



# Astrodienst Ephemeris Tables for the year 1677

tropical geocentric zodiac

contains Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, True Node, Moon's Node, Lilith, Chiron

Programming  
Dieter Koch and Alois Treindl  
based on Swiss Ephemeris  
Code D5EPH

ASTRODIENST EPHEMERIS for the year 1677  
geocentric

JANUARY 1677 GC

00:00 UT

| Day  | Sid.t   | ☉        | ☽     | ♀     | ♂     | ♂     | ♂     | ♂      | ♂     | ♂     | ♂     | ♂      | ♂     | ♂     | ♂    | Day  |
|------|---------|----------|-------|-------|-------|-------|-------|--------|-------|-------|-------|--------|-------|-------|------|------|
| F 1  | 6 44 44 | 11°18'56 | 2°18  | 26°27 | 28°40 | 3°R17 | 29°16 | 19°R13 | 0°Y20 | 12°47 | 8°R49 | 13°28  | 12°10 | 20°40 | 1°45 | F 1  |
| S 2  | 6 48 41 | 12°20'08 | 17°14 | 27°57 | 29°51 | 2°55  | 29°30 | 19°11  | 0°21  | 12°49 | 8°48  | 13°R28 | 12° 6 | 20°47 | 1°46 | S 2  |
| S 3  | 6 52 38 | 13°21'20 | 2°21  | 29°28 | 1°2   | 2°33  | 29°44 | 19° 9  | 0°23  | 12°51 | 8°46  | 13°27  | 12° 3 | 20°53 | 1°48 | S 3  |
| M 4  | 6 56 34 | 14°22'31 | 17°30 | 0°59  | 2°13  | 2°11  | 29°58 | 19° 7  | 0°24  | 12°53 | 8°45  | 13°25  | 12° 0 | 21° 0 | 1°49 | M 4  |
| T 5  | 7 0 31  | 15°23'43 | 2°30  | 2°30  | 3°24  | 1°50  | 0°12  | 19° 6  | 0°25  | 12°55 | 8°44  | 13°20  | 11°57 | 21° 6 | 1°50 | T 5  |
| W 6  | 7 4 27  | 16°24'53 | 17°14 | 4° 2  | 4°35  | 1°29  | 0°26  | 19° 4  | 0°27  | 12°57 | 8°43  | 13°15  | 11°54 | 21°13 | 1°52 | W 6  |
| T 7  | 7 8 24  | 17°26'04 | 1°33  | 5°34  | 5°46  | 1° 9  | 0°40  | 19° 3  | 0°28  | 12°59 | 8°41  | 13°10  | 11°50 | 21°20 | 1°53 | T 7  |
| F 8  | 7 12 20 | 18°27'13 | 15°25 | 7° 7  | 6°58  | 0°49  | 0°54  | 19° 1  | 0°30  | 13° 1 | 8°40  | 13° 5  | 11°47 | 21°26 | 1°54 | F 8  |
| S 9  | 7 16 17 | 19°28'22 | 28°47 | 8°40  | 8° 9  | 0°31  | 1° 8  | 19° 0  | 0°31  | 13° 3 | 8°39  | 13° 2  | 11°44 | 21°33 | 1°56 | S 9  |
| S 10 | 7 20 13 | 20°29'30 | 11°43 | 10°14 | 9°20  | 0°12  | 1°22  | 18°59  | 0°33  | 13° 6 | 8°38  | 13° 0  | 11°41 | 21°40 | 1°58 | S 10 |
| M 11 | 7 24 10 | 21°30'38 | 24°15 | 11°48 | 10°32 | 29°55 | 1°37  | 18°58  | 0°34  | 13° 8 | 8°37  | 12°D59 | 11°38 | 21°46 | 1°59 | M 11 |
| T 12 | 7 28 7  | 22°31'44 | 6°29  | 13°22 | 11°44 | 29°38 | 1°51  | 18°57  | 0°36  | 13°10 | 8°35  | 13° 0  | 11°35 | 21°53 | 2° 1 | T 12 |
| W 13 | 7 32 3  | 23°32'50 | 18°28 | 14°58 | 12°55 | 29°22 | 2° 5  | 18°56  | 0°38  | 13°12 | 8°34  | 13° 2  | 11°31 | 22° 0 | 2° 3 | W 13 |
| T 14 | 7 36 0  | 24°33'55 | 0°11  | 16°33 | 14° 7 | 29° 6 | 2°19  | 18°56  | 0°40  | 13°14 | 8°33  | 13° 3  | 11°28 | 22° 6 | 2° 4 | T 14 |
| F 15 | 7 39 56 | 25°34'59 | 12° 5 | 18°10 | 15°19 | 28°51 | 2°33  | 18°55  | 0°42  | 13°16 | 8°32  | 13°R 4 | 11°25 | 22°13 | 2° 6 | F 15 |
| S 16 | 7 43 53 | 26°36'03 | 23°52 | 19°46 | 16°31 | 28°37 | 2°47  | 18°55  | 0°43  | 13°19 | 8°31  | 13° 3  | 11°22 | 22°20 | 2° 8 | S 16 |
| S 17 | 7 47 49 | 27°37'05 | 5°42  | 21°24 | 17°43 | 28°24 | 3° 2  | 18°55  | 0°45  | 13°21 | 8°29  | 13° 1  | 11°19 | 22°26 | 2°10 | S 17 |
| M 18 | 7 51 46 | 28°38'07 | 17°39 | 23° 2 | 18°55 | 28°12 | 3°16  | 18°54  | 0°47  | 13°23 | 8°28  | 12°56  | 11°16 | 22°33 | 2°12 | M 18 |
| T 19 | 7 55 42 | 29°39'08 | 29°44 | 24°40 | 20° 7 | 28° 0 | 3°30  | 18°D54 | 0°49  | 13°25 | 8°27  | 12°49  | 11°12 | 22°40 | 2°14 | T 19 |
| W 20 | 7 59 39 | 0°40'08  | 11°28 | 26°20 | 21°19 | 27°49 | 3°44  | 18°54  | 0°51  | 13°27 | 8°26  | 12°40  | 11° 9 | 22°46 | 2°16 | W 20 |
| T 21 | 8 3 36  | 1°41'07  | 24°23 | 27°59 | 22°31 | 27°39 | 3°59  | 18°54  | 0°53  | 13°30 | 8°25  | 12°30  | 11° 6 | 22°53 | 2°18 | T 21 |
| F 22 | 8 7 32  | 2°42'05  | 6°59  | 29°40 | 23°44 | 27°30 | 4°13  | 18°55  | 0°56  | 13°32 | 8°24  | 12°21  | 11° 3 | 23° 0 | 2°21 | F 22 |
| S 23 | 8 11 29 | 3°43'03  | 19°47 | 1°21  | 24°56 | 27°22 | 4°27  | 18°55  | 0°58  | 13°34 | 8°23  | 12°13  | 11° 0 | 23° 6 | 2°23 | S 23 |
| S 24 | 8 15 25 | 4°43'59  | 2°47  | 3° 3  | 26° 8 | 27°14 | 4°41  | 18°56  | 1° 0  | 13°36 | 8°21  | 12° 6  | 10°56 | 23°13 | 2°25 | S 24 |
| M 25 | 8 19 22 | 5°44'55  | 16° 1 | 4°45  | 27°21 | 27° 7 | 4°56  | 18°56  | 1° 2  | 13°39 | 8°20  | 12° 2  | 10°53 | 23°19 | 2°27 | M 25 |
| T 26 | 8 23 18 | 6°45'51  | 29°30 | 6°29  | 28°33 | 27° 1 | 5°10  | 18°57  | 1° 4  | 13°41 | 8°19  | 12° 0  | 10°50 | 23°26 | 2°30 | T 26 |
| W 27 | 8 27 15 | 7°46'45  | 13°15 | 8°12  | 29°46 | 26°56 | 5°24  | 18°58  | 1° 7  | 13°43 | 8°18  | 12°D 0 | 10°47 | 23°33 | 2°32 | W 27 |
| T 28 | 8 31 11 | 8°47'39  | 27°16 | 9°57  | 0°59  | 26°52 | 5°38  | 18°59  | 1° 9  | 13°46 | 8°17  | 12° 0  | 10°44 | 23°39 | 2°34 | T 28 |
| F 29 | 8 35 8  | 9°48'32  | 11°35 | 11°42 | 2°11  | 26°48 | 5°53  | 19° 0  | 1°12  | 13°48 | 8°16  | 12°R 1 | 10°41 | 23°46 | 2°37 | F 29 |
| S 30 | 8 39 5  | 10°49'25 | 26° 8 | 13°28 | 3°24  | 26°45 | 6° 7  | 19° 1  | 1°14  | 13°50 | 8°15  | 12° 0  | 10°37 | 23°53 | 2°39 | S 30 |
| S 31 | 8 43 1  | 11°50'16 | 10°53 | 15°15 | 4°37  | 26°43 | 6°21  | 19°2   | 1°16  | 13°52 | 8°14  | 11°57  | 10°34 | 23°59 | 2°42 | S 31 |

Delta T = 25.41 sec

Greg. Calendar

FEBRUARY 1677 GC

00:00 UT

| Day  | Sid.t    | ☉        | ☽       | ♀      | ♂     | ♂       | ♂     | ♂      | ♂     | ♂     | ♂     | ♂      | ♂     | ♂       | ♂     | Day  |
|------|----------|----------|---------|--------|-------|---------|-------|--------|-------|-------|-------|--------|-------|---------|-------|------|
| M 1  | 8 46 58  | 12°51'06 | 25°43   | 17°2   | 5°50  | 26°R42  | 6°35  | 19°3   | 1°Y19 | 13°55 | 8°R13 | 11°R51 | 10°31 | 24°II 6 | 2°Y45 | M 1  |
| T 2  | 8 50 54  | 13°51'55 | 10°30   | 18°50  | 7° 2  | 26°D41  | 6°50  | 19° 5  | 1°22  | 13°57 | 8°12  | 11°43  | 10°28 | 24°13   | 2°47  | T 2  |
| W 3  | 8 54 51  | 14°52'43 | 25° 7   | 20°38  | 8°15  | 26°II42 | 7° 4  | 19° 7  | 1°24  | 13°59 | 8°11  | 11°33  | 10°25 | 24°19   | 2°50  | W 3  |
| T 4  | 8 58 47  | 15°53'29 | 9°25    | 22°26  | 9°28  | 26°43   | 7°18  | 19° 8  | 1°27  | 14° 2 | 8°10  | 11°22  | 10°22 | 24°26   | 2°53  | T 4  |
| F 5  | 9 2 44   | 16°54'14 | 23°19   | 24°15  | 10°41 | 26°44   | 7°32  | 19°10  | 1°29  | 14° 4 | 8° 9  | 11°12  | 10°18 | 24°33   | 2°55  | F 5  |
| S 6  | 9 6 40   | 17°54'57 | 6°Y47   | 26° 5  | 11°54 | 26°47   | 7°46  | 19°12  | 1°32  | 14° 6 | 8° 8  | 11° 3  | 10°15 | 24°39   | 2°58  | S 6  |
| S 7  | 9 10 37  | 18°55'39 | 19°48   | 27°54  | 13° 7 | 26°50   | 8° 1  | 19°14  | 1°35  | 14° 8 | 8° 7  | 10°57  | 10°12 | 24°46   | 3° 1  | S 7  |
| M 8  | 9 14 34  | 19°56'19 | 2°24    | 29°43  | 14°20 | 26°54   | 8°15  | 19°16  | 1°37  | 14°11 | 8° 6  | 10°53  | 10° 9 | 24°53   | 3° 4  | M 8  |
| T 9  | 9 18 30  | 20°56'58 | 14°40   | 1°32   | 15°33 | 26°59   | 8°29  | 19°19  | 1°40  | 14°13 | 8° 5  | 10°52  | 10° 6 | 24°59   | 3° 7  | T 9  |
| W 10 | 9 22 27  | 21°57'34 | 26°41   | 3°21   | 16°46 | 27° 4   | 8°43  | 19°21  | 1°43  | 14°15 | 8° 5  | 10°D51 | 10° 2 | 25° 6   | 3°10  | W 10 |
| T 11 | 9 26 23  | 22°58'09 | 8°II32  | 5° 9   | 17°59 | 27°10   | 8°57  | 19°23  | 1°46  | 14°17 | 8° 4  | 10°R52 | 9°59  | 25°12   | 3°13  | T 11 |
| F 12 | 9 30 20  | 23°58'42 | 20°19   | 6°55   | 19°12 | 27°17   | 9°11  | 19°26  | 1°49  | 14°20 | 8° 3  | 10°51  | 9°56  | 25°19   | 3°16  | F 12 |
| S 13 | 9 34 16  | 24°59'14 | 2°57    | 8°41   | 20°25 | 27°24   | 9°25  | 19°29  | 1°52  | 14°22 | 8° 2  | 10°49  | 9°53  | 25°26   | 3°19  | S 13 |
| S 14 | 9 38 13  | 25°59'43 | 14° 1   | 10°24  | 21°39 | 27°32   | 9°39  | 19°31  | 1°55  | 14°24 | 8° 1  | 10°45  | 9°50  | 25°32   | 3°22  | S 14 |
| M 15 | 9 42 9   | 27° 0'11 | 26° 3   | 12° 5  | 22°52 | 27°40   | 9°53  | 19°34  | 1°57  | 14°26 | 8° 1  | 10°37  | 9°47  | 25°39   | 3°25  | M 15 |
| T 16 | 9 46 6   | 28° 0'37 | 8°II18  | 13°44  | 24° 5 | 27°49   | 10° 7 | 19°37  | 2° 0  | 14°29 | 8° 0  | 10°27  | 9°43  | 25°46   | 3°28  | T 16 |
| W 17 | 9 50 3   | 29° 1'01 | 20°47   | 15°19  | 25°18 | 27°59   | 10°21 | 19°40  | 2° 3  | 14°31 | 7°59  | 10°15  | 9°40  | 25°52   | 3°31  | W 17 |
| T 18 | 9 53 59  | 0°14'24  | 3°II30  | 16°51  | 26°31 | 28°10   | 10°35 | 19°44  | 2° 6  | 14°33 | 7°58  | 10° 2  | 9°37  | 25°59   | 3°34  | T 18 |
| F 19 | 9 57 56  | 1° 1'44  | 16°26   | 18°18  | 27°45 | 28°20   | 10°49 | 19°47  | 2° 9  | 14°35 | 7°58  | 9°48   | 9°34  | 26° 6   | 3°37  | F 19 |
| S 20 | 10 1 52  | 2° 2'03  | 29°36   | 19°39  | 28°58 | 28°32   | 11° 2 | 19°50  | 2°12  | 14°38 | 7°57  | 9°36   | 9°31  | 26°12   | 3°41  | S 20 |
| S 21 | 10 5 49  | 3° 2'21  | 12°56   | 20°56  | 0°11  | 28°44   | 11°16 | 19°54  | 2°16  | 14°40 | 7°56  | 9°26   | 9°28  | 26°19   | 3°44  | S 21 |
| M 22 | 10 9 45  | 4° 2'37  | 26°27   | 22° 5  | 1°25  | 28°56   | 11°30 | 19°57  | 2°19  | 14°42 | 7°56  | 9°19   | 9°24  | 26°26   | 3°47  | M 22 |
| T 23 | 10 13 42 | 5° 2'51  | 10°II 7 | 23° 8  | 2°38  | 29° 9   | 11°44 | 20° 1  | 2°22  | 14°44 | 7°55  | 9°15   | 9°21  | 26°32   | 3°50  | T 23 |
| W 24 | 10 17 38 | 6° 3'04  | 23°55   | 24° 4  | 3°51  | 29°23   | 11°57 | 20° 5  | 2°25  | 14°46 | 7°54  | 9°13   | 9°18  | 26°39   | 3°54  | W 24 |
| T 25 | 10 21 35 | 7° 3'16  | 7°Y53   | 24°51  | 5° 5  | 29°37   | 12°11 | 20° 9  | 2°28  | 14°48 | 7°54  | 9°13   | 9°15  | 26°46   | 3°57  | T 25 |
| F 26 | 10 25 32 | 8° 3'26  | 21°59   | 25°30  | 6°18  | 29°51   | 12°24 | 20°13  | 2°31  | 14°51 | 7°53  | 9°13   | 9°12  | 26°52   | 4° 0  | F 26 |
| S 27 | 10 29 28 | 9° 3'34  | 6°Y13   | 26° 0  | 7°32  | 0°56    | 12°38 | 20°17  | 2°35  | 14°53 | 7°53  | 9°11   | 9° 8  | 26°59   | 4° 4  | S 27 |
| S 28 | 10 33 25 | 10° 3'41 | 20°Y33  | 26°Y22 | 8°45  | 0°52    | 12°52 | 20°Y21 | 2°Y38 | 14°55 | 7°52  | 9°Y 7  | 9°Y 5 | 27°II 6 | 4°Y 7 | S 28 |

