



# Astrodienst Ephemeris Tables for the year 1848

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 1848

geocentric

JANUARY 1848

00:00 UT

| Day  | Sid.t   | ☉        | ☽        | ♀        | ♂        | ♂        | ♂        | ♂        | ♂        | ♂        | ♂        | ♂       | ♂       | ♂        | ♂        | Day  |
|------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|---------|----------|----------|------|
| S 1  | 6 39 8  | 9°34'46  | 5°11'57  | 23°40'40 | 23°11'49 | 5°58'39  | 16°17'17 | 8°26'26  | 14°20'20 | 28°22'21 | 24°15'57 | 4°15'56 | 4°55'55 | 18°26'26 | 8°11'36  | S 1  |
| S 2  | 6 43 5  | 10°46'57 | 17°58'58 | 25°8'25  | 24°56'56 | 5°58'58  | 16°59'9  | 8°31'31  | 14°20'20 | 28°23'23 | 24°15'57 | 4°52'52 | 4°51'51 | 18°33'33 | 8°41'41  | S 2  |
| M 3  | 6 47 1  | 11°48'08 | 0°12'12  | 26°37'37 | 26°3'3   | 6°17'17  | 16°1'1   | 8°36'36  | 14°21'21 | 28°24'24 | 24°57'57 | 4°44'44 | 4°48'48 | 18°39'39 | 8°47'47  | M 3  |
| T 4  | 6 50 58 | 12°49'19 | 12°42'42 | 28°7'27  | 27°10'10 | 6°36'36  | 15°53'53 | 8°41'41  | 14°21'21 | 28°26'26 | 24°56'56 | 4°33'33 | 4°45'45 | 18°46'46 | 8°52'52  | T 4  |
| W 5  | 6 54 55 | 13°50'30 | 25°31'31 | 29°37'37 | 28°17'17 | 6°56'56  | 15°45'45 | 8°47'47  | 14°22'22 | 28°28'28 | 24°56'56 | 4°21'21 | 4°42'42 | 18°53'53 | 8°58'58  | W 5  |
| T 6  | 6 58 51 | 14°51'41 | 8°38'38  | 1°3'7    | 29°25'25 | 7°16'16  | 15°37'37 | 8°52'52  | 14°22'22 | 28°30'30 | 24°56'56 | 4°7'7   | 4°39'39 | 18°59'59 | 9°3'3    | T 6  |
| F 7  | 7 2 48  | 15°52'52 | 22°2'2   | 2°38'38  | 0°13'33  | 7°37'37  | 15°29'29 | 8°57'57  | 14°23'23 | 28°31'31 | 24°56'56 | 3°54'54 | 4°36'36 | 19°6'6   | 9°8'8    | F 7  |
| S 8  | 7 6 44  | 16°54'03 | 5°40'40  | 4°9'9    | 1°41'41  | 7°58'58  | 15°21'21 | 9°3'3    | 14°24'24 | 28°33'33 | 24°56'56 | 3°43'43 | 4°32'32 | 19°12'12 | 9°13'13  | S 8  |
| S 9  | 7 10 41 | 17°55'13 | 19°29'29 | 5°41'41  | 2°49'49  | 8°20'20  | 15°13'13 | 9°8'8    | 14°25'25 | 28°35'35 | 24°56'56 | 3°33'33 | 4°29'29 | 19°19'19 | 9°18'18  | S 9  |
| M10  | 7 14 37 | 18°56'23 | 3°12'12  | 7°13'13  | 3°57'57  | 8°42'42  | 15°4'4   | 9°14'14  | 14°25'25 | 28°37'37 | 24°56'56 | 3°27'27 | 4°26'26 | 19°26'26 | 9°23'23  | M10  |
| T 11 | 7 18 34 | 19°57'32 | 17°27'27 | 8°46'46  | 5°6'6    | 9°4'4    | 14°56'56 | 9°19'19  | 14°26'26 | 28°39'39 | 24°56'56 | 3°24'24 | 4°23'23 | 19°32'32 | 9°28'28  | T 11 |
| W12  | 7 22 30 | 20°58'41 | 1°13'13  | 10°19'19 | 6°14'14  | 9°26'26  | 14°48'48 | 9°25'25  | 14°27'27 | 28°41'41 | 24°56'56 | 3°18'18 | 4°20'20 | 19°39'39 | 9°33'33  | W12  |
| T 13 | 7 26 27 | 21°59'49 | 15°35'35 | 11°53'53 | 7°23'23  | 9°49'49  | 14°40'40 | 9°30'30  | 14°28'28 | 28°43'43 | 24°56'56 | 3°18'18 | 4°17'17 | 19°46'46 | 9°38'38  | T 13 |
| F 14 | 7 30 24 | 23°0'56  | 29°40'40 | 13°27'27 | 8°32'32  | 10°13'13 | 14°32'32 | 9°36'36  | 14°29'29 | 28°45'45 | 24°56'56 | 3°24'24 | 4°13'13 | 19°52'52 | 9°42'42  | F 14 |
