JDM | 2389441.5 | Day | Sun | Tue | Wed | Fri | Sat | Mon | Wed | Thu | Sat | Sun | Tue | Wed |
| MY | 3576 | JD | 2455817.699 | 875.238 | 932.778 | 990.317 | 047.857 | 105.396 | 162.936 | 220.475 | 278.015 | 335.554 | 393.094 | 450.633 |
| ADM | 1071 | AD | 2011 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2013 | 2013 | 2013 | 2013 | 2013 |
| Cyc / L | 5/d | Date | Nov 28 | Jan 24 | Mar 22 | May 18 | Jul 15 | Sep 10 | Nov 7 | Jan 3 | Mar 2 | Apr 29 | Jun 25 | Aug 22 |
| Day | Thu | UT | 4:46 | 17:42 | 6:39 | 19:36 | 8:33 | 21:30 | 10:27 | 23:24 | 12:21 | 1:18 | 14:15 | 3:11 |
| JDM | 2390110.5 | Day | Tue | Wed | Fri | Sat | Mon | Tue | Thu | Fri | Sun | Tue | Wed | Fri |
| MY | 3577 | JD | 2456504.063 | 561.602 | 619.142 | 676.681 | 734.221 | 791.760 | 849.300 | 906.839 | 964.379 | 021.918 | 079.458 | 136.997 |
| ADM | 1072 | AD | 2013 | 2013 | 2014 | 2014 | 2014 | 2014 | 2014 | 2014 | 2015 | 2015 | 2015 | 2015 |
| Cyc / L | 6 / A | Date | Oct 14 | Dec 11 | Feb 6 | Apr 5 | Jun 1 | Jul 29 | Sep 24 | Nov 21 | Jan 17 | Mar 16 | May 12 | Jul 9 |
| Day | Sun | UT | 13:30 | 2:27 | 15:24 | 4:21 | 17:18 | 6:14 | 19:11 | 8:08 | 21:05 | 10:02 | 22:59 | 11:56 |
| JDM | 2390778.5 | Day | Tue | Thu | Fri | Sun | Mon | Wed | Thu | Sat | Sun | Tue | Wed | Fri |
| MY | 3578 | JD | 2457191.454 | 248.994 | 306.533 | 364.073 | 421.612 | 479.152 | 536.692 | 594.231 | 651.771 | 709.310 | 766.850 | 824.389 |
| ADM | 1073 | AD | 2015 | 2015 | 2015 | 2016 | 2016 | 2016 | 2016 | 2016 | 2016 | 2017 | 2017 | 2017 |
| Cyc / L | $7 / \mathrm{d}$ | Date | Sep 1 | Oct 29 | Dec 26 | Feb 21 | Apr 19 | Jun 15 | Aug 12 | Oct 8 | Dec 5 | Jan 31 | Mar 30 | May 26 |
| Day | Wed | UT | 22:54 | 11:51 | 0:48 | 13:45 | 2:41 | 15:38 | 4:35 | 17:32 | 6:29 | 19:26 | 8:23 | 21:20 |
| JDM | 2391447.5 | Day | Wed | Fri | Sun | Mon | Wed | Thu | Sat | Sun | Tue | Wed | Fri | Sat |

## Notes:

For each Martian Year (MY), the year AD-Martian (ADM), the year of the 22 -year Intercalary Cycle and Dominical Letter (Cyc / L), day of the first day of every month (Day), and Julian Day-Martian (JDM) are given for March 1 of the given year. At the head of the table, an offset for JDM at 0 h Airy is given for the first day of every month. In each column under the heading of the Martian month, is given the JD, Date, and UT at Greenwich for 0 h Airy for the first day of
the month, as well as the day of the week at Greenwich. To save space, the JDM is truncated for the months April through February, and the four leading digits are omitted.

To find the Earth date and UT for any Martian date in a given Martian month, increment the Earth calendar day by one, and the UT by 00:39:35.244 for each additional Martian day after the first of the month.
*To find the JDM of the first day of the given Martian month, add the Offset for the month to the JDM for the given year.