Delta T = 25.36 sec

Greg. Calendar

# ASTRODIENST EPHEMERIS for the year 1677

## geocentric

MARCH 1677 GC

00:00 UT

| Day  | Sid.t    | ☉        | ☽     | ♂      | ♀     | ♂     | ♂     | ♂     | ♂    | ♂     | ♂     | ♂     | ♂    | ♂     | ♂    | Day  |
|------|----------|----------|-------|--------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|------|------|
| M 1  | 10 37 21 | 11°34'7  | 4°57  | 26°34  | 9°58  | 0°38  | 13°5  | 20°25 | 2°41 | 14°57 | 7°52  | 9°R 1 | 9°2  | 27°12 | 4°11 | M 1  |
| T 2  | 10 41 18 | 12°3'50  | 19°18 | 26°R36 | 11°12 | 0°54  | 13°18 | 20°29 | 2°44 | 14°59 | 7°51  | 8°51  | 8°59 | 27°19 | 4°14 | T 2  |
| W 3  | 10 45 14 | 13°3'52  | 3°32  | 26°30  | 12°25 | 1°11  | 13°32 | 20°34 | 2°47 | 15°1  | 7°51  | 8°39  | 8°56 | 27°26 | 4°17 | W 3  |
| T 4  | 10 49 11 | 14°3'52  | 17°33 | 26°15  | 13°39 | 1°28  | 13°45 | 20°38 | 2°51 | 15°3  | 7°51  | 8°26  | 8°53 | 27°32 | 4°21 | T 4  |
| F 5  | 10 53 7  | 15°3'50  | 1°16  | 25°52  | 14°52 | 1°46  | 13°58 | 20°43 | 2°54 | 15°5  | 7°50  | 8°14  | 8°49 | 27°39 | 4°24 | F 5  |
| S 6  | 10 57 4  | 16°3'45  | 14°37 | 25°20  | 16°6  | 2°4   | 14°12 | 20°48 | 2°57 | 15°7  | 7°50  | 8°4   | 8°46 | 27°45 | 4°28 | S 6  |
| S 7  | 11 1 1   | 17°3'39  | 27°35 | 24°42  | 17°19 | 2°22  | 14°25 | 20°52 | 3°1  | 15°9  | 7°49  | 7°55  | 8°43 | 27°52 | 4°31 | S 7  |
| M 8  | 11 4 57  | 18°3'31  | 10°12 | 23°58  | 18°33 | 2°41  | 14°38 | 20°57 | 3°4  | 15°11 | 7°49  | 7°50  | 8°40 | 27°59 | 4°35 | M 8  |
| T 9  | 11 8 54  | 19°3'20  | 22°29 | 23°10  | 19°46 | 3°0   | 14°51 | 21°2  | 3°7  | 15°13 | 7°49  | 7°47  | 8°37 | 28°5  | 4°39 | T 9  |
| W10  | 11 12 50 | 20°3'07  | 4°32  | 22°17  | 21°0  | 3°20  | 15°4  | 21°7  | 3°11 | 15°15 | 7°49  | 7°D46 | 8°33 | 28°12 | 4°42 | W10  |
| T 11 | 11 16 47 | 21°2'52  | 16°25 | 21°22  | 22°14 | 3°40  | 15°17 | 21°12 | 3°14 | 15°17 | 7°48  | 7°R46 | 8°30 | 28°19 | 4°46 | T 11 |
| F 12 | 11 20 43 | 22°2'35  | 28°13 | 20°26  | 23°27 | 4°0   | 15°30 | 21°17 | 3°17 | 15°19 | 7°48  | 7°46  | 8°27 | 28°25 | 4°49 | F 12 |
| S 13 | 11 24 40 | 23°2'16  | 10°3  | 19°29  | 24°41 | 4°21  | 15°42 | 21°23 | 3°21 | 15°21 | 7°48  | 7°45  | 8°24 | 28°32 | 4°53 | S 13 |
| S 14 | 11 28 36 | 24°1'54  | 21°58 | 18°34  | 25°54 | 4°42  | 15°55 | 21°28 | 3°24 | 15°23 | 7°48  | 7°42  | 8°21 | 28°39 | 4°57 | S 14 |
| M15  | 11 32 33 | 25°1'30  | 4°5   | 17°41  | 27°8  | 5°3   | 16°8  | 21°33 | 3°28 | 15°25 | 7°47  | 7°36  | 8°18 | 28°45 | 5°0  | M15  |
| T 16 | 11 36 30 | 26°1'03  | 16°27 | 16°51  | 28°21 | 5°25  | 16°20 | 21°39 | 3°31 | 15°26 | 7°47  | 7°27  | 8°14 | 28°52 | 5°4  | T 16 |
| W17  | 11 40 26 | 27°0'35  | 29°6  | 16°6   | 29°35 | 5°46  | 16°33 | 21°44 | 3°34 | 15°28 | 7°47  | 7°17  | 8°11 | 28°59 | 5°7  | W17  |
| T 18 | 11 44 23 | 28°0'04  | 12°14 | 15°24  | 0°48  | 6°9   | 16°45 | 21°50 | 3°38 | 15°30 | 7°47  | 7°5   | 8°8  | 29°5  | 5°11 | T 18 |
| F 19 | 11 48 19 | 28°59'31 | 25°20 | 14°48  | 2°2   | 6°31  | 16°58 | 21°56 | 3°41 | 15°32 | 7°47  | 6°53  | 8°5  | 29°12 | 5°15 | F 19 |
| S 20 | 11 52 16 | 29°58'55 | 8°53  | 14°18  | 3°16  | 6°54  | 17°10 | 22°1  | 3°45 | 15°34 | 7°47  | 6°42  | 8°2  | 29°19 | 5°18 | S 20 |
| S 21 | 11 56 12 | 0°58'18  | 22°38 | 13°53  | 4°29  | 7°17  | 17°22 | 22°7  | 3°48 | 15°35 | 7°D47 | 6°34  | 7°59 | 29°25 | 5°22 | S 21 |
| M22  | 12 0 9   | 1°57'39  | 6°34  | 13°35  | 5°43  | 7°41  | 17°34 | 22°13 | 3°52 | 15°37 | 7°47  | 6°28  | 7°55 | 29°32 | 5°26 | M22  |
| T 23 | 12 4 5   | 2°56'58  | 20°36 | 13°22  | 6°56  | 8°4   | 17°47 | 22°19 | 3°55 | 15°39 | 7°47  | 6°24  | 7°52 | 29°39 | 5°29 | T 23 |
| W24  | 12 8 2   | 3°56'16  | 4°42  | 13°15  | 8°10  | 8°28  | 17°59 | 22°25 | 3°58 | 15°41 | 7°47  | 6°D23 | 7°49 | 29°45 | 5°33 | W24  |
| T 25 | 12 11 58 | 4°55'31  | 18°50 | 13°D14 | 9°23  | 8°52  | 18°11 | 22°31 | 4°2  | 15°42 | 7°47  | 6°24  | 7°46 | 29°52 | 5°37 | T 25 |
| F 26 | 12 15 55 | 5°54'45  | 2°58  | 13°18  | 10°37 | 9°17  | 18°22 | 22°37 | 4°5  | 15°44 | 7°47  | 6°R24 | 7°43 | 29°59 | 5°40 | F 26 |
| S 27 | 12 19 52 | 6°53'57  | 17°5  | 13°28  | 11°51 | 9°41  | 18°34 | 22°43 | 4°9  | 15°45 | 7°47  | 6°24  | 7°39 | 0°5   | 5°44 | S 27 |
| S 28 | 12 23 48 | 7°53'08  | 1°9   | 13°43  | 13°4  | 10°6  | 18°46 | 22°50 | 4°12 | 15°47 | 7°48  | 6°22  | 7°36 | 0°12  | 5°48 | S 28 |
| M29  | 12 27 45 | 8°52'16  | 15°11 | 14°3   | 14°18 | 10°32 | 18°57 | 22°56 | 4°16 | 15°49 | 7°48  | 6°17  | 7°33 | 0°19  | 5°51 | M29  |
| T 30 | 12 31 41 | 9°51'23  | 29°6  | 14°27  | 15°32 | 10°57 | 19°9  | 23°2  | 4°19 | 15°50 | 7°48  | 6°10  | 7°30 | 0°25  | 5°55 | T 30 |
| W31  | 12 35 38 | 10°50'28 | 12°52 | 14°57  | 16°45 | 11°23 | 19°20 | 23°9  | 4°22 | 15°52 | 7°48  | 6°1   | 7°27 | 0°32  | 5°59 | W31  |

Delta T = 25.31 sec

Greg. Calendar

APRIL 1677 GC

00:00 UT

| Day  | Sid.t    | ☉        | ☽     | ♂     | ♀     | ♂     | ♂     | ♂     | ♂    | ♂     | ♂    | ♂     | ♂    | ♂    | ♂    | Day  |
|------|----------|----------|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|------|------|------|
| T 1  | 12 39 34 | 11°49'30 | 26°37 | 15°30 | 17°59 | 11°48 | 19°32 | 23°15 | 4°26 | 15°53 | 7°48 | 5°R52 | 7°24 | 0°38 | 6°2  | T 1  |
| F 2  | 12 43 31 | 12°48'31 | 9°47  | 16°8  | 19°12 | 12°15 | 19°43 | 23°22 | 4°29 | 15°55 | 7°49 | 5°43  | 7°20 | 0°45 | 6°6  | F 2  |
| S 3  | 12 47 27 | 13°47'30 | 22°51 | 16°49 | 20°26 | 12°41 | 19°54 | 23°28 | 4°33 | 15°56 | 7°49 | 5°35  | 7°17 | 0°52 | 6°10 | S 3  |
| S 4  | 12 51 24 | 14°46'27 | 5°37  | 17°34 | 21°40 | 13°7  | 20°5  | 23°35 | 4°36 | 15°57 | 7°49 | 5°29  | 7°14 | 0°58 | 6°13 | S 4  |
| M 5  | 12 55 21 | 15°45'21 | 18°6  | 18°23 | 22°53 | 13°34 | 20°16 | 23°42 | 4°39 | 15°59 | 7°50 | 5°25  | 7°11 | 1°5  | 6°17 | M 5  |
| T 6  | 12 59 17 | 16°44'14 | 0°12  | 19°15 | 24°7  | 14°1  | 20°27 | 23°48 | 4°43 | 16°0  | 7°50 | 5°D23 | 7°8  | 1°12 | 6°20 | T 6  |
| W 7  | 13 3 14  | 17°43'04 | 12°21 | 20°9  | 25°20 | 14°28 | 20°38 | 23°55 | 4°46 | 16°1  | 7°50 | 5°23  | 7°4  | 1°18 | 6°24 | W 7  |
| T 8  | 13 7 10  | 18°41'52 | 24°14 | 21°7  | 26°34 | 14°55 | 20°49 | 24°2  | 4°50 | 16°3  | 7°51 | 5°24  | 7°1  | 1°25 | 6°28 | T 8  |
| F 9  | 13 11 7  | 19°40'38 | 6°3   | 22°8  | 27°48 | 15°23 | 20°59 | 24°9  | 4°53 | 16°4  | 7°51 | 5°26  | 6°58 | 1°32 | 6°31 | F 9  |
| S 10 | 13 15 3  | 20°39'22 | 17°53 | 23°12 | 29°1  | 15°51 | 21°10 | 24°16 | 4°56 | 16°5  | 7°52 | 5°R27 | 6°55 | 1°38 | 6°35 | S 10 |
| S 11 | 13 19 0  | 21°38'03 | 29°50 | 24°18 | 0°15  | 16°18 | 21°20 | 24°23 | 5°0  | 16°6  | 7°52 | 5°26  | 6°52 | 1°45 | 6°38 | S 11 |
| M12  | 13 22 56 | 22°36'42 | 11°58 | 25°26 | 1°28  | 16°46 | 21°30 | 24°30 | 5°3  | 16°8  | 7°53 | 5°24  | 6°49 | 1°52 | 6°42 | M12  |
| T 13 | 13 26 53 | 23°35'19 | 24°22 | 26°37 | 2°42  | 17°15 | 21°40 | 24°37 | 5°6  | 16°9  | 7°53 | 5°20  | 6°45 | 1°58 | 6°46 | T 13 |
| W14  | 13 30 50 | 24°33'54 | 7°5   | 27°50 | 3°56  | 17°43 | 21°50 | 24°44 | 5°9  | 16°10 | 7°54 | 5°15  | 6°42 | 2°5  | 6°49 | W14  |
| T 15 | 13 34 46 | 25°32'26 | 20°10 | 29°6  | 5°9   | 18°12 | 22°0  | 24°51 | 5°13 | 16°11 | 7°54 | 5°9   | 6°39 | 2°12 | 6°53 | T 15 |
| F 16 | 13 38 43 | 26°30'56 | 3°38  | 0°13  | 6°23  | 18°40 | 22°10 | 24°58 | 5°16 | 16°12 | 7°55 | 5°3   | 6°36 | 2°18 | 6°56 | F 16 |
| S 17 | 13 42 39 | 27°29'25 | 17°28 | 1°43  | 7°36  | 19°9  | 22°20 | 25°5  | 5°19 | 16°13 | 7°56 | 4°57  | 6°33 | 2°25 | 7°0  | S 17 |
| S 18 | 13 46 36 | 28°27'51 | 1°35  | 3°5   | 8°50  | 19°38 | 22°29 | 25°13 | 5°22 | 16°14 | 7°56 | 4°52  | 6°30 | 2°32 | 7°3  | S 18 |
| M19  | 13 50 32 | 29°26'16 | 15°56 | 4°29  | 10°3  | 20°7  | 22°39 | 25°20 | 5°26 | 16°15 | 7°57 | 4°49  | 6°26 | 2°38 | 7°6  | M19  |
| T 20 | 13 54 29 | 0°24'39  | 0°25  | 5°54  | 11°17 | 20°37 | 22°48 | 25°27 | 5°29 | 16°16 | 7°58 | 4°D48 | 6°23 | 2°45 | 7°10 | T 20 |
| W21  | 13 58 25 | 1°23'00  | 14°56 | 7°22  | 12°31 | 21°6  | 22°57 | 25°35 | 5°32 | 16°17 | 7°58 | 4°48  | 6°20 | 2°52 | 7°13 | W21  |
| T 22 | 14 2 22  | 2°21'19  | 29°25 | 8°52  | 13°44 | 21°36 | 23°6  | 25°42 | 5°35 | 16°18 | 7°59 | 4°49  | 6°17 | 2°58 | 7°17 | T 22 |
| F 23 | 14 6 19  | 3°19'37  | 13°48 | 10°23 | 14°58 | 22°5  | 23°15 | 25°49 | 5°38 | 16°19 | 8°0  | 4°51  | 6°14 | 3°5  | 7°20 | F 23 |
| S 24 | 14 10 15 | 4°17'54  | 28°1  | 11°57 | 16°11 | 22°35 | 23°24 | 25°57 | 5°41 | 16°19 | 8°0  | 4°R51 | 6°10 | 3°12 | 7°23 | S 24 |
| S 25 | 14 14 12 | 5°16'09  | 12°2  | 13°32 | 17°25 | 23°5  | 23°33 | 26°4  | 5°45 | 16°20 | 8°1  | 4°51  | 6°7  | 3°18 | 7°27 | S 25 |
| M26  | 14 18 8  | 6°14'22  | 25°52 | 15°9  | 18°38 | 23°35 | 23°41 | 26°12 | 5°48 | 16°21 | 8°2  | 4°50  | 6°4  | 3°25 | 7°30 | M26  |
| T 27 | 14 22 5  | 7°12'34  | 9°29  | 16°48 | 19°52 | 24°5  | 23°50 | 26°19 | 5°51 | 16°22 | 8°3  | 4°48  | 6°1  | 3°32 | 7°33 | T 27 |
| W28  | 14 26 1  | 8°10'44  | 22°52 | 18°29 | 21°6  | 24°36 | 23°58 | 26°27 | 5°54 | 16°22 | 8°4  | 4°44  | 5°58 | 3°38 | 7°37 | W28  |
| T 29 | 14 29 58 | 9°8'53   | 6°2   | 20°12 | 22°19 | 25°6  | 24°6  | 26°34 | 5°57 | 16°23 | 8°5  | 4°40  | 5°55 | 3°45 | 7°40 | T 29 |
| F 30 | 14 33 54 | 10°8'00  | 18°58 | 21°56 | 23°33 | 25°37 | 24°14 | 26°42 | 6°0  | 16°24 | 8°5  | 4°36  | 5°51 | 3°52 | 7°43 | F 30 |