| S 15 | 7 34 20 | 24°2'03  | 13°45'45 | 15°1'1   | 9°41'41  | 10°36'36 | 14°25'25 | 9°42'42  | 14°30'30 | 28°46'46 | 24°56'56 | 3°22'22 | 4°10'10 | 19°59'59 | 9°47'47  | S 15 |
| S 16 | 7 38 17 | 25°3'08  | 27°48'48 | 16°37'37 | 10°50'50 | 11°0'0   | 14°17'17 | 9°48'48  | 14°32'32 | 28°48'48 | 24°57'57 | 3°18'18 | 4°7'7   | 20°6'6   | 9°51'51  | S 16 |
| M17  | 7 42 13 | 26°4'13  | 11°11'11 | 18°12'12 | 11°59'59 | 11°24'24 | 14°9'9   | 9°54'54  | 14°33'33 | 28°50'50 | 24°57'57 | 3°11'11 | 4°4'4   | 20°12'12 | 9°55'55  | M17  |
| T 18 | 7 46 10 | 27°5'17  | 25°41'41 | 19°48'48 | 13°9'9   | 11°49'49 | 14°1'1   | 10°0'0   | 14°34'34 | 28°52'52 | 24°57'57 | 3°2'2   | 4°1'1   | 20°19'19 | 9°59'59  | T 18 |
| W19  | 7 50 6  | 28°6'21  | 9°25'25  | 21°25'25 | 14°18'18 | 12°14'14 | 13°54'54 | 10°6'6   | 14°35'35 | 28°54'54 | 24°57'57 | 2°51'51 | 3°57'57 | 20°26'26 | 10°3'3   | W19  |
| T 20 | 7 54 3  | 29°7'23  | 22°56'56 | 23°2'2   | 15°28'28 | 12°39'39 | 13°46'46 | 10°12'12 | 14°37'37 | 28°56'56 | 24°57'57 | 2°40'40 | 3°54'54 | 20°32'32 | 10°7'7   | T 20 |
| F 21 | 7 57 59 | 0°8'25   | 6°11'11  | 24°40'40 | 16°38'38 | 13°4'4   | 13°38'38 | 10°18'18 | 14°38'38 | 28°58'58 | 24°58'58 | 2°29'29 | 3°51'51 | 20°39'39 | 10°11'11 | F 21 |
| S 22 | 8 1 56  | 1°9'26   | 19°8'8   | 26°18'18 | 17°48'48 | 13°30'30 | 13°31'31 | 10°25'25 | 14°39'39 | 29°1'1   | 24°58'58 | 2°20'20 | 3°48'48 | 20°46'46 | 10°15'15 | S 22 |
| S 23 | 8 5 53  | 2°10'27  | 1°11'11  | 27°57'57 | 18°58'58 | 13°56'56 | 13°24'24 | 10°31'31 | 14°41'41 | 29°3'3   | 24°58'58 | 2°13'13 | 3°45'45 | 20°52'52 | 10°18'18 | S 23 |
| M24  | 8 9 49  | 3°11'26  | 14°10'10 | 29°37'37 | 20°8'8   | 14°22'22 | 13°16'16 | 10°37'37 | 14°42'42 | 29°5'5   | 24°59'59 | 2°8'8   | 3°42'42 | 20°59'59 | 10°22'22 | M24  |
| T 25 | 8 13 46 | 4°12'25  | 26°17'17 | 1°18'18  | 21°18'18 | 14°49'49 | 13°9'9   | 10°44'44 | 14°44'44 | 29°7'7   | 24°59'59 | 2°7'7   | 3°38'38 | 21°6'6   | 10°25'25 | T 25 |
| W26  | 8 17 42 | 5°13'24  | 8°14'14  | 2°58'58  | 22°29'29 | 15°15'15 | 13°2'2   | 10°50'50 | 14°46'46 | 29°9'9   | 24°59'59 | 2°10'10 | 3°35'35 | 21°12'12 | 10°29'29 | W26  |
| T 27 | 8 21 39 | 6°14'21  | 20°3'3   | 4°40'40  | 23°39'39 | 15°42'42 | 12°55'55 | 10°56'56 | 14°47'47 | 29°11'11 | 25°0'0   | 2°8'8   | 3°32'32 | 21°19'19 | 10°32'32 | T 27 |
| F 28 | 8 25 35 | 7°15'19  | 1°11'11  | 6°22'22  | 24°50'50 | 16°9'9   | 12°49'49 | 11°3'3   | 14°49'49 | 29°13'13 | 25°0'0   | 2°8'8   | 3°29'29 | 21°26'26 | 10°35'35 | F 28 |
| S 29 | 8 29 32 | 8°16'15  | 13°43'43 | 8°5'5    | 26°1'1   | 16°37'37 | 12°42'42 | 11°10'10 | 14°51'51 | 29°15'15 | 25°0'0   | 2°8'8   | 3°26'26 | 21°32'32 | 10°38'38 | S 29 |
| S 30 | 8 33 28 | 9°17'11  | 25°44'44 | 9°49'49  | 27°12'12 | 17°4'4   | 12°35'35 | 11°16'16 | 14°53'53 | 29°17'17 | 25°1'1   | 2°7'7   | 3°23'23 | 21°39'39 | 10°41'41 | S 30 |
| M31  | 8 37 25 | 10°18'05 | 8°1'0    | 11°33'33 | 28°12'12 | 17°32'32 | 12°29'29 | 11°16'16 | 14°54'54 | 29°19'19 | 25°1'1   | 2°7'7   | 3°20'20 | 21°45'45 | 10°44'44 | M31  |