Table B. 2 - JDM, Mars Date, and Airy-0 Time at 0 h UT on the First Day of the Month Gregorian, Years 2005-2015

| Gregorian |  | Month |  | Feb <br> 31 | $\begin{array}{r} \text { Mar } \\ 59 \\ 60 \end{array}$ | $\begin{array}{r} \text { Apr } \\ 90 \\ 91 \end{array}$ | $\begin{array}{r} \text { May } \\ 120 \\ 121 \end{array}$ | $\begin{array}{r} \text { Jun } \\ 151 \\ 152 \end{array}$ | $\begin{gathered} \text { Jul } \\ 181 \\ 182 \end{gathered}$ | $\begin{array}{r} \text { Aug } \\ 212 \\ 213 \end{array}$ | $\begin{gathered} \text { Sep } \\ 243 \\ 244 \end{gathered}$ | $\begin{array}{r} \text { Oct } \\ 273 \\ 274 \end{array}$ | $\begin{array}{r} \text { Nov } \\ 304 \\ 305 \end{array}$ | $\begin{array}{r} \text { Dec } \\ 334 \\ 335 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Offset |  |  |  |  |  |  |  |  |  |  |  |  |
| Year | 2005 | JDM | 2387729.751 | 759.922 | 787.173 | 817.343 | 846.540 | 876.711 | 905.908 | 936.079 | 966.249 | 995.447 | 025.617 | 054.815 |
| MY | 3572 | Date | Aug 14 | Aug 44 | Sep 15 | Sep 45 | Oct 19 | Oct 49 | Nov 22 | Nov 52 | Dec 26 | Dec 55 | Jan 30 | Feb 3 |
| JD | 2453371.5 | Airy T | 6:01 | 10:07 | 16:08 | 20:14 | 0:58 | 5:03 | 9:48 | 13:53 | 17:59 | 22:43 | 2:49 | 7:33 |
| Year | 2006 | JD | 2388084.985 | 115.156 | 142.407 | 172.577 | 201.775 | 231.945 | 261.142 | 291.313 | 321.484 | 350.681 | 380.852 | 410.049 |
| MY | 3572 | Date | Feb 33 | Mar 11 | Mar 38 | Apr 13 | Apr 42 | May 16 | May 45 | Jun 19 | Jun 49 | Jul 23 | Jul 53 | Aug 26 |
| JD | 2453736.5 | Airy T | 11:38 | 15:44 | 21:45 | 1:51 | 6:35 | 10:41 | 15:25 | 19:30 | 23:36 | 4:20 | 8:26 | 13:10 |
| Year | 2007 | JD | 2388440.219 | 470.390 | 497.641 | 527.811 | 557.009 | 587.179 | 616.377 | 646.547 | 676.718 | 705.915 | 736.086 | 765.283 |
| MY | 3573 | Date | Aug 56 | Sep 30 | Oct 2 | Oct 32 | Nov 5 | Nov 35 | Dec 8 | Dec 39 | Jan 13 | Jan 42 | Feb 16 | Feb 45 |
| JD | 2454101.5 | Airy T | 17:16 | 21:21 | 3:22 | 7:28 | 12:12 | 16:18 | 21:02 | 1:08 | 5:13 | 9:57 | 14:03 | 18:47 |
| Year | 2008 | JD | 2388795.454 | 825.624 | 853.848 | 884.019 | 913.216 | 943.387 | 972.584 | 002.755 | 032.925 | 062.123 | 092.293 | 121.490 |
| MY | 3574 | Date | Mar 22 | Mar 53 | Apr 25 | Apr 55 | May 28 | Jun 2 | Jun 32 | Jul 6 | Jul 36 | Aug 9 | Aug 39 | Sep 12 |
| JD | 2454466.5 | Airy T | 22:53 | 2:58 | 8:21 | 12:27 | 17:11 | 21:16 | 2:01 | 6:06 | 10:12 | 14:56 | 19:02 | 23:46 |
| Year | 2009 | JD | 2389151.661 | 181.832 | 209.082 | 239.253 | 268.450 | 298.621 | 327.818 | 357.989 | 388.159 | 417.357 | 447.527 | 476.725 |
| MY | 3574 | Date | Sep 43 | Oct 17 | Oct 44 | Nov 18 | Nov 47 | Dec 22 | Dec 51 | Jan 25 | Jan 55 | Feb 28 | Mar 7 | Mar 36 |
| JD | 2454832.5 | Airy T | 3:51 | 7:57 | 13:58 | 18:04 | 22:48 | 2:54 | 7:38 | 11:43 | 15:49 | 20:33 | 0:39 | 5:23 |
| Year | 2010 | JD | 2389506.895 | 537.066 | 564.317 | 594.487 | 623.685 | 653.855 | 683.052 | 713.223 | 743.394 | 772.591 | 802.761 | 831.959 |
| MY | 3575 | Date | Apr 10 | Apr 40 | May 11 | May 41 | Jun 15 | Jun 45 | Jul 18 | Jul 48 | Aug 22 | Aug 52 | Sep 26 | Sep 55 |
| JD | 2455197.5 | Airy T | 9:29 | 13:34 | 19:35 | 23:41 | 4:25 | 8:31 | 13:15 | 17:21 | 21:26 | 2:10 | 6:16 | 11:00 |
| Year | 2011 | JD | 2389862.129 | 892.300 | 919.551 | 949.721 | 978.919 | 009.089 | 038.287 | 068.457 | 098.628 | 127.825 | 157.996 | 187.193 |
| MY | 3575 | Date | Oct 29 | Nov 3 | Nov 31 | Dec 5 | Dec 34 | Jan 8 | Jan 37 | Feb 11 | Feb 42 | Mar 18 | Mar 48 | Apr 21 |
| JD | 2455562.5 | Airy T | 15:06 | 19:11 | 1:13 | 5:18 | 10:02 | 14:08 | 18:52 | 22:58 | 3:03 | 7:48 | 11:53 | 16:37 |