Delta T = 25.26 sec

Greg. Calendar

# ASTRODIENST EPHEMERIS for the year 1677

## geocentric

MAY 1677 GC

00:00 UT

| Day  | Sid.t    | ☉          | ☽       | ♀       | ♂       | ♂       | ♂       | ♂       | ♂      | ♂       | ♂      | ♂      | ♂      | ♂      | ♂      | Day  |
|------|----------|------------|---------|---------|---------|---------|---------|---------|--------|---------|--------|--------|--------|--------|--------|------|
| S 1  | 14 37 51 | 11° 5'06"  | 18° 40' | 23° 43' | 24° 46' | 26° 8'  | 24° 22' | 26° 50' | 6° 3'  | 16° 24' | 8° 6'  | 4° R33 | 5° 48' | 3° 58' | 7° 46' | S 1  |
| S 2  | 14 41 47 | 12° 3'10"  | 14° 9'  | 25° 31' | 26° 0'  | 26° 39' | 24° 30' | 26° 57' | 6° 6'  | 16° 25' | 8° 7'  | 4° 30' | 5° 45' | 4° 5'  | 7° 50' | S 2  |
| M 3  | 14 45 44 | 13° 1'13"  | 26° 26' | 27° 21' | 27° 13' | 27° 10' | 24° 38' | 27° 5'  | 6° 9'  | 16° 25' | 8° 8'  | 4° 29' | 5° 42' | 4° 12' | 7° 53' | M 3  |
| T 4  | 14 49 41 | 13° 59'14" | 8° 32'  | 29° 13' | 28° 27' | 27° 41' | 24° 45' | 27° 13' | 6° 11' | 16° 26' | 8° 9'  | 4° D29 | 5° 39' | 4° 18' | 7° 56' | T 4  |
| W 5  | 14 53 37 | 14° 57'13" | 20° 28' | 18° 7'  | 29° 41' | 28° 12' | 24° 53' | 27° 20' | 6° 14' | 16° 26' | 8° 10' | 4° 30' | 5° 36' | 4° 25' | 7° 59' | W 5  |
| T 6  | 14 57 34 | 14° 55'10" | 20° 19' | 3° 3'   | 0° 54'  | 28° 43' | 25° 0'  | 27° 28' | 6° 17' | 16° 27' | 8° 11' | 4° 31' | 5° 32' | 4° 32' | 8° 2'  | T 6  |
| F 7  | 15 1 30  | 16° 53'06" | 14° 8'  | 5° 1'   | 2° 8'   | 29° 15' | 25° 7'  | 27° 36' | 6° 20' | 16° 27' | 8° 12' | 4° 33' | 5° 29' | 4° 38' | 8° 5'  | F 7  |
| S 8  | 15 5 27  | 17° 51'00" | 25° 58' | 7° 0'   | 3° 21'  | 29° 46' | 25° 14' | 27° 43' | 6° 23' | 16° 27' | 8° 13' | 4° 34' | 5° 26' | 4° 45' | 8° 8'  | S 8  |
| S 9  | 15 9 23  | 18° 48'52" | 7° 54'  | 9° 1'   | 4° 35'  | 0° 18'  | 25° 20' | 27° 51' | 6° 25' | 16° 28' | 8° 14' | 4° 35' | 5° 23' | 4° 52' | 8° 11' | S 9  |
| M10  | 15 13 20 | 19° 46'42" | 20° 1'  | 11° 4'  | 5° 48'  | 0° 50'  | 25° 27' | 27° 59' | 6° 28' | 16° 28' | 8° 15' | 4° R35 | 5° 20' | 4° 58' | 8° 14' | M10  |
| T 11 | 15 17 17 | 20° 44'31" | 2° 24'  | 13° 9'  | 7° 2'   | 1° 22'  | 25° 33' | 28° 7'  | 6° 31' | 16° 28' | 8° 16' | 4° 35' | 5° 16' | 5° 5'  | 8° 17' | T 11 |
| W12  | 15 21 13 | 21° 42'18" | 15° 6'  | 15° 15' | 8° 15'  | 1° 54'  | 25° 40' | 28° 14' | 6° 34' | 16° 29' | 8° 18' | 4° 34' | 5° 13' | 5° 12' | 8° 20' | W12  |
| T 13 | 15 25 10 | 22° 40'03" | 28° 11' | 17° 22' | 9° 29'  | 2° 26'  | 25° 46' | 28° 22' | 6° 36' | 16° 29' | 8° 19' | 4° 33' | 5° 10' | 5° 18' | 8° 23' | T 13 |
| F 14 | 15 29 6  | 23° 37'46" | 11° 41' | 19° 31' | 10° 42' | 2° 58'  | 25° 52' | 28° 30' | 6° 39' | 16° 29' | 8° 20' | 4° 31' | 5° 7'  | 5° 25' | 8° 25' | F 14 |
| S 15 | 15 33 3  | 24° 35'28" | 25° 36' | 21° 40' | 11° 56' | 3° 30'  | 25° 58' | 28° 38' | 6° 41' | 16° 29' | 8° 21' | 4° 30' | 5° 4'  | 5° 32' | 8° 28' | S 15 |
| S 16 | 15 36 59 | 25° 33'08" | 9° 55'  | 23° 51' | 13° 9'  | 4° 3'   | 26° 3'  | 28° 45' | 6° 44' | 16° 29' | 8° 22' | 4° 29' | 5° 1'  | 5° 38' | 8° 31' | S 16 |
| M17  | 15 40 56 | 26° 30'48" | 24° 33' | 26° 2'  | 14° 23' | 4° 35'  | 26° 9'  | 28° 53' | 6° 46' | 16° 29' | 8° 23' | 4° 29' | 4° 57' | 5° 45' | 8° 34' | M17  |
| T 18 | 15 44 52 | 27° 28'25" | 9° 23'  | 28° 14' | 15° 37' | 5° 8'   | 26° 14' | 29° 1'  | 6° 49' | 16° 29' | 8° 24' | 4° D29 | 4° 54' | 5° 52' | 8° 36' | T 18 |
| W19  | 15 48 49 | 28° 26'02" | 24° 19' | 0° 25'  | 16° 50' | 5° 40'  | 26° 19' | 29° 9'  | 6° 51' | 16° R29 | 8° 26' | 4° 29' | 4° 51' | 5° 58' | 8° 39' | W19  |
| T 20 | 15 52 46 | 29° 23'38" | 9° 31'  | 2° 37'  | 18° 4'  | 6° 13'  | 26° 24' | 29° 17' | 6° 54' | 16° 29' | 8° 27' | 4° 29' | 4° 48' | 6° 5'  | 8° 42' | T 20 |
| F 21 | 15 56 42 | 0° 21'12"  | 23° 56' | 4° 48'  | 19° 17' | 6° 46'  | 26° 29' | 29° 24' | 6° 56' | 16° 29' | 8° 28' | 4° 30' | 4° 45' | 6° 12' | 8° 44' | F 21 |
| S 22 | 16 0 39  | 1° 18'46"  | 8° 24'  | 6° 58'  | 20° 31' | 7° 19'  | 26° 34' | 29° 32' | 6° 58' | 16° 29' | 8° 29' | 4° 30' | 4° 42' | 6° 18' | 8° 47' | S 22 |
| S 23 | 16 4 35  | 2° 16'19"  | 22° 34' | 9° 8'   | 21° 44' | 7° 52'  | 26° 38' | 29° 40' | 7° 1'  | 16° 29' | 8° 31' | 4° 30' | 4° 38' | 6° 25' | 8° 49' | S 23 |
| M24  | 16 8 32  | 3° 13'50"  | 6° 23'  | 11° 16' | 22° 58' | 8° 25'  | 26° 42' | 29° 48' | 7° 3'  | 16° 29' | 8° 32' | 4° R30 | 4° 35' | 6° 32' | 8° 52' | M24  |
| T 25 | 16 12 28 | 4° 11'21"  | 19° 52' | 13° 23' | 24° 11' | 8° 58'  | 26° 46' | 29° 56' | 7° 5'  | 16° 29' | 8° 33' | 4° D30 | 4° 32' | 6° 38' | 8° 54' | T 25 |
| W26  | 16 16 25 | 5° 8'51"   | 3° 2'   | 15° 28' | 25° 25' | 9° 31'  | 26° 50' | 0° 3'   | 7° 7'  | 16° 28' | 8° 34' | 4° 30' | 4° 29' | 6° 45' | 8° 56' | W26  |
| T 27 | 16 20 21 | 6° 6'21"   | 15° 54' | 17° 31' | 26° 38' | 10° 4'  | 26° 54' | 0° 11'  | 7° 9'  | 16° 28' | 8° 36' | 4° 30' | 4° 26' | 6° 52' | 8° 59' | T 27 |
| F 28 | 16 24 18 | 7° 3'49"   | 28° 31' | 19° 33' | 27° 52' | 10° 38' | 26° 58' | 0° 19'  | 7° 12' | 16° 28' | 8° 37' | 4° 30' | 4° 22' | 6° 58' | 9° 1'  | F 28 |
| S 29 | 16 28 14 | 8° 1'17"   | 10° 55' | 21° 32' | 29° 5'  | 11° 11' | 27° 1'  | 0° 27'  | 7° 14' | 16° 27' | 8° 38' | 4° 31' | 4° 19' | 7° 5'  | 9° 3'  | S 29 |
| S 30 | 16 32 11 | 8° 58'44"  | 23° 8'  | 23° 29' | 0° 19'  | 11° 45' | 27° 4'  | 0° 35'  | 7° 16' | 16° 27' | 8° 40' | 4° 31' | 4° 16' | 7° 12' | 9° 6'  | S 30 |
| M31  | 16 36 8  | 9° 56'10"  | 5° 11'  | 25° 23' | 1° 33'  | 12° 18' | 27° 7'  | 0° 42'  | 7° 18' | 16° 27' | 8° 41' | 4° R31 | 4° 13' | 7° 18' | 9° 8'  | M31  |

Delta T = 25.21 sec

Greg. Calendar

JUNE 1677 GC

00:00 UT

| Day  | Sid.t    | ☉          | ☽       | ♀       | ♂       | ♂       | ♂       | ♂      | ♂      | ♂       | ♂      | ♂      | ♂      | ♂       | ♂      | Day  |
|------|----------|------------|---------|---------|---------|---------|---------|--------|--------|---------|--------|--------|--------|---------|--------|------|
| T 1  | 16 40 4  | 10° 53'35" | 17° 8'  | 27° 16' | 2° 46'  | 12° 52' | 27° 10' | 0° 50' | 7° 20' | 16° R26 | 8° 43' | 4° R31 | 4° 10' | 7° 25'  | 9° 10' | T 1  |
| W 2  | 16 44 1  | 11° 51'00" | 29° 0'  | 29° 5'  | 4° 0'   | 13° 26' | 27° 13' | 0° 58' | 7° 21' | 16° 26' | 8° 44' | 4° 30' | 4° 7'  | 7° 32'  | 9° 12' | W 2  |
| T 3  | 16 47 57 | 12° 48'23" | 10° 49' | 0° 53'  | 5° 13'  | 14° 0'  | 27° 16' | 1° 5'  | 7° 23' | 16° 25' | 8° 45' | 4° 30' | 4° 3'  | 7° 38'  | 9° 14' | T 3  |
| F 4  | 16 51 54 | 13° 45'45" | 22° 38' | 2° 37'  | 6° 27'  | 14° 34' | 27° 18' | 1° 13' | 7° 25' | 16° 25' | 8° 47' | 4° 28' | 4° 0'  | 7° 45'  | 9° 16' | F 4  |
| S 5  | 16 55 50 | 14° 43'07" | 4° 29'  | 4° 19'  | 7° 41'  | 15° 8'  | 27° 20' | 1° 21' | 7° 27' | 16° 24' | 8° 48' | 4° 27' | 3° 57' | 7° 52'  | 9° 18' | S 5  |
| S 6  | 16 59 47 | 15° 40'27" | 16° 26' | 5° 59'  | 8° 54'  | 15° 42' | 27° 22' | 1° 29' | 7° 29' | 16° 24' | 8° 50' | 4° 26' | 3° 54' | 7° 58'  | 9° 20' | S 6  |
| M 7  | 17 3 44  | 16° 37'47" | 28° 33' | 7° 35'  | 10° 8'  | 16° 16' | 27° 24' | 1° 36' | 7° 30' | 16° 23' | 8° 51' | 4° 25' | 3° 51' | 8° 5'   | 9° 22' | M 7  |
| T 8  | 17 7 40  | 17° 35'05" | 10° 54' | 9° 10'  | 11° 21' | 16° 50' | 27° 25' | 1° 44' | 7° 32' | 16° 23' | 8° 52' | 4° 24' | 3° 48' | 8° 12'  | 9° 23' | T 8  |
| W 9  | 17 11 37 | 18° 32'23" | 23° 33' | 10° 41' | 12° 35' | 17° 24' | 27° 26' | 1° 51' | 7° 34' | 16° 22' | 8° 54' | 4° D24 | 3° 44' | 8° 18'  | 9° 25' | W 9  |
| T 10 | 17 15 33 | 19° 29'40" | 6° 33'  | 12° 10' | 13° 49' | 17° 59' | 27° 28' | 1° 59' | 7° 35' | 16° 21' | 8° 55' | 4° 24' | 3° 41' | 8° 25'  | 9° 27' | T 10 |
| F 11 | 17 19 30 | 20° 26'56" | 19° 57' | 13° 36' | 15° 2'  | 18° 33' | 27° 29' | 2° 7'  | 7° 37' | 16° 21' | 8° 57' | 4° 25' | 3° 38' | 8° 32'  | 9° 29' | F 11 |
| S 12 | 17 23 26 | 21° 24'11" | 3° 44'  | 14° 59' | 16° 16' | 19° 8'  | 27° 29' | 2° 14' | 7° 38' | 16° 20' | 8° 58' | 4° 27' | 3° 35' | 8° 38'  | 9° 30' | S 12 |
| S 13 | 17 27 23 | 22° 21'25" | 18° 6'  | 16° 20' | 17° 29' | 19° 42' | 27° 30' | 2° 22' | 7° 40' | 16° 19' | 9° 0'  | 4° 28' | 3° 32' | 8° 45'  | 9° 32' | S 13 |
| M14  | 17 31 19 | 23° 18'38" | 2° 47'  | 17° 37' | 18° 43' | 20° 17' | 27° 30' | 2° 29' | 7° 41' | 16° 18' | 9° 1'  | 4° R28 | 3° 28' | 8° 52'  | 9° 33' | M14  |
| T 15 | 17 35 16 | 24° 15'52" | 17° 47' | 18° 52' | 19° 57' | 20° 52' | 27° 31' | 2° 37' | 7° 42' | 16° 17' | 9° 3'  | 4° 28' | 3° 25' | 8° 58'  | 9° 35' | T 15 |
| W16  | 17 39 13 | 25° 13'04" | 2° 57'  | 20° 4'  | 21° 10' | 21° 26' | 27° R31 | 2° 44' | 7° 44' | 16° 17' | 9° 4'  | 4° 26' | 3° 22' | 9° 5'   | 9° 36' | W16  |
| T 17 | 17 43 9  | 26° 10'16" | 18° 8'  | 21° 13' | 22° 24' | 22° 1'  | 27° 30' | 2° 51' | 7° 45' | 16° 16' | 9° 6'  | 4° 24' | 3° 19' | 9° 12'  | 9° 38' | T 17 |
| F 18 | 17 47 6  | 27° 7'28"  | 3° 11'  | 22° 19' | 23° 37' | 22° 36' | 27° 30' | 2° 59' | 7° 46' | 16° 15' | 9° 7'  | 4° 21' | 3° 16' | 9° 18'  | 9° 39' | F 18 |
| S 19 | 17 51 2  | 28° 4'40"  | 17° 56' | 23° 22' | 24° 51' | 23° 11' | 27° 30' | 3° 6'  | 7° 47' | 16° 14' | 9° 9'  | 4° 18' | 3° 13' | 9° 25'  | 9° 40' | S 19 |
| S 20 | 17 54 59 | 29° 1'52"  | 2° 19'  | 24° 22' | 26° 5'  | 23° 46' | 27° 29' | 3° 13' | 7° 48' | 16° 13' | 9° 10' | 4° 16' | 3° 9'  | 9° 32'  | 9° 41' | S 20 |
| M21  | 17 58 55 | 29° 59'03" | 16° 16' | 25° 18' | 27° 18' | 24° 21' | 27° 28' | 3° 21' | 7° 50' | 16° 12' | 9° 12' | 4° 14' | 3° 6'  | 9° 38'  | 9° 43' | M21  |
| T 22 | 18 2 52  | 0° 56'15"  | 29° 46' | 26° 11' | 28° 32' | 24° 56' | 27° 27' | 3° 28' | 7° 51' | 16° 11' | 9° 13' | 4° D13 | 3° 3'  | 9° 45'  | 9° 44' | T 22 |
| W23  | 18 6 48  | 1° 53'27"  | 12° 52' | 27° 0'  | 29° 46' | 25° 32' | 27° 25' | 3° 35' | 7° 52' | 16° 10' | 9° 15' | 4° 14' | 3° 0'  | 9° 52'  | 9° 45' | W23  |
| T 24 | 18 10 45 | 2° 50'38"  | 25° 36' | 27° 46' | 1° 0'   | 26° 7'  | 27° 24' | 3° 42' | 7° 52' | 16° 9'  | 9° 16' | 4° 15' | 2° 57' | 9° 58'  | 9° 46' | T 24 |
| F 25 | 18 14 42 | 3° 47'50"  | 8° 2'   | 28° 28' | 2° 13'  | 26° 42' | 27° 22' | 3° 49' | 7° 53' | 16° 8'  | 9° 18' | 4° 17' | 2° 53' | 10° 5'  | 9° 47' | F 25 |
| S 26 | 18 18 38 | 4° 45'02"  | 20° 14' | 29° 6'  | 3° 27'  | 27° 18' | 27° 20' | 3° 57' | 7° 54' | 16° 7'  | 9° 19' | 4° 18' | 2° 50' | 10° 12' | 9° 48' | S 26 |
| S 27 | 18 22 35 | 5° 42'15"  | 2° 15'  | 29° 41' | 4° 41'  | 27° 53' | 27° 18' | 4° 4'  | 7° 55' | 16° 6'  | 9° 21' | 4° R19 | 2° 47' | 10° 18' | 9° 49' | S 27 |
| M28  | 18 26 31 | 6° 39'27"  | 14° 10' | 0° 11'  | 5° 54'  | 28° 29' | 27° 16' | 4° 11' | 7° 56' | 16° 4'  | 9° 22' | 4° 19' | 2° 44' | 10° 25' | 9° 49' | M28  |
| T 29 | 18 30 28 | 7° 36'39"  | 26° 0'  | 0° 37'  | 7° 8'   | 29° 4'  | 27° 13' | 4° 18' | 7° 56' | 16° 3'  | 9° 24' | 4° 17' | 2° 41' | 10° 32' | 9° 50' | T 29 |
| W30  | 18 34 24 | 8° 33'52"  | 7° 49'  | 0° 58'  | 8° 22'  | 29° 40' | 27° 11' | 4° 25' | 7° 57' | 16° 2'  | 9° 25' | 4° 13' | 2° 38' | 10° 38' | 9° 51' | W30  |