Delta T = 8.66 sec

FEBRUARY 1848

00:00 UT

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

## ASTRODIENST EPHEMERIS for the year 1848

geocentric

MARCH 1848

00:00 UT

| Day  | Sid.t    | ☉        | ☽        | ♀        | ♂        | ♂        | ♂        | ♂        | ♂        | ♂       | ♂        | ♂       | ♂       | ♂        | ♂        | Day  |
|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---------|----------|---------|---------|----------|----------|------|
| W 1  | 10 35 42 | 10°34'47 | 11°31'19 | 27°31'31 | 4°18'18  | 2°45'45  | 10°33'33 | 14°56'56 | 16°08'08 | 0°27'27 | 25°25'25 | 0°45'45 | 1°44'44 | 25°05'05 | 11°13'13 | W 1  |
| T 2  | 10 39 38 | 11°34'56 | 24°37'27 | 27°53'53 | 5°31'31  | 3°17'17  | 10°32'32 | 15°03'03 | 16°11'11 | 0°30'30 | 25°26'26 | 0°42'42 | 1°41'41 | 25°12'12 | 11°13'13 | T 2  |
| F 3  | 10 43 35 | 12°35'03 | 8°21'28  | 28°04'04 | 6°43'43  | 3°50'50  | 10°32'32 | 15°11'11 | 16°14'14 | 0°32'32 | 25°27'27 | 0°40'40 | 1°38'38 | 25°18'18 | 11°12'12 | F 3  |
| S 4  | 10 47 31 | 13°35'09 | 22°30'28 | 28°07'07 | 7°56'56  | 4°22'22  | 10°31'31 | 15°18'18 | 16°17'17 | 0°34'34 | 25°28'28 | 0°37'37 | 1°34'34 | 25°25'25 | 11°11'11 | S 4  |
| S 5  | 10 51 28 | 14°35'13 | 7°00'28  | 28°01'01 | 9°09'09  | 4°55'55  | 10°31'31 | 15°25'25 | 16°20'20 | 0°36'36 | 25°29'29 | 0°36'36 | 1°31'31 | 25°32'32 | 11°10'10 | S 5  |
| M 6  | 10 55 24 | 15°35'15 | 21°45'21 | 27°45'21 | 10°21'21 | 5°28'28  | 10°30'30 | 15°33'33 | 16°23'23 | 0°38'38 | 25°30'30 | 0°35'35 | 1°28'28 | 25°38'38 | 11°08'08 | M 6  |
| T 7  | 10 59 21 | 16°35'16 | 6°38'27  | 27°21'21 | 11°34'34 | 6°01'01  | 10°30'30 | 15°40'40 | 16°26'26 | 0°41'41 | 25°31'31 | 0°35'35 | 1°25'25 | 25°45'45 | 11°07'07 | T 7  |
| W 8  | 11 03 17 | 17°35'14 | 21°32'21 | 26°50'21 | 12°47'47 | 6°34'34  | 10°31'31 | 15°47'47 | 16°29'29 | 0°43'43 | 25°32'32 | 0°35'35 | 1°22'22 | 25°52'52 | 11°06'06 | W 8  |
| T 9  | 11 07 14 | 18°35'10 | 6°18'26  | 26°11'26 | 13°59'59 | 7°07'07  | 10°31'31 | 15°55'55 | 16°32'32 | 0°45'45 | 25°33'33 | 0°36'36 | 1°19'19 | 25°58'58 | 11°04'04 | T 9  |
| F 10 | 11 11 11 | 19°35'04 | 20°52'20 | 25°27'27 | 15°12'12 | 7°40'40  | 10°32'32 | 16°02'02 | 16°35'35 | 0°47'47 | 25°35'35 | 0°37'37 | 1°15'15 | 26°05'05 | 11°02'02 | F 10 |
| S 11 | 11 15 07 | 20°34'56 | 5°11'24  | 24°37'24 | 16°25'25 | 8°13'13  | 10°33'33 | 16°10'10 | 16°38'38 | 0°49'49 | 25°36'36 | 0°38'38 | 1°12'12 | 26°12'12 | 11°01'01 | S 11 |
| S 12 | 11 19 04 | 21°34'45 | 19°05'19 | 23°44'19 | 17°38'38 | 8°47'47  | 10°34'34 | 16°17'17 | 16°42'42 | 0°52'52 | 25°37'37 | 0°38'38 | 1°09'09 | 26°18'18 | 10°59'59 | S 12 |
| M 13 | 11 23 00 | 22°34'32 | 2°42'22  | 22°48'22 | 18°51'51 | 9°20'20  | 10°35'35 | 16°24'24 | 16°45'45 | 0°54'54 | 25°38'38 | 0°38'38 | 1°06'06 | 26°25'25 | 10°57'57 | M 13 |
| T 14 | 11 26 57 | 23°34'17 | 16°01'16 | 21°51'16 | 20°03'03 | 9°53'53  | 10°36'36 | 16°32'32 | 16°48'48 | 0°56'56 | 25°39'39 | 0°37'37 | 1°03'03 | 26°32'32 | 10°55'55 | T 14 |