Table B. 2 - JDM, Mars Date, and Airy- 0 Time at 0 h UT on the First Day of the Month Gregorian, Years 2005-2015

| Gregorian |  | Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | 2012 | JD | 2390217.364 | 247.534 | 275.758 | 305.929 | 335.126 | 365.297 | 394.494 | 424.665 | 454.835 | 484.032 | 514.203 | 543.400 |
| MY | 3576 | Date | Apr 51 | May 26 | May 54 | Jun 28 | Jul 1 | Jul 31 | Aug 4 | Aug 35 | Sep 9 | Sep 38 | Oct 12 | Oct 41 |
| JD | 2455927.5 | Airy T | 20:43 | 0:49 | 6:11 | 10:17 | 15:01 | 19:07 | 23:51 | 3:56 | 8:02 | 12:46 | 16:52 | 21:36 |
| Year | 2013 | JD | 2390573.571 | 603.742 | 630.992 | 661.163 | 690.360 | 720.531 | 749.728 | 779.899 | 810.069 | 839.267 | 869.437 | 898.635 |
| MY | 3576 | Date | Nov 16 | Nov 46 | Dec 17 | Dec 47 | Jan 20 | Jan 51 | Feb 24 | Mar 2 | Mar 32 | Apr 5 | Apr 35 | May 9 |
| JD | 2456293.5 | Airy T | 1:42 | 5:47 | 11:49 | 15:54 | 20:38 | 0:44 | 5:28 | 9:34 | 13:39 | 18:23 | 22:29 | 3:13 |
| Year | 2014 | JD | 2390928.805 | 958.976 | 986.227 | 016.397 | 045.594 | 075.765 | 104.962 | 135.133 | 165.303 | 194.501 | 224.671 | 253.869 |
| MY | 3577 | Date | May 39 | Jun 13 | Jun 40 | Jul 14 | Jul 44 | Aug 18 | Aug 47 | Sep 21 | Sep 51 | Oct 25 | Oct 55 | Nov 28 |
| JD | 2456658.5 | Airy T | 7:19 | 11:25 | 17:26 | 21:31 | 2:15 | 6:21 | 11:05 | 15:11 | 19:17 | 0:01 | 4:06 | 8:50 |
| Year | 2015 | JD | 2391284.039 | 314.210 | 341.461 | 371.631 | 400.829 | 430.999 | 460.197 | 490.367 | 520.538 | 549.735 | $\begin{array}{r} 2391579 . \\ 906 \end{array}$ | $\begin{array}{r} 2391609 . \\ 103 \end{array}$ |
| MY | 3577 | Date | Dec 2 | Dec 32 | Jan 3 | Jan 34 | Feb 7 | Feb 37 | Mar 13 | Mar 43 | Apr 18 | Apr 47 | May 21 | May 50 |
| JD | 2457023.5 | Airy T | 12:56 | 17:02 | 23:03 | 3:09 | 7:53 | 11:58 | 16:42 | 20:48 | 0:54 | 5:38 | 9:44 | 14:28 |

## Notes:

For each Gregorian Year (Year), the Martian Year (MY) and the Julian Day (JD) are given for UT 0h of January 1 of the given year. At the head of the table, an offset for JD at UT 0h is given for the first day of every month. In each column under the heading of the given month, are given the JDM, Martian Date, and Airy-0 Time for UT 0h on the first day of the given month, as well as the day of the week. To save space, the JD is truncated for the months February through December, and the four leading digits are omitted.

To find the Martian date and Airy- 0 time of the sol for the Earth day after the first of the month, add 23:21:28.307 of Martian time for each additional Earth day. This is the same as incrementing the Martian day by 1 while subtracting 00:38:31.693 from the Martian time for each Earth day.
*To find the JD of the first day of the given Gregorian month, add the Offset for the month to the JD for the first day of the given year. Use the upper figure for ordinary years, and the lower figure for leap years.

From 'A Calendar for Mars' by Rev. George D. Lardas.
http://fortnightlyreview.co.uk/2012/08/martian-calendar/