Delta T = 25.16 sec

Greg. Calendar

ASTRODIENST EPHEMERIS for the year 1677  
geocentric

JULY 1677 GC

00:00 UT

| Day  | Sid.t    | ☉                     | ☽                   | ♀                   | ♂                   | ♂                   | ♂                   | ♂                  | ♂                  | ♂                   | ♂                   | ♂                 | ♂                  | ♂                   | ♂                  | Day  |
|------|----------|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|---------------------|---------------------|-------------------|--------------------|---------------------|--------------------|------|
| T 1  | 18 38 21 | 9 <sup>53</sup> 31'04 | 19 <sup>53</sup> 38 | 1 <sup>53</sup> 16  | 9 <sup>53</sup> 36  | 0 <sup>53</sup> 16  | 27°R 8              | 4 <sup>53</sup> 32 | 7 <sup>53</sup> 58 | 16°R 1              | 9 <sup>53</sup> 27  | 4°R 8             | 2 <sup>53</sup> 34 | 10 <sup>53</sup> 45 | 9 <sup>53</sup> 52 | T 1  |
| F 2  | 18 42 17 | 10°28'17              | 1 <sup>53</sup> 29  | 1°28                | 10°49               | 0°51                | 27 <sup>53</sup> 5  | 4°38               | 7°58               | 16 <sup>53</sup> 0  | 9°28                | 4 <sup>53</sup> 2 | 2°31               | 10°52               | 9°52               | F 2  |
| S 3  | 18 46 14 | 11°25'29              | 13°25               | 1°36                | 12° 3               | 1°27                | 27° 2               | 4°45               | 7°59               | 15°58               | 9°30                | 3°55              | 2°28               | 10°58               | 9°53               | S 3  |
| S 4  | 18 50 11 | 12°22'42              | 25°27               | 1°R39               | 13°17               | 2° 3                | 26°58               | 4°52               | 7°59               | 15°57               | 9°31                | 3°48              | 2°25               | 11° 5               | 9°53               | S 4  |
| M 5  | 18 54 7  | 13°19'54              | 7 <sup>53</sup> 38  | 1°38                | 14°31               | 2°39                | 26°55               | 4°59               | 8° 0               | 15°56               | 9°33                | 3°43              | 2°22               | 11°12               | 9°54               | M 5  |
| T 6  | 18 58 4  | 14°17'06              | 20° 1               | 1°32                | 15°45               | 3°15                | 26°51               | 5° 5               | 8° 0               | 15°54               | 9°34                | 3°38              | 2°19               | 11°18               | 9°54               | T 6  |
| W 7  | 19 2 0   | 15°14'19              | 2 <sup>53</sup> 39  | 1°21                | 16°58               | 3°51                | 26°47               | 5°12               | 8° 0               | 15°53               | 9°36                | 3°36              | 2°15               | 11°25               | 9°54               | W 7  |
| T 8  | 19 5 57  | 16°11'31              | 15°35               | 1° 5                | 18°12               | 4°27                | 26°43               | 5°19               | 8° 1               | 15°52               | 9°38                | 3°D35             | 2°12               | 11°32               | 9°55               | T 8  |
| F 9  | 19 9 53  | 17° 8'44              | 28°52               | 0°45                | 19°26               | 5° 3                | 26°39               | 5°25               | 8° 1               | 15°50               | 9°39                | 3°36              | 2° 9               | 11°38               | 9°55               | F 9  |
| S 10 | 19 13 50 | 18° 5'56              | 12 <sup>53</sup> 34 | 0°21                | 20°40               | 5°40                | 26°34               | 5°32               | 8° 1               | 15°49               | 9°41                | 3°37              | 2° 6               | 11°45               | 9°55               | S 10 |
| S 11 | 19 17 46 | 19° 3'09              | 26°42               | 29 <sup>53</sup> 53 | 21°54               | 6°16                | 26°30               | 5°38               | 8° 1               | 15°48               | 9°42                | 3°R38             | 2° 3               | 11°52               | 9°55               | S 11 |
| M12  | 19 21 43 | 20° 0'22              | 11 <sup>53</sup> 15 | 29°21               | 23° 8               | 6°52                | 26°25               | 5°44               | 8° 1               | 15°46               | 9°44                | 3°38              | 1°59               | 11°58               | 9°55               | M12  |
| T 13 | 19 25 40 | 20°57'35              | 26° 9               | 28°46               | 24°22               | 7°29                | 26°20               | 5°51               | 8°R 1              | 15°45               | 9°45                | 3°36              | 1°56               | 12° 5               | 9°R55              | T 13 |
| W14  | 19 29 36 | 21°54'48              | 11 <sup>53</sup> 18 | 28° 8               | 25°35               | 8° 5                | 26°15               | 5°57               | 8° 1               | 15°43               | 9°47                | 3°32              | 1°53               | 12°12               | 9°55               | W14  |
| T 15 | 19 33 33 | 22°52'02              | 26°34               | 27°29               | 26°49               | 8°42                | 26°10               | 6° 3               | 8° 1               | 15°42               | 9°48                | 3°26              | 1°50               | 12°19               | 9°55               | T 15 |
| F 16 | 19 37 29 | 23°49'16              | 11 <sup>53</sup> 45 | 26°48               | 28° 3               | 9°18                | 26° 4               | 6° 9               | 8° 1               | 15°40               | 9°50                | 3°19              | 1°47               | 12°25               | 9°55               | F 16 |
| S 17 | 19 41 26 | 24°46'31              | 26°41               | 26° 6               | 29°17               | 9°55                | 25°59               | 6°15               | 8° 1               | 15°39               | 9°51                | 3°12              | 1°44               | 12°32               | 9°55               | S 17 |
| S 18 | 19 45 22 | 25°43'46              | 11 <sup>53</sup> 15 | 25°24               | 0 <sup>53</sup> 31  | 10°32               | 25°53               | 6°21               | 8° 0               | 15°37               | 9°53                | 3° 5              | 1°40               | 12°39               | 9°55               | S 18 |
| M19  | 19 49 19 | 26°41'03              | 25°20               | 24°43               | 1°45                | 11° 8               | 25°47               | 6°27               | 8° 0               | 15°36               | 9°54                | 2°59              | 1°37               | 12°45               | 9°54               | M19  |
| T 20 | 19 53 15 | 27°38'20              | 8 <sup>53</sup> 56  | 24° 3               | 2°59                | 11°45               | 25°41               | 6°33               | 8° 0               | 15°34               | 9°56                | 2°55              | 1°34               | 12°52               | 9°54               | T 20 |
| W21  | 19 57 12 | 28°35'38              | 22° 4               | 23°26               | 4°13                | 12°22               | 25°35               | 6°39               | 7°59               | 15°33               | 9°57                | 2°54              | 1°31               | 12°59               | 9°53               | W21  |
| T 22 | 20 1 9   | 29°32'58              | 4 <sup>53</sup> 47  | 22°51               | 5°27                | 12°59               | 25°29               | 6°45               | 7°59               | 15°31               | 9°58                | 2°D54             | 1°28               | 13° 5               | 9°53               | T 22 |
| F 23 | 20 5 5   | 0 <sup>53</sup> 30'18 | 17°10               | 22°20               | 6°41                | 13°36               | 25°23               | 6°50               | 7°59               | 15°30               | 10° 0               | 2°54              | 1°25               | 13°12               | 9°52               | F 23 |
| S 24 | 20 9 2   | 1°27'40               | 29°17               | 21°54               | 7°54                | 14°13               | 25°16               | 6°56               | 7°58               | 15°28               | 10° 1               | 2°R55             | 1°21               | 13°19               | 9°52               | S 24 |
| S 25 | 20 12 58 | 2°25'02               | 11 <sup>53</sup> 13 | 21°31               | 9° 8                | 14°50               | 25°10               | 7° 2               | 7°58               | 15°27               | 10° 3               | 2°55              | 1°18               | 13°25               | 9°51               | S 25 |
| M26  | 20 16 55 | 3°22'26               | 23° 3               | 21°15               | 10°22               | 15°27               | 25° 3               | 7° 7               | 7°57               | 15°25               | 10° 4               | 2°53              | 1°15               | 13°32               | 9°51               | M26  |
| T 27 | 20 20 51 | 4°19'50               | 4 <sup>53</sup> 51  | 21° 3               | 11°36               | 16° 4               | 24°56               | 7°13               | 7°56               | 15°23               | 10° 6               | 2°48              | 1°12               | 13°39               | 9°50               | T 27 |
| W28  | 20 24 48 | 5°17'16               | 16°40               | 20°D58              | 12°50               | 16°42               | 24°49               | 7°18               | 7°56               | 15°22               | 10° 7               | 2°41              | 1° 9               | 13°45               | 9°49               | W28  |
| T 29 | 20 28 44 | 6°14'42               | 28°32               | 20°59               | 14° 4               | 17°19               | 24°42               | 7°23               | 7°55               | 15°20               | 10° 8               | 2°32              | 1° 5               | 13°52               | 9°48               | T 29 |
| F 30 | 20 32 41 | 7°12'10               | 10 <sup>53</sup> 29 | 21° 6               | 15°18               | 17°56               | 24°35               | 7°28               | 7°54               | 15°19               | 10°10               | 2°21              | 1° 2               | 13°59               | 9°47               | F 30 |
| S 31 | 20 36 38 | 8 <sup>53</sup> 9'38  | 22 <sup>53</sup> 33 | 21 <sup>53</sup> 20 | 16 <sup>53</sup> 32 | 18 <sup>53</sup> 34 | 24 <sup>53</sup> 28 | 7 <sup>53</sup> 34 | 7 <sup>53</sup> 53 | 15 <sup>53</sup> 17 | 10 <sup>53</sup> 11 | 2 <sup>53</sup> 9 | 0 <sup>53</sup> 59 | 14 <sup>53</sup> 5  | 9 <sup>53</sup> 46 | S 31 |