| W 15 | 11 30 53 | 24°34'00 | 29°02'29 | 20°55'29 | 21°16'16 | 10°27'27 | 10°38'38 | 16°39'39 | 16°51'51 | 0°58'58 | 25°41'41 | 0°37'37 | 1°00'00 | 26°38'38 | 10°52'52 | W 15 |
| T 16 | 11 34 50 | 25°33'40 | 11°47'11 | 19°59'11 | 22°29'29 | 11°00'00 | 10°39'39 | 16°46'46 | 16°54'54 | 1°00'00 | 25°42'42 | 0°36'36 | 0°56'56 | 26°45'45 | 10°50'50 | T 16 |
| F 17 | 11 38 46 | 26°33'19 | 24°19'24 | 19°06'24 | 23°42'42 | 11°34'34 | 10°41'41 | 16°54'54 | 16°58'58 | 1°02'02 | 25°43'43 | 0°36'36 | 0°53'53 | 26°52'52 | 10°48'48 | F 17 |
| S 18 | 11 42 43 | 27°32'54 | 6°18'38  | 18°16'38 | 24°55'55 | 12°08'08 | 10°44'44 | 17°01'01 | 17°01'01 | 1°04'04 | 25°44'44 | 0°35'35 | 0°50'50 | 26°58'58 | 10°45'45 | S 18 |
| S 19 | 11 46 40 | 28°32'28 | 18°48'18 | 17°30'30 | 26°08'08 | 12°42'42 | 10°46'46 | 17°08'08 | 17°04'04 | 1°06'06 | 25°45'45 | 0°35'35 | 0°47'47 | 27°05'05 | 10°43'43 | S 19 |
| M 20 | 11 50 36 | 29°32'00 | 0°49'29  | 16°49'29 | 27°21'21 | 13°15'15 | 10°48'48 | 17°16'16 | 17°08'08 | 1°09'09 | 25°47'47 | 0°35'35 | 0°44'44 | 27°12'12 | 10°40'40 | M 20 |
| T 21 | 11 54 33 | 0°31'30  | 12°45'12 | 16°13'12 | 28°34'34 | 13°49'49 | 10°51'51 | 17°23'23 | 17°11'11 | 1°11'11 | 25°48'48 | 0°35'35 | 0°40'40 | 27°18'18 | 10°37'37 | T 21 |
| W 22 | 11 58 29 | 1°30'57  | 24°35'24 | 15°42'42 | 29°47'47 | 14°23'23 | 10°54'54 | 17°30'30 | 17°14'14 | 1°13'13 | 25°49'49 | 0°35'35 | 0°37'37 | 27°25'25 | 10°35'35 | W 22 |
| T 23 | 12 02 26 | 2°30'23  | 6°18'26  | 15°18'26 | 1°00'00  | 14°57'57 | 10°57'57 | 17°37'37 | 17°18'18 | 1°15'15 | 25°51'51 | 0°35'35 | 0°34'34 | 27°32'32 | 10°32'32 | T 23 |
| F 24 | 12 06 22 | 3°29'47  | 18°14'18 | 14°59'18 | 2°13'13  | 15°31'31 | 11°00'00 | 17°44'44 | 17°21'21 | 1°17'17 | 25°52'52 | 0°34'34 | 0°31'31 | 27°38'38 | 10°29'29 | F 24 |
| S 25 | 12 10 19 | 4°29'09  | 0°17'12  | 14°47'12 | 3°26'26  | 16°06'06 | 11°04'04 | 17°52'52 | 17°24'24 | 1°19'19 | 25°53'53 | 0°34'34 | 0°28'28 | 27°45'45 | 10°26'26 | S 25 |
| S 26 | 12 14 15 | 5°28'30  | 12°08'12 | 14°40'12 | 4°39'39  | 16°40'40 | 11°07'07 | 17°59'59 | 17°28'28 | 1°21'21 | 25°54'54 | 0°33'33 | 0°25'25 | 27°52'52 | 10°22'22 | S 26 |
| M 27 | 12 18 12 | 6°27'48  | 24°21'24 | 14°39'24 | 5°52'52  | 17°14'14 | 11°11'11 | 18°06'06 | 17°31'31 | 1°23'23 | 25°56'56 | 0°33'33 | 0°21'21 | 27°58'58 | 10°19'19 | M 27 |
| T 28 | 12 22 08 | 7°27'05  | 6°18'49  | 14°44'49 | 7°05'05  | 17°48'48 | 11°15'15 | 18°13'13 | 17°34'34 | 1°24'24 | 25°57'57 | 0°33'33 | 0°18'18 | 28°05'05 | 10°16'16 | T 28 |
| W 29 | 12 26 05 | 8°26'20  | 19°37'19 | 14°54'54 | 8°18'18  | 18°23'23 | 11°19'19 | 18°20'20 | 17°38'38 | 1°26'26 | 25°58'58 | 0°33'33 | 0°15'15 | 28°12'12 | 10°12'12 | W 29 |
| T 30 | 12 30 02 | 9°25'33  | 2°48'22  | 15°10'22 | 9°31'31  | 18°57'57 | 11°24'24 | 18°27'27 | 17°41'41 | 1°28'28 | 26°00'00 | 0°34'34 | 0°12'12 | 28°18'18 | 10°09'09 | T 30 |
| F 31 | 12 33 58 | 10°24'45 | 16°26'16 | 15°10'30 | 10°44'44 | 19°32'32 | 11°28'28 | 18°34'34 | 17°45'45 | 1°30'30 | 26°01'01 | 0°34'34 | 0°09'09 | 28°25'25 | 10°05'05 | F 31 |

Delta T = 8.70 sec

APRIL 1848

00:00 UT

| Day  | Sid.t    | ☉        | ☽       | ♀     | ♂     | ♂       | ♂     | ♂     | ♂     | ♂    | ♂     | ♂      | ♂     | ♂     | ♂      | Day  |
|------|----------|----------|---------|-------|-------|---------|-------|-------|-------|------|-------|--------|-------|-------|--------|------|
| S 1  | 12 37 55 | 11°23'54 | 0°30    | 15°55 | 11°57 | 20°11 6 | 11°33 | 18°41 | 17°48 | 1°32 | 26° 2 | 0°35   | 0° 5  | 28°32 | 10°R 2 | S 1  |
| S 2  | 12 41 51 | 12°23'02 | 15° 0   | 16°25 | 13°10 | 20°41   | 11°38 | 18°48 | 17°51 | 1°34 | 26° 4 | 0°36   | 0° 2  | 28°38 | 9°M58  | S 2  |
| M 3  | 12 45 48 | 13°22'07 | 29°51   | 16°59 | 14°23 | 21°15   | 11°43 | 18°55 | 17°55 | 1°36 | 26° 5 | 0°R36  | 29°59 | 28°45 | 9°54   | M 3  |
| T 4  | 12 49 44 | 14°21'11 | 14°56   | 17°37 | 15°37 | 21°50   | 11°48 | 19° 2 | 17°58 | 1°38 | 26° 7 | 0°36   | 29°56 | 28°51 | 9°50   | T 4  |
| W 5  | 12 53 41 | 15°20'13 | 0° 7    | 18°18 | 16°50 | 22°25   | 11°53 | 19° 9 | 18° 2 | 1°39 | 26° 8 | 0°35   | 29°53 | 28°58 | 9°46   | W 5  |
| T 6  | 12 57 37 | 16°19'13 | 15°14   | 19° 4 | 18° 3 | 22°59   | 11°58 | 19°16 | 18° 5 | 1°41 | 26° 9 | 0°33   | 29°50 | 29° 5 | 9°42   | T 6  |
| F 7  | 13 1 34  | 17°18'10 | 0°11 8  | 19°53 | 19°16 | 23°34   | 12° 4 | 19°23 | 18° 9 | 1°43 | 26°11 | 0°31   | 29°46 | 29°11 | 9°38   | F 7  |
| S 8  | 13 5 31  | 18°17'06 | 14°42   | 20°45 | 20°29 | 24° 9   | 12°10 | 19°30 | 18°12 | 1°45 | 26°12 | 0°29   | 29°43 | 29°18 | 9°34   | S 8  |
| S 9  | 13 9 27  | 19°15'59 | 28°52   | 21°40 | 21°42 | 24°44   | 12°16 | 19°36 | 18°15 | 1°46 | 26°13 | 0°27   | 29°40 | 29°25 | 9°30   | S 9  |
| M10  | 13 13 24 | 20°14'50 | 12°35   | 22°38 | 22°56 | 25°19   | 12°22 | 19°43 | 18°19 | 1°48 | 26°15 | 0°26   | 29°37 | 29°31 | 9°26   | M10  |
| T 11 | 13 17 20 | 21°13'38 | 25°53   | 23°39 | 24° 9 | 25°54   | 12°28 | 19°50 | 18°22 | 1°50 | 26°16 | 0°D26  | 29°34 | 29°38 | 9°22   | T 11 |
| W12  | 13 21 17 | 22°12'24 | 8°48    | 24°43 | 25°22 | 26°29   | 12°35 | 19°56 | 18°26 | 1°51 | 26°18 | 0°27   | 29°31 | 29°45 | 9°18   | W12  |
| T 13 | 13 25 13 | 23°11'08 | 21°23   | 25°49 | 26°35 | 27° 4   | 12°41 | 20° 3 | 18°29 | 1°53 | 26°19 | 0°28   | 29°27 | 29°51 | 9°13   | T 13 |
| F 14 | 13 29 10 | 24° 9'50 | 3°18 43 | 26°58 | 27°48 | 27°39   | 12°48 | 20°10 | 18°33 | 1°54 | 26°20 | 0°30   | 29°24 | 29°58 | 9° 9   | F 14 |