Delta T = 25.11 sec

Greg. Calendar

AUGUST 1677 GC

00:00 UT

| Day  | Sid.t    | ☉                     | ☽                   | ♀                   | ♂                   | ♂                   | ♂                   | ♂                  | ♂                 | ♂                   | ♂                   | ♂                   | ♂                   | ♂                   | ♂                  | Day  |
|------|----------|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|------|
| S 1  | 20 40 34 | 9 <sup>53</sup> 7'08  | 4 <sup>53</sup> 45  | 21 <sup>53</sup> 40 | 17 <sup>53</sup> 47 | 19 <sup>53</sup> 11 | 24°R21              | 7 <sup>53</sup> 39 | 7°R52             | 15°R15              | 10 <sup>53</sup> 13 | 1°R57               | 0 <sup>53</sup> 56  | 14 <sup>53</sup> 12 | 9°R45              | S 1  |
| M 2  | 20 44 31 | 10° 4'38              | 17° 6               | 22° 7               | 19° 1               | 19°49               | 24 <sup>53</sup> 13 | 7°44               | 7°51              | 15 <sup>53</sup> 14 | 10°14               | 1 <sup>53</sup> 46  | 0°53                | 14°19               | 9°Y44              | M 2  |
| T 3  | 20 48 27 | 11° 2'09              | 29°38               | 22°41               | 20°15               | 20°26               | 24° 6               | 7°48               | 7°50              | 15°12               | 10°15               | 1°38                | 0°50                | 14°25               | 9°43               | T 3  |
| W 4  | 20 52 24 | 11°59'41              | 12 <sup>53</sup> 22 | 23°21               | 21°29               | 21° 4               | 23°58               | 7°53               | 7°49              | 15°10               | 10°17               | 1°32                | 0°46                | 14°32               | 9°42               | W 4  |
| T 5  | 20 56 20 | 12°57'14              | 25°20               | 24° 8               | 22°43               | 21°42               | 23°51               | 7°58               | 7°48              | 15° 9               | 10°18               | 1°28                | 0°43                | 14°39               | 9°41               | T 5  |
| F 6  | 21 0 17  | 13°54'48              | 8 <sup>53</sup> 35  | 25° 1               | 23°57               | 22°20               | 23°43               | 8° 3               | 7°47              | 15° 7               | 10°19               | 1°D27               | 0°40                | 14°45               | 9°40               | F 6  |
| S 7  | 21 4 13  | 14°52'23              | 22°10               | 26° 1               | 25°11               | 22°57               | 23°35               | 8° 7               | 7°46              | 15° 6               | 10°21               | 1°27                | 0°37                | 14°52               | 9°38               | S 7  |
| S 8  | 21 8 10  | 15°49'58              | 6 <sup>53</sup> 7   | 27° 7               | 26°25               | 23°35               | 23°28               | 8°12               | 7°45              | 15° 4               | 10°22               | 1°R27               | 0°34                | 14°59               | 9°37               | S 8  |
| M 9  | 21 12 7  | 16°47'35              | 20°25               | 28°19               | 27°39               | 24°13               | 23°20               | 8°16               | 7°44              | 15° 2               | 10°23               | 1°26                | 0°31                | 15° 6               | 9°36               | M 9  |
| T 10 | 21 16 3  | 17°45'13              | 5 <sup>53</sup> 4   | 29°36               | 28°53               | 24°51               | 23°12               | 8°21               | 7°42              | 15° 1               | 10°24               | 1°23                | 0°27                | 15°12               | 9°34               | T 10 |
| W11  | 21 20 0  | 18°42'51              | 19°59               | 0 <sup>53</sup> 59  | 0 <sup>53</sup> 0   | 25°29               | 23° 4               | 8°25               | 7°41              | 14°59               | 10°26               | 1°17                | 0°24                | 15°19               | 9°33               | W11  |
| T 12 | 21 23 56 | 19°40'31              | 5 <sup>53</sup> 3   | 2°27                | 1°21                | 26° 7               | 22°57               | 8°29               | 7°40              | 14°57               | 10°27               | 1° 9                | 0°21                | 15°26               | 9°31               | T 12 |
| F 13 | 21 27 53 | 20°38'12              | 20° 7               | 3°59                | 2°35                | 26°45               | 22°49               | 8°33               | 7°38              | 14°56               | 10°28               | 0°58                | 0°18                | 15°32               | 9°30               | F 13 |
| S 14 | 21 31 49 | 21°35'55              | 5 <sup>53</sup> 0   | 5°36                | 3°49                | 27°24               | 22°41               | 8°37               | 7°37              | 14°54               | 10°29               | 0°47                | 0°15                | 15°39               | 9°28               | S 14 |
| S 15 | 21 35 46 | 22°33'38              | 19°34               | 7°17                | 5° 3                | 28° 2               | 22°33               | 8°41               | 7°35              | 14°53               | 10°31               | 0°37                | 0°11                | 15°46               | 9°26               | S 15 |
| M16  | 21 39 42 | 23°31'24              | 3 <sup>53</sup> 43  | 9° 2                | 6°17                | 28°40               | 22°25               | 8°45               | 7°34              | 14°51               | 10°32               | 0°28                | 0° 8                | 15°52               | 9°25               | M16  |
| T 17 | 21 43 39 | 24°29'11              | 17°23               | 10°50               | 7°31                | 29°18               | 22°17               | 8°48               | 7°32              | 14°49               | 10°33               | 0°22                | 0° 5                | 15°59               | 9°23               | T 17 |
| W18  | 21 47 36 | 25°26'59              | 0 <sup>53</sup> 35  | 12°40               | 8°45                | 29°57               | 22° 9               | 8°52               | 7°31              | 14°48               | 10°34               | 0°18                | 0° 2                | 16° 6               | 9°21               | W18  |
| T 19 | 21 51 32 | 26°24'50              | 13°21               | 14°33               | 9°59                | 0 <sup>53</sup> 35  | 22° 2               | 8°56               | 7°29              | 14°46               | 10°35               | 0°16                | 29 <sup>53</sup> 59 | 16°12               | 9°19               | T 19 |
| F 20 | 21 55 29 | 27°22'42              | 25°45               | 16°28               | 11°14               | 1°14                | 21°54               | 8°59               | 7°28              | 14°45               | 10°36               | 0°16                | 29°56               | 16°19               | 9°17               | F 20 |
| S 21 | 21 59 25 | 28°20'36              | 7 <sup>53</sup> 52  | 18°24               | 12°28               | 1°52                | 21°46               | 9° 2               | 7°26              | 14°43               | 10°38               | 0°16                | 29°52               | 16°26               | 9°16               | S 21 |
| S 22 | 22 3 22  | 29°18'32              | 19°48               | 20°21               | 13°42               | 2°31                | 21°38               | 9° 6               | 7°24              | 14°41               | 10°39               | 0°15                | 29°49               | 16°32               | 9°14               | S 22 |
| M23  | 22 7 18  | 0 <sup>53</sup> 16'30 | 1 <sup>53</sup> 37  | 22°19               | 14°56               | 3°10                | 21°30               | 9° 9               | 7°22              | 14°40               | 10°40               | 0°12                | 29°46               | 16°39               | 9°12               | M23  |
| T 24 | 22 11 15 | 1°14'29               | 13°26               | 24°17               | 16°10               | 3°48                | 21°23               | 9°12               | 7°21              | 14°38               | 10°41               | 0° 7                | 29°43               | 16°46               | 9°10               | T 24 |
| W25  | 22 15 11 | 2°12'30               | 25°17               | 26°15               | 17°24               | 4°27                | 21°15               | 9°15               | 7°19              | 14°37               | 10°42               | 29 <sup>53</sup> 59 | 29°40               | 16°53               | 9° 7               | W25  |
| T 26 | 22 19 8  | 3°10'34               | 7 <sup>53</sup> 14  | 28°14               | 18°38               | 5° 6                | 21° 8               | 9°18               | 7°17              | 14°35               | 10°43               | 29°48               | 29°37               | 16°59               | 9° 5               | T 26 |
| F 27 | 22 23 5  | 4° 8'38               | 19°20               | 0 <sup>53</sup> 12  | 19°52               | 5°45                | 21° 0               | 9°20               | 7°15              | 14°34               | 10°44               | 29°36               | 29°33               | 17° 6               | 9° 3               | F 27 |
| S 28 | 22 27 1  | 5° 6'45               | 1 <sup>53</sup> 35  | 2° 9                | 21° 6               | 6°24                | 20°53               | 9°23               | 7°13              | 14°32               | 10°45               | 29°22               | 29°30               | 17°13               | 9° 1               | S 28 |
| S 29 | 22 30 58 | 6° 4'53               | 14° 1               | 4° 6                | 22°20               | 7° 3                | 20°45               | 9°26               | 7°11              | 14°31               | 10°46               | 29° 8               | 29°27               | 17°19               | 8°59               | S 29 |
| M30  | 22 34 54 | 7° 3'03               | 26°37               | 6° 2                | 23°35               | 7°42                | 20°38               | 9°28               | 7° 9              | 14°29               | 10°47               | 28°56               | 29°24               | 17°26               | 8°57               | M30  |
| T 31 | 22 38 51 | 8 <sup>53</sup> 1'14  | 9 <sup>53</sup> 25  | 7 <sup>53</sup> 58  | 24 <sup>53</sup> 49 | 8 <sup>53</sup> 21  | 20 <sup>53</sup> 31 | 9 <sup>53</sup> 31 | 7 <sup>53</sup> 7 | 14 <sup>53</sup> 28 | 10 <sup>53</sup> 48 | 28 <sup>53</sup> 46 | 29 <sup>53</sup> 21 | 17 <sup>53</sup> 33 | 8 <sup>53</sup> 54 | T 31 |

Delta T = 25.06 sec

Greg. Calendar

## ASTRODIENST EPHEMERIS for the year 1677

geocentric

SEPTEMBER 1677 GC

00:00 UT

| Day  | Sid.t    | ☉   | ☽                               | ♀   | ♂                               | ♂                               | ♂                   | ♂                   | ♂                  | ♂                   | ♂                   | ♂                    | ♂                    | ♂                   | ♂                  | Day  |
|------|----------|---|---------------------------------|---|---------------------------------|---------------------------------|---------------------|---------------------|--------------------|---------------------|---------------------|----------------------|----------------------|---------------------|--------------------|------|
| W 1  | 22 42 47 | 8 <sup>h</sup> 59 <sup>m</sup> 27 <sup>s</sup>  | 22 <sup>h</sup> 23 <sup>m</sup> | 9 <sup>h</sup> 52 <sup>m</sup> 3 <sup>s</sup> | 26 <sup>h</sup> 3 <sup>m</sup>  | 9 <sup>h</sup> 0 <sup>m</sup>   | 20 <sup>h</sup> R24 | 9 <sup>h</sup> II33 | 7 <sup>h</sup> R 5 | 14 <sup>h</sup> R26 | 10 <sup>h</sup> 549 | 28 <sup>h</sup> R39  | 29 <sup>h</sup> ML17 | 17 <sup>h</sup> 539 | 8 <sup>h</sup> R52 | W 1  |