| S 15 | 13 33 6  | 25° 8'29 | 15°50   | 28° 9 | 29° 1 | 28°14   | 12°55 | 20°16 | 18°36 | 1°56 | 26°22 | 0°32   | 29°21 | 0°M 5 | 9° 5   | S 15 |
| S 16 | 13 37 3  | 26° 7'06 | 27°48   | 29°22 | 0°15  | 28°49   | 13° 2 | 20°23 | 18°39 | 1°57 | 26°23 | 0°R32  | 29°18 | 0°11  | 9° 0   | S 16 |
| M17  | 13 41 0  | 27° 5'42 | 9°41    | 0°38  | 1°28  | 29°24   | 13° 9 | 20°29 | 18°43 | 1°59 | 26°25 | 0°32   | 29°15 | 0°18  | 8°56   | M17  |
| T 18 | 13 44 56 | 28° 4'15 | 21°31   | 1°56  | 2°41  | 29°59   | 13°16 | 20°35 | 18°46 | 2° 0 | 26°26 | 0°30   | 29°11 | 0°25  | 8°51   | T 18 |
| W19  | 13 48 53 | 29° 2'46 | 3°M20   | 3°16  | 3°54  | 0°35    | 13°23 | 20°42 | 18°50 | 2° 2 | 26°27 | 0°27   | 29° 8 | 0°31  | 8°47   | W19  |
| T 20 | 13 52 49 | 0° 1'15  | 15°10   | 4°37  | 5° 7  | 1°10    | 13°31 | 20°48 | 18°53 | 2° 3 | 26°29 | 0°23   | 29° 5 | 0°38  | 8°42   | T 20 |
| F 21 | 13 56 46 | 0°59'43  | 27° 3   | 6° 1  | 6°21  | 1°45    | 13°38 | 20°54 | 18°56 | 2° 5 | 26°30 | 0°18   | 29° 2 | 0°45  | 8°38   | F 21 |
| S 22 | 14 0 42  | 1°58'09  | 9°1 2   | 7°27  | 7°34  | 2°21    | 13°46 | 21° 0 | 19° 0 | 2° 6 | 26°32 | 0°12   | 28°59 | 0°51  | 8°33   | S 22 |
| S 23 | 14 4 39  | 2°56'33  | 21° 8   | 8°55  | 8°47  | 2°56    | 13°54 | 21° 7 | 19° 3 | 2° 7 | 26°33 | 0° 7   | 28°56 | 0°58  | 8°29   | S 23 |
| M24  | 14 8 35  | 3°54'56  | 3°32 4  | 10°25 | 10° 0 | 3°31    | 14° 2 | 21°13 | 19° 6 | 2° 9 | 26°34 | 0° 2   | 28°52 | 1° 5  | 8°24   | M24  |
| T 25 | 14 12 32 | 4°53'17  | 15°54   | 11°56 | 11°13 | 4° 7    | 14°10 | 21°19 | 19°10 | 2°10 | 26°36 | 29°59  | 28°49 | 1°11  | 8°19   | T 25 |
| W26  | 14 16 28 | 5°51'36  | 28°40   | 13°30 | 12°27 | 4°42    | 14°19 | 21°25 | 19°13 | 2°11 | 26°37 | 29°57  | 28°46 | 1°18  | 8°15   | W26  |
| T 27 | 14 20 25 | 6°49'54  | 11°45   | 15° 5 | 13°40 | 5°18    | 14°27 | 21°31 | 19°16 | 2°12 | 26°38 | 29°D57 | 28°43 | 1°25  | 8°10   | T 27 |
| F 28 | 14 24 22 | 7°48'10  | 29°14   | 16°42 | 14°53 | 5°53    | 14°36 | 21°37 | 19°20 | 2°14 | 26°40 | 29°58  | 28°40 | 1°31  | 8° 5   | F 28 |
| S 29 | 14 28 18 | 8°46'25  | 9°1 7   | 18°21 | 16° 6 | 6°29    | 14°44 | 21°42 | 19°23 | 2°15 | 26°41 | 29°59  | 28°36 | 1°38  | 8° 1   | S 29 |
| S 30 | 14 32 15 | 9°44'38  | 23°126  | 20° 2 | 17°20 | 7° 4    | 14°53 | 21°48 | 19°26 | 2°16 | 26°43 | 0°R 1  | 28°33 | 1°M45 | 7°M56  | S 30 |