| T 2  | 22 46 44 | 9 <sup>h</sup> 57 <sup>m</sup> 42 <sup>s</sup>  | 5 <sup>h</sup> ML33             | 11 <sup>h</sup> 45 <sup>m</sup>               | 27 <sup>h</sup> 17 <sup>m</sup> | 9 <sup>h</sup> 40 <sup>m</sup>  | 20 <sup>h</sup> 17  | 9 <sup>h</sup> 35   | 7 <sup>h</sup> Y 3 | 14 <sup>h</sup> 25  | 10 <sup>h</sup> 49  | 28 <sup>h</sup> ML35 | 29 <sup>h</sup> 14   | 17 <sup>h</sup> 46  | 8 <sup>h</sup> Y50 | T 2  |
| F 3  | 22 50 40 | 10 <sup>h</sup> 55 <sup>m</sup> 59 <sup>s</sup> | 18 <sup>h</sup> 56 <sup>m</sup> | 13 <sup>h</sup> 37 <sup>m</sup>               | 28 <sup>h</sup> 31 <sup>m</sup> | 10 <sup>h</sup> 19 <sup>m</sup> | 20 <sup>h</sup> 10  | 9 <sup>h</sup> 37   | 7 <sup>h</sup> 1   | 14 <sup>h</sup> 23  | 10 <sup>h</sup> 50  | 28 <sup>h</sup> 34   | 29 <sup>h</sup> 11   | 17 <sup>h</sup> 53  | 8 <sup>h</sup> 47  | F 3  |
| S 4  | 22 54 37 | 11 <sup>h</sup> 54 <sup>m</sup> 16 <sup>s</sup> | 2 <sup>h</sup> 32               | 15 <sup>h</sup> 29 <sup>m</sup>               | 29 <sup>h</sup> 45 <sup>m</sup> | 10 <sup>h</sup> 58 <sup>m</sup> | 20 <sup>h</sup> 3   | 9 <sup>h</sup> 39   | 6 <sup>h</sup> 59  | 14 <sup>h</sup> 22  | 10 <sup>h</sup> 51  | 28 <sup>h</sup> D33  | 29 <sup>h</sup> 8    | 17 <sup>h</sup> 59  | 8 <sup>h</sup> 45  | S 4  |
| S 5  | 22 58 34 | 12 <sup>h</sup> 52 <sup>m</sup> 36 <sup>s</sup> | 16 <sup>h</sup> 24 <sup>m</sup> | 17 <sup>h</sup> 19 <sup>m</sup>               | 0 <sup>h</sup> 59 <sup>m</sup>  | 11 <sup>h</sup> 38 <sup>m</sup> | 19 <sup>h</sup> 56  | 9 <sup>h</sup> 41   | 6 <sup>h</sup> 57  | 14 <sup>h</sup> 21  | 10 <sup>h</sup> 52  | 28 <sup>h</sup> R33  | 29 <sup>h</sup> 5    | 18 <sup>h</sup> 6   | 8 <sup>h</sup> 42  | S 5  |
| M 6  | 23 2 30  | 13 <sup>h</sup> 50 <sup>m</sup> 57 <sup>s</sup> | 0 <sup>h</sup> 31               | 19 <sup>h</sup> 8 <sup>m</sup>                | 2 <sup>h</sup> 13 <sup>m</sup>  | 12 <sup>h</sup> 17 <sup>m</sup> | 19 <sup>h</sup> 50  | 9 <sup>h</sup> 43   | 6 <sup>h</sup> 55  | 14 <sup>h</sup> 19  | 10 <sup>h</sup> 53  | 28 <sup>h</sup> 33   | 29 <sup>h</sup> 2    | 18 <sup>h</sup> 13  | 8 <sup>h</sup> 40  | M 6  |
| T 7  | 23 6 27  | 14 <sup>h</sup> 49 <sup>m</sup> 19 <sup>s</sup> | 14 <sup>h</sup> 53 <sup>m</sup> | 20 <sup>h</sup> 56 <sup>m</sup>               | 3 <sup>h</sup> 27 <sup>m</sup>  | 12 <sup>h</sup> 57 <sup>m</sup> | 19 <sup>h</sup> 43  | 9 <sup>h</sup> 44   | 6 <sup>h</sup> 52  | 14 <sup>h</sup> 18  | 10 <sup>h</sup> 54  | 28 <sup>h</sup> 30   | 28 <sup>h</sup> 58   | 18 <sup>h</sup> 19  | 8 <sup>h</sup> 37  | T 7  |
| W 8  | 23 10 23 | 15 <sup>h</sup> 47 <sup>m</sup> 43 <sup>s</sup> | 29 <sup>h</sup> 27 <sup>m</sup> | 22 <sup>h</sup> 42 <sup>m</sup>               | 4 <sup>h</sup> 41 <sup>m</sup>  | 13 <sup>h</sup> 36 <sup>m</sup> | 19 <sup>h</sup> 37  | 9 <sup>h</sup> 46   | 6 <sup>h</sup> 50  | 14 <sup>h</sup> 16  | 10 <sup>h</sup> 54  | 28 <sup>h</sup> 24   | 28 <sup>h</sup> 55   | 18 <sup>h</sup> 26  | 8 <sup>h</sup> 35  | W 8  |
| T 9  | 23 14 20 | 16 <sup>h</sup> 46 <sup>m</sup> 09 <sup>s</sup> | 14 <sup>h</sup> 8 <sup>m</sup>  | 24 <sup>h</sup> 28 <sup>m</sup>               | 5 <sup>h</sup> 55 <sup>m</sup>  | 14 <sup>h</sup> 16 <sup>m</sup> | 19 <sup>h</sup> 31  | 9 <sup>h</sup> 47   | 6 <sup>h</sup> 48  | 14 <sup>h</sup> 15  | 10 <sup>h</sup> 55  | 28 <sup>h</sup> 16   | 28 <sup>h</sup> 52   | 18 <sup>h</sup> 33  | 8 <sup>h</sup> 32  | T 9  |
| F 10 | 23 18 16 | 17 <sup>h</sup> 44 <sup>m</sup> 36 <sup>s</sup> | 28 <sup>h</sup> 51 <sup>m</sup> | 26 <sup>h</sup> 12 <sup>m</sup>               | 7 <sup>h</sup> 9 <sup>m</sup>   | 14 <sup>h</sup> 56 <sup>m</sup> | 19 <sup>h</sup> 25  | 9 <sup>h</sup> 48   | 6 <sup>h</sup> 46  | 14 <sup>h</sup> 14  | 10 <sup>h</sup> 56  | 28 <sup>h</sup> 6    | 28 <sup>h</sup> 49   | 18 <sup>h</sup> 40  | 8 <sup>h</sup> 30  | F 10 |
| S 11 | 23 22 13 | 18 <sup>h</sup> 43 <sup>m</sup> 05 <sup>s</sup> | 13 <sup>h</sup> 26 <sup>m</sup> | 27 <sup>h</sup> 56 <sup>m</sup>               | 8 <sup>h</sup> 23 <sup>m</sup>  | 15 <sup>h</sup> 35 <sup>m</sup> | 19 <sup>h</sup> 19  | 9 <sup>h</sup> 50   | 6 <sup>h</sup> 44  | 14 <sup>h</sup> 13  | 10 <sup>h</sup> 57  | 27 <sup>h</sup> 56   | 28 <sup>h</sup> 46   | 18 <sup>h</sup> 46  | 8 <sup>h</sup> 27  | S 11 |
| S 12 | 23 26 9  | 19 <sup>h</sup> 41 <sup>m</sup> 36 <sup>s</sup> | 27 <sup>h</sup> 47 <sup>m</sup> | 29 <sup>h</sup> 38 <sup>m</sup>               | 9 <sup>h</sup> 37 <sup>m</sup>  | 16 <sup>h</sup> 15 <sup>m</sup> | 19 <sup>h</sup> 13  | 9 <sup>h</sup> 51   | 6 <sup>h</sup> 41  | 14 <sup>h</sup> 11  | 10 <sup>h</sup> 57  | 27 <sup>h</sup> 46   | 28 <sup>h</sup> 42   | 18 <sup>h</sup> 53  | 8 <sup>h</sup> 25  | S 12 |
| M13  | 23 30 6  | 20 <sup>h</sup> 40 <sup>m</sup> 09 <sup>s</sup> | 11 <sup>h</sup> Y48             | 1 <sup>h</sup> 20 <sup>m</sup>                | 10 <sup>h</sup> 51 <sup>m</sup> | 16 <sup>h</sup> 55 <sup>m</sup> | 19 <sup>h</sup> 7   | 9 <sup>h</sup> 52   | 6 <sup>h</sup> 39  | 14 <sup>h</sup> 10  | 10 <sup>h</sup> 58  | 27 <sup>h</sup> 37   | 28 <sup>h</sup> 39   | 19 <sup>h</sup> 0   | 8 <sup>h</sup> 22  | M13  |
| T 14 | 23 34 2  | 21 <sup>h</sup> 38 <sup>m</sup> 44 <sup>s</sup> | 25 <sup>h</sup> 24 <sup>m</sup> | 3 <sup>h</sup> 0 <sup>m</sup>                 | 12 <sup>h</sup> 6 <sup>m</sup>  | 17 <sup>h</sup> 35 <sup>m</sup> | 19 <sup>h</sup> 2   | 9 <sup>h</sup> 53   | 6 <sup>h</sup> 37  | 14 <sup>h</sup> 9   | 10 <sup>h</sup> 59  | 27 <sup>h</sup> 31   | 28 <sup>h</sup> 36   | 19 <sup>h</sup> 6   | 8 <sup>h</sup> 19  | T 14 |
| W15  | 23 37 59 | 22 <sup>h</sup> 37 <sup>m</sup> 21 <sup>s</sup> | 8 <sup>h</sup> 35 <sup>m</sup>  | 4 <sup>h</sup> 39 <sup>m</sup>                | 13 <sup>h</sup> 20 <sup>m</sup> | 18 <sup>h</sup> 15 <sup>m</sup> | 18 <sup>h</sup> 57  | 9 <sup>h</sup> 53   | 6 <sup>h</sup> 34  | 14 <sup>h</sup> 8   | 10 <sup>h</sup> 59  | 27 <sup>h</sup> 27   | 28 <sup>h</sup> 33   | 19 <sup>h</sup> 13  | 8 <sup>h</sup> 17  | W15  |
| T 16 | 23 41 56 | 23 <sup>h</sup> 36 <sup>m</sup> 01 <sup>s</sup> | 21 <sup>h</sup> 22 <sup>m</sup> | 6 <sup>h</sup> 18 <sup>m</sup>                | 14 <sup>h</sup> 34 <sup>m</sup> | 18 <sup>h</sup> 55 <sup>m</sup> | 18 <sup>h</sup> 51  | 9 <sup>h</sup> 54   | 6 <sup>h</sup> 32  | 14 <sup>h</sup> 6   | 11 <sup>h</sup> 0   | 27 <sup>h</sup> 25   | 28 <sup>h</sup> 30   | 19 <sup>h</sup> 20  | 8 <sup>h</sup> 14  | T 16 |
| F 17 | 23 45 52 | 24 <sup>h</sup> 34 <sup>m</sup> 42 <sup>s</sup> | 3 <sup>h</sup> II48             | 7 <sup>h</sup> 55 <sup>m</sup>                | 15 <sup>h</sup> 48 <sup>m</sup> | 19 <sup>h</sup> 35 <sup>m</sup> | 18 <sup>h</sup> 46  | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 30  | 14 <sup>h</sup> 5   | 11 <sup>h</sup> 0   | 27 <sup>h</sup> D25  | 28 <sup>h</sup> 27   | 19 <sup>h</sup> 26  | 8 <sup>h</sup> 11  | F 17 |
| S 18 | 23 49 49 | 25 <sup>h</sup> 33 <sup>m</sup> 26 <sup>s</sup> | 15 <sup>h</sup> 57 <sup>m</sup> | 9 <sup>h</sup> 31 <sup>m</sup>                | 17 <sup>h</sup> 2 <sup>m</sup>  | 20 <sup>h</sup> 15 <sup>m</sup> | 18 <sup>h</sup> 41  | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 27  | 14 <sup>h</sup> 4   | 11 <sup>h</sup> 1   | 27 <sup>h</sup> 26   | 28 <sup>h</sup> 23   | 19 <sup>h</sup> 33  | 8 <sup>h</sup> 9   | S 18 |
| S 19 | 23 53 45 | 26 <sup>h</sup> 32 <sup>m</sup> 12 <sup>s</sup> | 27 <sup>h</sup> 55 <sup>m</sup> | 11 <sup>h</sup> 7 <sup>m</sup>                | 18 <sup>h</sup> 16 <sup>m</sup> | 20 <sup>h</sup> 55 <sup>m</sup> | 18 <sup>h</sup> 37  | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 25  | 14 <sup>h</sup> 3   | 11 <sup>h</sup> 1   | 27 <sup>h</sup> R26  | 28 <sup>h</sup> 20   | 19 <sup>h</sup> 40  | 8 <sup>h</sup> 6   | S 19 |
| M20  | 23 57 42 | 27 <sup>h</sup> 31 <sup>m</sup> 01 <sup>s</sup> | 9 <sup>h</sup> 56 <sup>m</sup>  | 12 <sup>h</sup> 41 <sup>m</sup>               | 19 <sup>h</sup> 30 <sup>m</sup> | 21 <sup>h</sup> 36 <sup>m</sup> | 18 <sup>h</sup> 32  | 9 <sup>h</sup> 56   | 6 <sup>h</sup> 23  | 14 <sup>h</sup> 2   | 11 <sup>h</sup> 2   | 27 <sup>h</sup> 25   | 28 <sup>h</sup> 17   | 19 <sup>h</sup> 46  | 8 <sup>h</sup> 3   | M20  |
| T 21 | 0 1 38   | 28 <sup>h</sup> 29 <sup>m</sup> 51 <sup>s</sup> | 21 <sup>h</sup> 46 <sup>m</sup> | 14 <sup>h</sup> 15 <sup>m</sup>               | 20 <sup>h</sup> 44 <sup>m</sup> | 22 <sup>h</sup> 16 <sup>m</sup> | 18 <sup>h</sup> 28  | 9 <sup>h</sup> R56  | 6 <sup>h</sup> 20  | 14 <sup>h</sup> 1   | 11 <sup>h</sup> 2   | 27 <sup>h</sup> 22   | 28 <sup>h</sup> 14   | 19 <sup>h</sup> 53  | 8 <sup>h</sup> 0   | T 21 |
| W22  | 0 5 35   | 29 <sup>h</sup> 28 <sup>m</sup> 44 <sup>s</sup> | 3 <sup>h</sup> II30             | 15 <sup>h</sup> 47 <sup>m</sup>               | 21 <sup>h</sup> 58 <sup>m</sup> | 22 <sup>h</sup> 56 <sup>m</sup> | 18 <sup>h</sup> 24  | 9 <sup>h</sup> 56   | 6 <sup>h</sup> 18  | 14 <sup>h</sup> 0   | 11 <sup>h</sup> 3   | 27 <sup>h</sup> 17   | 28 <sup>h</sup> 11   | 20 <sup>h</sup> 0   | 7 <sup>h</sup> 58  | W22  |
| T 23 | 0 9 31   | 0 <sup>h</sup> 52 <sup>m</sup> 37 <sup>s</sup>  | 15 <sup>h</sup> 32 <sup>m</sup> | 17 <sup>h</sup> 19 <sup>m</sup>               | 23 <sup>h</sup> 11 <sup>m</sup> | 23 <sup>h</sup> 37 <sup>m</sup> | 18 <sup>h</sup> 20  | 9 <sup>h</sup> 56   | 6 <sup>h</sup> 15  | 13 <sup>h</sup> 59  | 11 <sup>h</sup> 3   | 27 <sup>h</sup> 10   | 28 <sup>h</sup> 8    | 20 <sup>h</sup> 7   | 7 <sup>h</sup> 55  | T 23 |
| F 24 | 0 13 28  | 1 <sup>h</sup> 26 <sup>m</sup> 36 <sup>s</sup>  | 27 <sup>h</sup> 45 <sup>m</sup> | 18 <sup>h</sup> 50 <sup>m</sup>               | 24 <sup>h</sup> 25 <sup>m</sup> | 24 <sup>h</sup> 17 <sup>m</sup> | 18 <sup>h</sup> 16  | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 13  | 13 <sup>h</sup> 58  | 11 <sup>h</sup> 4   | 27 <sup>h</sup> 1    | 28 <sup>h</sup> 4    | 20 <sup>h</sup> 13  | 7 <sup>h</sup> 52  | F 24 |
| S 25 | 0 17 25  | 2 <sup>h</sup> 25 <sup>m</sup> 36 <sup>s</sup>  | 10 <sup>h</sup> II11            | 20 <sup>h</sup> 20 <sup>m</sup>               | 25 <sup>h</sup> 39 <sup>m</sup> | 24 <sup>h</sup> 58 <sup>m</sup> | 18 <sup>h</sup> 12  | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 10  | 13 <sup>h</sup> 57  | 11 <sup>h</sup> 4   | 26 <sup>h</sup> 51   | 28 <sup>h</sup> 1    | 20 <sup>h</sup> 20  | 7 <sup>h</sup> 49  | S 25 |
| S 26 | 0 21 21  | 3 <sup>h</sup> 24 <sup>m</sup> 37 <sup>s</sup>  | 22 <sup>h</sup> 51 <sup>m</sup> | 21 <sup>h</sup> 49 <sup>m</sup>               | 26 <sup>h</sup> 53 <sup>m</sup> | 25 <sup>h</sup> 38 <sup>m</sup> | 18 <sup>h</sup> 9   | 9 <sup>h</sup> 55   | 6 <sup>h</sup> 8   | 13 <sup>h</sup> 56  | 11 <sup>h</sup> 5   | 26 <sup>h</sup> 40   | 27 <sup>h</sup> 58   | 20 <sup>h</sup> 27  | 7 <sup>h</sup> 46  | S 26 |
| M27  | 0 25 18  | 4 <sup>h</sup> 23 <sup>m</sup> 41 <sup>s</sup>  | 5 <sup>h</sup> 54 <sup>m</sup>  | 23 <sup>h</sup> 17 <sup>m</sup>               | 28 <sup>h</sup> 7 <sup>m</sup>  | 26 <sup>h</sup> 19 <sup>m</sup> | 18 <sup>h</sup> 5   | 9 <sup>h</sup> 54   | 6 <sup>h</sup> 6   | 13 <sup>h</sup> 55  | 11 <sup>h</sup> 5   | 26 <sup>h</sup> 31   | 27 <sup>h</sup> 55   | 20 <sup>h</sup> 33  | 7 <sup>h</sup> 44  | M27  |
| T 28 | 0 29 14  | 5 <sup>h</sup> 22 <sup>m</sup> 47 <sup>s</sup>  | 18 <sup>h</sup> 54 <sup>m</sup> | 24 <sup>h</sup> 44 <sup>m</sup>               | 29 <sup>h</sup> 21 <sup>m</sup> | 27 <sup>h</sup> 0 <sup>m</sup>  | 18 <sup>h</sup> 2   | 9 <sup>h</sup> 53   | 6 <sup>h</sup> 3   | 13 <sup>h</sup> 54  | 11 <sup>h</sup> 5   | 26 <sup>h</sup> 24   | 27 <sup>h</sup> 52   | 20 <sup>h</sup> 40  | 7 <sup>h</sup> 41  | T 28 |
| W29  | 0 33 11  | 6 <sup>h</sup> 21 <sup>m</sup> 54 <sup>s</sup>  | 2 <sup>h</sup> ML14             | 26 <sup>h</sup> 10 <sup>m</sup>               | 0 <sup>h</sup> ML35             | 27 <sup>h</sup> 41 <sup>m</sup> | 17 <sup>h</sup> 59  | 9 <sup>h</sup> 53   | 6 <sup>h</sup> 1   | 13 <sup>h</sup> 53  | 11 <sup>h</sup> 6   | 26 <sup>h</sup> 19   | 27 <sup>h</sup> 48   | 20 <sup>h</sup> 47  | 7 <sup>h</sup> 38  | W29  |
| T 30 | 0 37 7   | 7 <sup>h</sup> 21 <sup>m</sup> 04 <sup>s</sup>  | 15 <sup>h</sup> ML46            | 27 <sup>h</sup> 36 <sup>m</sup>               | 1 <sup>h</sup> ML49             | 28 <sup>h</sup> 21 <sup>m</sup> | 17 <sup>h</sup> 57  | 9 <sup>h</sup> II52 | 5 <sup>h</sup> Y58 | 13 <sup>h</sup> 53  | 11 <sup>h</sup> 6   | 26 <sup>h</sup> ML17 | 27 <sup>h</sup> ML45 | 20 <sup>h</sup> 53  | 7 <sup>h</sup> Y35 | T 30 |

Delta T = 25.01 sec

Greg. Calendar

OCTOBER 1677 GC

00:00 UT

| Day  | Sid.t   | ☉  | ☽   | ♀                               | ♂   | ♂                               | ♂                   | ♂                   | ♂                  | ♂                   | ♂                   | ♂                    | ♂                    | ♂                  | ♂                  | Day  |
|------|---------|--|---|---------------------------------|---|---------------------------------|---------------------|---------------------|--------------------|---------------------|---------------------|----------------------|----------------------|--------------------|--------------------|------|
| F 1  | 0 41 4  | 8 <sup>h</sup> 20 <sup>m</sup> 16 <sup>s</sup>   | 29 <sup>h</sup> ML27                            | 29 <sup>h</sup> 0 <sup>m</sup>  | 3 <sup>h</sup> ML 3                           | 29 <sup>h</sup> 2 <sup>m</sup>  | 17 <sup>h</sup> R54 | 9 <sup>h</sup> R51  | 5 <sup>h</sup> R56 | 13 <sup>h</sup> R52 | 11 <sup>h</sup> 56  | 26 <sup>h</sup> D16  | 27 <sup>h</sup> ML42 | 21 <sup>h</sup> 50 | 7 <sup>h</sup> R32 | F 1  |
| S 2  | 0 45 0  | 9 <sup>h</sup> 19 <sup>m</sup> 29 <sup>s</sup>   | 13 <sup>h</sup> 31 <sup>m</sup> 17 <sup>s</sup> | 0 <sup>h</sup> ML23             | 4 <sup>h</sup> 17 <sup>m</sup>                | 29 <sup>h</sup> 43 <sup>m</sup> | 17 <sup>h</sup> 552 | 9 <sup>h</sup> II50 | 5 <sup>h</sup> Y54 | 13 <sup>h</sup> 551 | 11 <sup>h</sup> 6   | 26 <sup>h</sup> ML17 | 27 <sup>h</sup> 39   | 21 <sup>h</sup> 7  | 7 <sup>h</sup> Y30 | S 2  |
| S 3  | 0 48 57 | 10 <sup>h</sup> 18 <sup>m</sup> 44 <sup>s</sup>  | 27 <sup>h</sup> 15 <sup>m</sup>                 | 1 <sup>h</sup> 46 <sup>m</sup>  | 5 <sup>h</sup> 31 <sup>m</sup>                | 0 <sup>h</sup> ML24             | 17 <sup>h</sup> 50  | 9 <sup>h</sup> 48   | 5 <sup>h</sup> 51  | 13 <sup>h</sup> 50  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> 18   | 27 <sup>h</sup> 36   | 21 <sup>h</sup> 13 | 7 <sup>h</sup> 27  | S 3  |
| M 4  | 0 52 54 | 11 <sup>h</sup> 18 <sup>m</sup> 01 <sup>s</sup>  | 11 <sup>h</sup> 32 <sup>m</sup> 20 <sup>s</sup> | 3 <sup>h</sup> 7 <sup>m</sup>   | 6 <sup>h</sup> 45 <sup>m</sup>                | 1 <sup>h</sup> 5 <sup>m</sup>   | 17 <sup>h</sup> 48  | 9 <sup>h</sup> 47   | 5 <sup>h</sup> 49  | 13 <sup>h</sup> 50  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> R19  | 27 <sup>h</sup> 33   | 21 <sup>h</sup> 20 | 7 <sup>h</sup> 24  | M 4  |
| T 5  | 0 56 50 | 12 <sup>h</sup> 17 <sup>m</sup> 20 <sup>s</sup>  | 25 <sup>h</sup> 32 <sup>m</sup>                 | 4 <sup>h</sup> 27 <sup>m</sup>  | 7 <sup>h</sup> 59 <sup>m</sup>                | 1 <sup>h</sup> 46 <sup>m</sup>  | 17 <sup>h</sup> 46  | 9 <sup>h</sup> 46   | 5 <sup>h</sup> 46  | 13 <sup>h</sup> 49  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> 18   | 27 <sup>h</sup> 29   | 21 <sup>h</sup> 27 | 7 <sup>h</sup> 21  | T 5  |
| W 6  | 1 0 47  | 13 <sup>h</sup> 16 <sup>m</sup> 41 <sup>s</sup>  | 9 <sup>h</sup> 38 <sup>m</sup> 48 <sup>s</sup>  | 5 <sup>h</sup> 46 <sup>m</sup>  | 9 <sup>h</sup> 13 <sup>m</sup>                | 2 <sup>h</sup> 28 <sup>m</sup>  | 17 <sup>h</sup> 44  | 9 <sup>h</sup> 44   | 5 <sup>h</sup> 44  | 13 <sup>h</sup> 48  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> 16   | 27 <sup>h</sup> 26   | 21 <sup>h</sup> 34 | 7 <sup>h</sup> 18  | W 6  |
| T 7  | 1 4 43  | 14 <sup>h</sup> 16 <sup>m</sup> 03 <sup>s</sup>  | 24 <sup>h</sup> 5 <sup>m</sup>                  | 7 <sup>h</sup> 4 <sup>m</sup>   | 10 <sup>h</sup> 26 <sup>m</sup>               | 3 <sup>h</sup> 9 <sup>m</sup>   | 17 <sup>h</sup> 43  | 9 <sup>h</sup> 42   | 5 <sup>h</sup> 41  | 13 <sup>h</sup> 48  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> 11   | 27 <sup>h</sup> 23   | 21 <sup>h</sup> 40 | 7 <sup>h</sup> 16  | T 7  |
| F 8  | 1 8 40  | 15 <sup>h</sup> 15 <sup>m</sup> 27 <sup>s</sup>  | 8 <sup>h</sup> 32 <sup>m</sup> 20 <sup>s</sup>  | 8 <sup>h</sup> 20 <sup>m</sup>  | 11 <sup>h</sup> 40 <sup>m</sup>               | 3 <sup>h</sup> 50 <sup>m</sup>  | 17 <sup>h</sup> 42  | 9 <sup>h</sup> 41   | 5 <sup>h</sup> 39  | 13 <sup>h</sup> 47  | 11 <sup>h</sup> 7   | 26 <sup>h</sup> 5    | 27 <sup>h</sup> 20   | 21 <sup>h</sup> 47 | 7 <sup>h</sup> 13  | F 8  |
| S 9  | 1 12 36 | 16 <sup>h</sup> 14 <sup>m</sup> 52 <sup>s</sup>  | 22 <sup>h</sup> 28 <sup>m</sup>                 | 9 <sup>h</sup> 35 <sup>m</sup>  | 12 <sup>h</sup> 54 <sup>m</sup>               | 4 <sup>h</sup> 31 <sup>m</sup>  | 17 <sup>h</sup> 41  | 9 <sup>h</sup> 39   | 5 <sup>h</sup> 37  | 13 <sup>h</sup> 47  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 59   | 27 <sup>h</sup> 17   | 21 <sup>h</sup> 54 | 7 <sup>h</sup> 10  | S 9  |
| S 10 | 1 16 33 | 17 <sup>h</sup> 14 <sup>m</sup> 20 <sup>s</sup>  | 6 <sup>h</sup> Y24                              | 10 <sup>h</sup> 49 <sup>m</sup> | 14 <sup>h</sup> 8 <sup>m</sup>                | 5 <sup>h</sup> 13 <sup>m</sup>  | 17 <sup>h</sup> 40  | 9 <sup>h</sup> 37   | 5 <sup>h</sup> 34  | 13 <sup>h</sup> 46  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 52   | 27 <sup>h</sup> 14   | 22 <sup>h</sup> 0  | 7 <sup>h</sup> 7   | S 10 |
| M11  | 1 20 29 | 18 <sup>h</sup> 13 <sup>m</sup> 50 <sup>s</sup>  | 20 <sup>h</sup> 5 <sup>m</sup>                  | 12 <sup>h</sup> 1 <sup>m</sup>  | 15 <sup>h</sup> 22 <sup>m</sup>               | 5 <sup>h</sup> 54 <sup>m</sup>  | 17 <sup>h</sup> 40  | 9 <sup>h</sup> 35   | 5 <sup>h</sup> 32  | 13 <sup>h</sup> 46  | 11 <sup>h</sup> R 7 | 25 <sup>h</sup> 47   | 27 <sup>h</sup> 10   | 22 <sup>h</sup> 7  | 7 <sup>h</sup> 4   | M11  |
| T 12 | 1 24 26 | 19 <sup>h</sup> 13 <sup>m</sup> 22 <sup>s</sup>  | 3 <sup>h</sup> 32 <sup>m</sup> 27 <sup>s</sup>  | 13 <sup>h</sup> 11 <sup>m</sup> | 16 <sup>h</sup> 35 <sup>m</sup>               | 6 <sup>h</sup> 36 <sup>m</sup>  | 17 <sup>h</sup> 39  | 9 <sup>h</sup> 33   | 5 <sup>h</sup> 30  | 13 <sup>h</sup> 45  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 43   | 27 <sup>h</sup> 7    | 22 <sup>h</sup> 14 | 7 <sup>h</sup> 2   | T 12 |
| W13  | 1 28 23 | 20 <sup>h</sup> 12 <sup>m</sup> 55 <sup>s</sup>  | 16 <sup>h</sup> 29 <sup>m</sup>                 | 14 <sup>h</sup> 19 <sup>m</sup> | 17 <sup>h</sup> 49 <sup>m</sup>               | 7 <sup>h</sup> 17 <sup>m</sup>  | 17 <sup>h</sup> D39 | 9 <sup>h</sup> 30   | 5 <sup>h</sup> 27  | 13 <sup>h</sup> 45  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 41   | 27 <sup>h</sup> 4    | 22 <sup>h</sup> 20 | 6 <sup>h</sup> 59  | W13  |
| T 14 | 1 32 19 | 21 <sup>h</sup> 12 <sup>m</sup> 32 <sup>s</sup>  | 29 <sup>h</sup> 12 <sup>m</sup>                 | 15 <sup>h</sup> 25 <sup>m</sup> | 19 <sup>h</sup> 3 <sup>m</sup>                | 7 <sup>h</sup> 59 <sup>m</sup>  | 17 <sup>h</sup> 39  | 9 <sup>h</sup> 28   | 5 <sup>h</sup> 25  | 13 <sup>h</sup> 44  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> D41  | 27 <sup>h</sup> 1    | 22 <sup>h</sup> 27 | 6 <sup>h</sup> 56  | T 14 |
| F 15 | 1 36 16 | 22 <sup>h</sup> 12 <sup>m</sup> 10 <sup>s</sup>  | 11 <sup>h</sup> II37                            | 16 <sup>h</sup> 29 <sup>m</sup> | 20 <sup>h</sup> 17 <sup>m</sup>               | 8 <sup>h</sup> 41 <sup>m</sup>  | 17 <sup>h</sup> 40  | 9 <sup>h</sup> 26   | 5 <sup>h</sup> 23  | 13 <sup>h</sup> 44  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 42   | 26 <sup>h</sup> 58   | 22 <sup>h</sup> 34 | 6 <sup>h</sup> 54  | F 15 |
| S 16 | 1 40 12 | 23 <sup>h</sup> 11 <sup>m</sup> 50 <sup>s</sup>  | 23 <sup>h</sup> 46 <sup>m</sup>                 | 17 <sup>h</sup> 30 <sup>m</sup> | 21 <sup>h</sup> 31 <sup>m</sup>               | 9 <sup>h</sup> 22 <sup>m</sup>  | 17 <sup>h</sup> 40  | 9 <sup>h</sup> 23   | 5 <sup>h</sup> 20  | 13 <sup>h</sup> 44  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 44   | 26 <sup>h</sup> 54   | 22 <sup>h</sup> 41 | 6 <sup>h</sup> 51  | S 16 |
| S 17 | 1 44 9  | 24 <sup>h</sup> 11 <sup>m</sup> 33 <sup>s</sup>  | 5 <sup>h</sup> 54 <sup>m</sup>                  | 18 <sup>h</sup> 29 <sup>m</sup> | 22 <sup>h</sup> 44 <sup>m</sup>               | 10 <sup>h</sup> 4 <sup>m</sup>  | 17 <sup>h</sup> 41  | 9 <sup>h</sup> 20   | 5 <sup>h</sup> 18  | 13 <sup>h</sup> 43  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 45   | 26 <sup>h</sup> 51   | 22 <sup>h</sup> 47 | 6 <sup>h</sup> 48  | S 17 |
| M18  | 1 48 5  | 25 <sup>h</sup> 11 <sup>m</sup> 18 <sup>s</sup>  | 17 <sup>h</sup> 38 <sup>m</sup>                 | 19 <sup>h</sup> 25 <sup>m</sup> | 23 <sup>h</sup> 58 <sup>m</sup>               | 10 <sup>h</sup> 46 <sup>m</sup> | 17 <sup>h</sup> 42  | 9 <sup>h</sup> 18   | 5 <sup>h</sup> 16  | 13 <sup>h</sup> 43  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> 47   | 26 <sup>h</sup> 48   | 22 <sup>h</sup> 54 | 6 <sup>h</sup> 46  | M18  |
| T 19 | 1 52 2  | 26 <sup>h</sup> 11 <sup>m</sup> 06 <sup>s</sup>  | 29 <sup>h</sup> 29 <sup>m</sup>                 | 20 <sup>h</sup> 17 <sup>m</sup> | 25 <sup>h</sup> 12 <sup>m</sup>               | 11 <sup>h</sup> 28 <sup>m</sup> | 17 <sup>h</sup> 43  | 9 <sup>h</sup> 15   | 5 <sup>h</sup> 14  | 13 <sup>h</sup> 43  | 11 <sup>h</sup> 7   | 25 <sup>h</sup> R47  | 26 <sup>h</sup> 45   | 23 <sup>h</sup> 1  | 6 <sup>h</sup> 43  | T 19 |
| W20  | 1 55 58 | 27 <sup>h</sup> 10 <sup>m</sup> 55 <sup>s</sup>  | 11 <sup>h</sup> Ω24                             | 21 <sup>h</sup> 6 <sup>m</sup>  | 26 <sup>h</sup> 25 <sup>m</sup>               | 12 <sup>h</sup> 10 <sup>m</sup> | 17 <sup>h</sup> 44  | 9 <sup>h</sup> 12   | 5 <sup>h</sup> 12  | 13 <sup>h</sup> 43  | 11 <sup>h</sup> 6   | 25 <sup>h</sup> 46   | 26 <sup>h</sup> 42   | 23 <sup>h</sup> 7  | 6 <sup>h</sup> 40  | W20  |
| T 21 | 1 59 55 | 28 <sup>h</sup> 10 <sup>m</sup> 47 <sup>s</sup>  | 23 <sup>h</sup> 27 <sup>m</sup>                 | 21 <sup>h</sup> 50 <sup>m</sup> | 27 <sup>h</sup> 39 <sup>m</sup>               | 12 <sup>h</sup> 52 <sup>m</sup> | 17 <sup>h</sup> 45  | 9 <sup>h</sup> 9    | 5 <sup>h</sup> 9   | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 6   | 25 <sup>h</sup> 44   | 26 <sup>h</sup> 39   | 23 <sup>h</sup> 14 | 6 <sup>h</sup> 38  | T 21 |
| F 22 | 2 3 51  | 29 <sup>h</sup> 10 <sup>m</sup> 41 <sup>s</sup>  | 5 <sup>h</sup> mp42                             | 22 <sup>h</sup> 30 <sup>m</sup> | 28 <sup>h</sup> 53 <sup>m</sup>               | 13 <sup>h</sup> 34 <sup>m</sup> | 17 <sup>h</sup> 47  | 9 <sup>h</sup> 6    | 5 <sup>h</sup> 7   | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 6   | 25 <sup>h</sup> 40   | 26 <sup>h</sup> 35   | 23 <sup>h</sup> 21 | 6 <sup>h</sup> 35  | F 22 |
| S 23 | 2 7 48  | 0 <sup>h</sup> ML10 <sup>m</sup> 37 <sup>s</sup> | 18 <sup>h</sup> 14 <sup>m</sup>                 | 23 <sup>h</sup> 5 <sup>m</sup>  | 0 <sup>h</sup> 3 <sup>m</sup> 6 <sup>s</sup>  | 14 <sup>h</sup> 16 <sup>m</sup> | 17 <sup>h</sup> 49  | 9 <sup>h</sup> 3    | 5 <sup>h</sup> 5   | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 6   | 25 <sup>h</sup> 36   | 26 <sup>h</sup> 32   | 23 <sup>h</sup> 27 | 6 <sup>h</sup> 33  | S 23 |
| S 24 | 2 11 45 | 1 <sup>h</sup> 10 <sup>m</sup> 35 <sup>s</sup>   | 1 <sup>h</sup> 4 <sup>m</sup>                   | 23 <sup>h</sup> 34 <sup>m</sup> | 1 <sup>h</sup> 20 <sup>m</sup>                | 14 <sup>h</sup> 58 <sup>m</sup> | 17 <sup>h</sup> 51  | 8 <sup>h</sup> 59   | 5 <sup>h</sup> 3   | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 5   | 25 <sup>h</sup> 32   | 26 <sup>h</sup> 29   | 23 <sup>h</sup> 34 | 6 <sup>h</sup> 30  | S 24 |
| M25  | 2 15 41 | 2 <sup>h</sup> 10 <sup>m</sup> 35 <sup>s</sup>   | 14 <sup>h</sup> 13 <sup>m</sup>                 | 23 <sup>h</sup> 57 <sup>m</sup> | 2 <sup>h</sup> 34 <sup>m</sup>                | 15 <sup>h</sup> 41 <sup>m</sup> | 17 <sup>h</sup> 53  | 8 <sup>h</sup> 56   | 5 <sup>h</sup> 1   | 13 <sup>h</sup> D42 | 11 <sup>h</sup> 5   | 25 <sup>h</sup> 28   | 26 <sup>h</sup> 26   | 23 <sup>h</sup> 41 | 6 <sup>h</sup> 28  | M25  |
| T 26 | 2 19 38 | 3 <sup>h</sup> 10 <sup>m</sup> 37 <sup>s</sup>   | 27 <sup>h</sup> 40 <sup>m</sup>                 | 24 <sup>h</sup> 14 <sup>m</sup> | 3 <sup>h</sup> 47 <sup>m</sup>                | 16 <sup>h</sup> 23 <sup>m</sup> | 17 <sup>h</sup> 56  | 8 <sup>h</sup> 52   | 4 <sup>h</sup> 59  | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 5   | 25 <sup>h</sup> 25   | 26 <sup>h</sup> 23   | 23 <sup>h</sup> 48 | 6 <sup>h</sup> 25  | T 26 |
| W27  | 2 23 34 | 4 <sup>h</sup> 10 <sup>m</sup> 42 <sup>s</sup>   | 11 <sup>h</sup> ML25                            | 24 <sup>h</sup> 23 <sup>m</sup> | 5 <sup>h</sup> 1 <sup>m</sup>                 | 17 <sup>h</sup> 5 <sup>m</sup>  | 17 <sup>h</sup> 58  | 8 <sup>h</sup> 49   | 4 <sup>h</sup> 57  | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 4   | 25 <sup>h</sup> 24   | 26 <sup>h</sup> 19   | 23 <sup>h</sup> 54 | 6 <sup>h</sup> 23  | W27  |
| T 28 | 2 27 31 | 5 <sup>h</sup> 10 <sup>m</sup> 48 <sup>s</sup>   | 25 <sup>h</sup> 23 <sup>m</sup>                 | 24 <sup>h</sup> R24             | 6 <sup>h</sup> 15 <sup>m</sup>                | 17 <sup>h</sup> 48              | 18 <sup>h</sup> 1   | 8 <sup>h</sup> 45   | 4 <sup>h</sup> 55  | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 4   | 25 <sup>h</sup> D23  | 26 <sup>h</sup> 16   | 24 <sup>h</sup> 1  | 6 <sup>h</sup> 21  | T 28 |
| F 29 | 2 31 27 | 6 <sup>h</sup> 10 <sup>m</sup> 56 <sup>s</sup>   | 9 <sup>h</sup> 32 <sup>m</sup>                  | 24 <sup>h</sup> 16 <sup>m</sup> | 7 <sup>h</sup> 28 <sup>m</sup>                | 18 <sup>h</sup> 30 <sup>m</sup> | 18 <sup>h</sup> 4   | 8 <sup>h</sup> 42   | 4 <sup>h</sup> 53  | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 4   | 25 <sup>h</sup> 24   | 26 <sup>h</sup> 13   | 24 <sup>h</sup> 8  | 6 <sup>h</sup> 18  | F 29 |
| S 30 | 2 35 24 | 7 <sup>h</sup> 11 <sup>m</sup> 05 <sup>s</sup>   | 23 <sup>h</sup> 47 <sup>m</sup>                 | 23 <sup>h</sup> 59 <sup>m</sup> | 8 <sup>h</sup> 42 <sup>m</sup>                | 19 <sup>h</sup> 13 <sup>m</sup> | 18 <sup>h</sup> 7   | 8 <sup>h</sup> 38   | 4 <sup>h</sup> 51  | 13 <sup>h</sup> 42  | 11 <sup>h</sup> 3   | 25 <sup>h</sup> 25   | 26 <sup>h</sup> 10   | 24 <sup>h</sup> 14 | 6 <sup>h</sup> 16  | S 30 |
| S 31 | 2 39 20 | 8 <sup>h</sup> ML11 <sup>m</sup> 16 <sup>s</sup> | 8 <sup>h</sup> 3 <sup>m</sup> 4 <sup>s</sup>    | 23 <sup>h</sup> ML33            | 9 <sup>h</sup> 3 <sup>m</sup> 55 <sup>s</sup> | 19 <sup>h</sup> ML56            | 18 <sup>h</sup> 31  | 8 <sup>h</sup> II34 | 4 <sup>h</sup> Y49 | 13 <sup>h</sup> 33  | 11 <sup>h</sup> 56  | 25 <sup>h</sup> ML26 | 26 <sup>h</sup> ML 7 | 24 <sup>h</sup> 52 | 6 <sup>h</sup> Y14 | S 31 |