## ASTRODIENST EPHEMERIS for the year 1848

geocentric

MAY 1848

00:00 UT

| Day  | Sid.t    | ☉        | ☽     | ♀     | ♂     | ♂     | ♂     | ♂     | ♂     | ♂    | ♂      | ♂      | ♂     | ♂    | ♂     | Day  |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|--------|--------|-------|------|-------|------|
| M 1  | 14 36 11 | 10♌42'50 | 8♍8   | 21♍44 | 18♍33 | 7♎40  | 15♎2  | 21♏54 | 19♏30 | 2♏17 | 26♏44  | 0°R 1  | 28♐30 | 1♐51 | 7°R52 | M 1  |
| T 2  | 14 40 8  | 11°41'00 | 23° 9 | 23°29 | 19°46 | 8°16  | 15°11 | 22° 0 | 19°33 | 2°18 | 26°45  | 29♐59  | 28°27 | 1°58 | 7♐47  | T 2  |
| W 3  | 14 44 4  | 12°39'09 | 8♌21  | 25°15 | 20°59 | 8°51  | 15°20 | 22° 5 | 19°36 | 2°19 | 26°47  | 29°55  | 28°24 | 2° 5 | 7°42  | W 3  |
| T 4  | 14 48 1  | 13°37'16 | 23°34 | 27° 3 | 22°13 | 9°27  | 15°29 | 22°11 | 19°39 | 2°20 | 26°48  | 29°49  | 28°21 | 2°11 | 7°38  | T 4  |
| F 5  | 14 51 57 | 14°35'21 | 8♌39  | 28°53 | 23°26 | 10° 3 | 15°39 | 22°16 | 19°43 | 2°21 | 26°49  | 29°43  | 28°17 | 2°18 | 7°33  | F 5  |
| S 6  | 14 55 54 | 15°33'25 | 23°25 | 0♌45  | 24°39 | 10°39 | 15°48 | 22°21 | 19°46 | 2°22 | 26°51  | 29°36  | 28°14 | 2°25 | 7°29  | S 6  |
| S 7  | 14 59 51 | 16°31'27 | 7♎46  | 2°39  | 25°53 | 11°14 | 15°58 | 22°27 | 19°49 | 2°23 | 26°52  | 29°30  | 28°11 | 2°31 | 7°24  | S 7  |
| M 8  | 15 3 47  | 17°29'26 | 21°39 | 4°34  | 27° 6 | 11°50 | 16° 7 | 22°32 | 19°52 | 2°24 | 26°53  | 29°25  | 28° 8 | 2°38 | 7°20  | M 8  |
| T 9  | 15 7 44  | 18°27'25 | 5♌2   | 6°32  | 28°19 | 12°26 | 16°17 | 22°37 | 19°55 | 2°25 | 26°55  | 29°23  | 28° 5 | 2°45 | 7°15  | T 9  |
| W10  | 15 11 40 | 19°25'21 | 17°59 | 8°31  | 29°32 | 13° 2 | 16°27 | 22°42 | 19°58 | 2°26 | 26°56  | 29°D22 | 28° 2 | 2°51 | 7°11  | W10  |
| T 11 | 15 15 37 | 20°23'15 | 0♐32  | 10°32 | 0♌46  | 13°38 | 16°37 | 22°48 | 20° 1 | 2°27 | 26°57  | 29°22  | 27°58 | 2°58 | 7° 6  | T 11 |
| F 12 | 15 19 33 | 21°21'07 | 12°48 | 12°34 | 1°59  | 14°14 | 16°47 | 22°53 | 20° 4 | 2°27 | 26°59  | 29°23  | 27°55 | 3° 5 | 7° 2  | F 12 |