ASTRODIENST EPHEMERIS for the year 1677  
geocentric

NOVEMBER 1677 GC

00:00 UT

| Day  | Sid.t   | ☉        | ☽     | ♀      | ♂     | ♂     | ♂     | ♂     | ♂     | ♂     | ♂      | ♂      | ♂     | ♂     | ♂     | Day  |
|------|---------|----------|-------|--------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|------|
| M 1  | 2 43 17 | 9♉11'29  | 22♈21 | 22°R57 | 11♈9  | 20♉38 | 18♈15 | 8°R30 | 4°R47 | 13♈43 | 11°R 2 | 25♉27  | 26♉4  | 24♈28 | 6°R11 | M 1  |
| T 2  | 2 47 14 | 10°11'43 | 6♈34  | 22♉11  | 12°22 | 21°21 | 18°18 | 8♉26  | 4°Y45 | 13°43 | 11°22  | 25°R28 | 26° 0 | 24°34 | 6°Y 9 | T 2  |
| W 3  | 2 51 10 | 11°11'59 | 20°42 | 21°16  | 13°36 | 22° 4 | 18°22 | 8°22  | 4°43  | 13°43 | 11° 1  | 25°28  | 25°57 | 24°41 | 6° 7  | W 3  |
| T 4  | 2 55 7  | 12°12'16 | 4♈42  | 20°12  | 14°49 | 22°46 | 18°27 | 8°18  | 4°42  | 13°44 | 11° 1  | 25°27  | 25°54 | 24°48 | 6° 5  | T 4  |
| F 5  | 2 59 3  | 13°12'34 | 18°33 | 19° 1  | 16° 3 | 23°29 | 18°31 | 8°14  | 4°40  | 13°44 | 11° 0  | 25°25  | 25°51 | 24°55 | 6° 3  | F 5  |
| S 6  | 3 3 0   | 14°12'54 | 2°Y13 | 17°45  | 17°16 | 24°12 | 18°36 | 8° 9  | 4°38  | 13°44 | 10°59  | 25°24  | 25°48 | 25° 1 | 6° 1  | S 6  |
| S 7  | 3 6 56  | 15°13'16 | 15°42 | 16°25  | 18°30 | 24°55 | 18°40 | 8° 5  | 4°36  | 13°45 | 10°59  | 25°22  | 25°45 | 25° 8 | 5°59  | S 7  |
| M 8  | 3 10 53 | 16°13'39 | 28°56 | 15° 5  | 19°43 | 25°38 | 18°45 | 8° 1  | 4°35  | 13°45 | 10°58  | 25°21  | 25°41 | 25°15 | 5°57  | M 8  |
| T 9  | 3 14 49 | 17°14'03 | 11♈57 | 13°47  | 20°56 | 26°21 | 18°50 | 7°56  | 4°33  | 13°46 | 10°58  | 25°21  | 25°38 | 25°21 | 5°55  | T 9  |
| W10  | 3 18 46 | 18°14'30 | 24°43 | 12°33  | 22°10 | 27° 5 | 18°56 | 7°52  | 4°32  | 13°46 | 10°57  | 25°D20 | 25°35 | 25°28 | 5°53  | W10  |
| T 11 | 3 22 43 | 19°14'57 | 7♉14  | 11°25  | 23°23 | 27°48 | 19° 1 | 7°47  | 4°30  | 13°47 | 10°56  | 25°21  | 25°32 | 25°35 | 5°51  | T 11 |
| F 12 | 3 26 39 | 20°15'27 | 19°33 | 10°27  | 24°36 | 28°31 | 19° 7 | 7°43  | 4°29  | 13°47 | 10°55  | 25°21  | 25°29 | 25°41 | 5°49  | F 12 |
| S 13 | 3 30 36 | 21°15'58 | 1♈39  | 9°39   | 25°49 | 29°14 | 19°12 | 7°38  | 4°27  | 13°48 | 10°55  | 25°21  | 25°25 | 25°48 | 5°47  | S 13 |
| S 14 | 3 34 32 | 22°16'31 | 13°37 | 9° 2   | 27° 3 | 29°58 | 19°18 | 7°34  | 4°26  | 13°49 | 10°54  | 25°22  | 25°22 | 25°55 | 5°46  | S 14 |
| M15  | 3 38 29 | 23°17'06 | 25°30 | 8°36   | 28°16 | 0♈41  | 19°25 | 7°29  | 4°24  | 13°49 | 10°53  | 25°22  | 25°19 | 26° 2 | 5°44  | M15  |
| T 16 | 3 42 25 | 24°17'42 | 7♉21  | 8°23   | 29°29 | 1°25  | 19°31 | 7°24  | 4°23  | 13°50 | 10°52  | 25°22  | 25°16 | 26° 8 | 5°42  | T 16 |
| W17  | 3 46 22 | 25°18'21 | 19°15 | 8°D20  | 0♈42  | 2° 8  | 19°37 | 7°19  | 4°22  | 13°51 | 10°52  | 25°22  | 25°13 | 26°15 | 5°41  | W17  |
| T 18 | 3 50 18 | 26°19'00 | 1♉16  | 8°29   | 1°55  | 2°52  | 19°44 | 7°15  | 4°21  | 13°52 | 10°51  | 25°22  | 25°10 | 26°22 | 5°39  | T 18 |
| F 19 | 3 54 15 | 27°19'42 | 13°30 | 8°47   | 3° 8  | 3°35  | 19°51 | 7°10  | 4°19  | 13°52 | 10°50  | 25°22  | 25° 6 | 26°28 | 5°38  | F 19 |
| S 20 | 3 58 12 | 28°20'25 | 26° 0 | 9°15   | 4°21  | 4°19  | 19°58 | 7° 5  | 4°18  | 13°53 | 10°49  | 25°23  | 25° 3 | 26°35 | 5°36  | S 20 |
| S 21 | 4 2 8   | 29°21'09 | 8♈50  | 9°51   | 5°34  | 5° 3  | 20° 5 | 7° 0  | 4°17  | 13°54 | 10°48  | 25°23  | 25° 0 | 26°42 | 5°35  | S 21 |
| M22  | 4 6 5   | 0♈21'56  | 22° 4 | 10°34  | 6°47  | 5°47  | 20°12 | 6°55  | 4°16  | 13°55 | 10°47  | 25°24  | 24°57 | 26°49 | 5°33  | M22  |
| T 23 | 4 10 1  | 1°22'43  | 5♉41  | 11°24  | 8° 0  | 6°31  | 20°20 | 6°50  | 4°15  | 13°56 | 10°46  | 25°24  | 24°54 | 26°55 | 5°32  | T 23 |
| W24  | 4 13 58 | 2°23'32  | 19°42 | 12°19  | 9°13  | 7°15  | 20°27 | 6°45  | 4°14  | 13°57 | 10°45  | 25°R24 | 24°51 | 27° 2 | 5°31  | W24  |
| T 25 | 4 17 54 | 3°24'23  | 4♈3   | 13°20  | 10°26 | 7°59  | 20°35 | 6°40  | 4°13  | 13°58 | 10°45  | 25°24  | 24°47 | 27° 9 | 5°30  | T 25 |
| F 26 | 4 21 51 | 4°25'15  | 18°39 | 14°25  | 11°39 | 8°43  | 20°43 | 6°35  | 4°12  | 13°59 | 10°44  | 25°24  | 24°44 | 27°15 | 5°29  | F 26 |
| S 27 | 4 25 47 | 5°26'08  | 3♈23  | 15°34  | 12°52 | 9°27  | 20°51 | 6°31  | 4°12  | 14° 0 | 10°43  | 25°23  | 24°41 | 27°22 | 5°28  | S 27 |
| S 28 | 4 29 44 | 6°27'02  | 18° 9 | 16°46  | 14° 4 | 10°11 | 20°59 | 6°26  | 4°11  | 14° 1 | 10°42  | 25°22  | 24°38 | 27°29 | 5°27  | S 28 |
| M29  | 4 33 41 | 7°27'56  | 2♈49  | 18° 1  | 15°17 | 10°55 | 21° 8 | 6°21  | 4°10  | 14° 2 | 10°41  | 25°20  | 24°35 | 27°35 | 5°26  | M29  |
| T 30 | 4 37 37 | 8♈28'52  | 17♈18 | 19♉18  | 16♈30 | 11♈39 | 21♈16 | 6♉16  | 4°Y 9 | 14♈4  | 10♈40  | 25♉19  | 24♉31 | 27♈42 | 5°Y25 | T 30 |

Delta T = 24.92 sec

Greg. Calendar

DECEMBER 1677 GC

00:00 UT

| Day  | Sid.t   | ☉        | ☽      | ♀     | ♂     | ♂     | ♂     | ♂     | ♂     | ♂     | ♂      | ♂      | ♂     | ♂     | ♂     | Day  |
|------|---------|----------|--------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|------|
| W 1  | 4 41 34 | 9♉29'48  | 1♈31   | 20♉37 | 17♈42 | 12♈24 | 21♈25 | 6°R11 | 4°R 9 | 14♈5  | 10°R39 | 25°R18 | 24♉28 | 27♈49 | 5°R24 | W 1  |
| T 2  | 4 45 30 | 10°30'45 | 15°27  | 21°58 | 18°55 | 13° 8 | 21°34 | 6♉6   | 4°Y 8 | 14° 6 | 10°37  | 25°D18 | 24°25 | 27°56 | 5°Y23 | T 2  |
| F 3  | 4 49 27 | 11°31'42 | 29° 6  | 23°21 | 20° 7 | 13°52 | 21°42 | 6° 1  | 4° 8  | 14° 7 | 10°36  | 25°R19 | 24°22 | 28° 2 | 5°22  | F 3  |
| S 4  | 4 53 23 | 12°32'40 | 12°Y27 | 24°45 | 21°20 | 14°37 | 21°51 | 5°56  | 4° 7  | 14° 9 | 10°35  | 25°20  | 24°19 | 28° 9 | 5°21  | S 4  |
| S 5  | 4 57 20 | 13°33'39 | 25°32  | 26°10 | 22°32 | 15°21 | 22° 1 | 5°51  | 4° 7  | 14°10 | 10°34  | 25°21  | 24°16 | 28°16 | 5°21  | S 5  |
| M 6  | 5 1 16  | 14°34'39 | 8♈23   | 27°36 | 23°45 | 16° 6 | 22°10 | 5°46  | 4° 6  | 14°11 | 10°33  | 25°23  | 24°12 | 28°22 | 5°20  | M 6  |
| T 7  | 5 5 13  | 15°35'39 | 21° 1  | 29° 3 | 24°57 | 16°50 | 22°19 | 5°41  | 4° 6  | 14°13 | 10°32  | 25°R23 | 24° 9 | 28°29 | 5°20  | T 7  |
| W 8  | 5 9 10  | 16°36'40 | 3♉28   | 0♈30  | 26° 9 | 17°35 | 22°29 | 5°37  | 4° 6  | 14°14 | 10°31  | 25°23  | 24° 6 | 28°36 | 5°19  | W 8  |
| T 9  | 5 13 6  | 17°37'42 | 15°45  | 1°59  | 27°21 | 18°20 | 22°39 | 5°32  | 4° 6  | 14°15 | 10°30  | 25°22  | 24° 3 | 28°43 | 5°19  | T 9  |
| F 10 | 5 17 3  | 18°38'44 | 27°54  | 3°27  | 28°33 | 19° 4 | 22°49 | 5°27  | 4° 5  | 14°17 | 10°29  | 25°19  | 24° 0 | 28°49 | 5°18  | F 10 |
| S 11 | 5 20 59 | 19°39'47 | 9♈55   | 4°57  | 29°45 | 19°49 | 22°59 | 5°22  | 4° 5  | 14°18 | 10°27  | 25°16  | 23°57 | 28°56 | 5°18  | S 11 |
| S 12 | 5 24 56 | 20°40'51 | 21°50  | 6°26  | 0♈57  | 20°34 | 23° 9 | 5°18  | 4° 5  | 14°20 | 10°26  | 25°11  | 23°53 | 29° 3 | 5°18  | S 12 |
| M13  | 5 28 52 | 21°41'56 | 3♉42   | 7°57  | 2° 9  | 21°19 | 23°19 | 5°13  | 4°D 5 | 14°21 | 10°25  | 25° 6  | 23°50 | 29° 9 | 5°18  | M13  |
| T 14 | 5 32 49 | 22°43'01 | 15°33  | 9°27  | 3°21  | 22° 4 | 23°29 | 5° 8  | 4° 5  | 14°23 | 10°24  | 25° 2  | 23°47 | 29°16 | 5°18  | T 14 |
| W15  | 5 36 46 | 23°44'07 | 27°26  | 10°58 | 4°32  | 22°49 | 23°39 | 5° 4  | 4° 5  | 14°25 | 10°23  | 24°58  | 23°44 | 29°23 | 5°17  | W15  |
| T 16 | 5 40 42 | 24°45'14 | 9♉25   | 12°29 | 5°44  | 23°34 | 23°50 | 4°59  | 4° 6  | 14°26 | 10°22  | 24°55  | 23°41 | 29°30 | 5°D17 | T 16 |
| F 17 | 5 44 39 | 25°46'21 | 21°35  | 14° 0 | 6°56  | 24°19 | 24° 1 | 4°55  | 4° 6  | 14°28 | 10°20  | 24°D54 | 23°37 | 29°36 | 5°17  | F 17 |
| S 18 | 5 48 35 | 26°47'30 | 4♈0    | 15°32 | 8° 7  | 25° 4 | 24°11 | 4°50  | 4° 6  | 14°29 | 10°19  | 24°54  | 23°34 | 29°43 | 5°18  | S 18 |
| S 19 | 5 52 32 | 27°48'38 | 16°44  | 17° 4 | 9°19  | 25°49 | 24°22 | 4°46  | 4° 6  | 14°31 | 10°18  | 24°55  | 23°31 | 29°50 | 5°18  | S 19 |
| M20  | 5 56 28 | 28°49'48 | 29°52  | 18°36 | 10°30 | 26°34 | 24°33 | 4°42  | 4° 7  | 14°33 | 10°17  | 24°57  | 23°28 | 29°56 | 5°18  | M20  |
| T 21 | 6 0 25  | 29°50'58 | 13♉26  | 20° 8 | 11°41 | 27°20 | 24°44 | 4°38  | 4° 7  | 14°35 | 10°15  | 24°59  | 23°25 | 0♉3   | 5°18  | T 21 |
| W22  | 6 4 21  | 0♈52'09  | 27°29  | 21°41 | 12°52 | 28° 5 | 24°56 | 4°33  | 4° 7  | 14°36 | 10°14  | 24°R59 | 23°22 | 0°10  | 5°19  | W22  |
| T 23 | 6 8 18  | 1°53'20  | 11♈58  | 23°14 | 14° 3 | 28°50 | 25° 7 | 4°29  | 4° 8  | 14°38 | 10°13  | 24°58  | 23°18 | 0°17  | 5°19  | T 23 |
| F 24 | 6 12 15 | 2°54'32  | 26°49  | 24°47 | 15°14 | 29°36 | 25°18 | 4°25  | 4° 9  | 14°40 | 10°12  | 24°55  | 23°15 | 0°23  | 5°19  | F 24 |
| S 25 | 6 16 11 | 3°55'44  | 11♈55  | 26°21 | 16°25 | 0♈21  | 25°30 | 4°21  | 4° 9  | 14°42 | 10°10  | 24°50  | 23°12 | 0°30  | 5°20  | S 25 |
| S 26 | 6 20 8  | 4°56'56  | 27° 6  | 27°55 | 17°36 | 1° 7  | 25°41 | 4°17  | 4°10  | 14°44 | 10° 9  | 24°44  | 23° 9 | 0°37  | 5°20  | S 26 |
| M27  | 6 24 4  | 5°58'08  | 12♈12  | 29°29 | 18°46 | 1°52  | 25°53 | 4°14  | 4°11  | 14°45 | 10° 8  | 24°37  | 23° 6 | 0°43  | 5°21  | M27  |
| T 28 | 6 28 1  | 6°59'19  | 27° 3  | 1♈3   | 19°57 | 2°38  | 26° 5 | 4°10  | 4°11  | 14°47 | 10° 7  | 24°31  | 23° 3 | 0°50  | 5°22  | T 28 |
| W29  | 6 31 57 | 8° 0'31  | 11♈33  | 2°38  | 21° 7 | 3°23  | 26°17 | 4° 6  | 4°12  | 14°49 | 10° 5  | 24°27  | 22°59 | 0°57  | 5°22  | W29  |
| T 30 | 6 35 54 | 9° 1'42  | 25°38  | 4°13  | 22°17 | 4° 9  | 26°29 | 4° 3  | 4°13  | 14°51 | 10° 4  | 24°24  | 22°56 | 1° 4  | 5°23  | T 30 |
| F 31 | 6 39 50 | 10♈25'52 | 9°Y18  | 5♈49  | 23♈28 | 4♈55  | 26♈41 | 3♉59  | 4°Y14 | 14♈53 | 10♈3   | 24°D23 | 22♉53 | 1♉10  | 5°Y24 | F 31 |

Delta T = 24.87 sec

Greg. Calendar