| S 13 | 15 23 30 | 22°18'58 | 24°50 | 14°39 | 3°12  | 14°50 | 16°57 | 22°57 | 20° 7 | 2°28 | 27° 0  | 29°R24 | 27°52 | 3°11 | 6°57  | S 13 |
| S 14 | 15 27 26 | 23°16'47 | 6♌43  | 16°44 | 4°25  | 15°25 | 17° 7 | 23° 2 | 20°10 | 2°29 | 27° 1  | 29°24  | 27°49 | 3°18 | 6°53  | S 14 |
| M15  | 15 31 23 | 24°14'35 | 18°31 | 18°52 | 5°39  | 16° 1 | 17°17 | 23° 7 | 20°13 | 2°29 | 27° 2  | 29°22  | 27°46 | 3°25 | 6°49  | M15  |
| T 16 | 15 35 20 | 25°12'20 | 0♐19  | 21° 0 | 6°52  | 16°37 | 17°28 | 23°12 | 20°16 | 2°30 | 27° 4  | 29°17  | 27°42 | 3°32 | 6°45  | T 16 |
| W17  | 15 39 16 | 26°10'05 | 12° 9 | 23°10 | 8° 5  | 17°13 | 17°38 | 23°16 | 20°19 | 2°31 | 27° 5  | 29°11  | 27°39 | 3°38 | 6°41  | W17  |
| T 18 | 15 43 13 | 27° 7'48 | 24° 4 | 25°20 | 9°18  | 17°49 | 17°49 | 23°21 | 20°22 | 2°31 | 27° 6  | 29° 2  | 27°36 | 3°45 | 6°36  | T 18 |
| F 19 | 15 47 9  | 28° 5'29 | 6♌4   | 27°31 | 10°32 | 18°25 | 18° 0 | 23°26 | 20°25 | 2°32 | 27° 7  | 28°52  | 27°33 | 3°52 | 6°32  | F 19 |
| S 20 | 15 51 6  | 29° 3'10 | 18°12 | 29°42 | 11°45 | 19° 2 | 18°10 | 23°30 | 20°28 | 2°32 | 27° 9  | 28°40  | 27°30 | 3°58 | 6°28  | S 20 |
| S 21 | 15 55 2  | 0♐19     | 0♌29  | 1♐54  | 12°58 | 19°38 | 18°21 | 23°34 | 20°31 | 2°33 | 27°10  | 28°30  | 27°27 | 4° 5 | 6°24  | S 21 |
| M22  | 15 58 59 | 0°58'27  | 12°55 | 4° 6  | 14°12 | 20°14 | 18°32 | 23°39 | 20°34 | 2°33 | 27°11  | 28°20  | 27°23 | 4°12 | 6°20  | M22  |
| T 23 | 16 2 55  | 1°56'04  | 25°33 | 6°17  | 15°25 | 20°50 | 18°43 | 23°43 | 20°36 | 2°34 | 27°12  | 28°13  | 27°20 | 4°18 | 6°17  | T 23 |
| W24  | 16 6 52  | 2°53'40  | 8♌24  | 8°27  | 16°38 | 21°26 | 18°54 | 23°47 | 20°39 | 2°34 | 27°13  | 28° 8  | 27°17 | 4°25 | 6°13  | W24  |
| T 25 | 16 10 49 | 3°51'15  | 21°31 | 10°37 | 17°52 | 22° 2 | 19° 5 | 23°51 | 20°42 | 2°35 | 27°15  | 28° 5  | 27°14 | 4°32 | 6° 9  | T 25 |
| F 26 | 16 14 45 | 4°48'49  | 4♌56  | 12°45 | 19° 5 | 22°38 | 19°16 | 23°55 | 20°45 | 2°35 | 27°16  | 28°D 5 | 27°11 | 4°38 | 6° 5  | F 26 |
| S 27 | 16 18 42 | 5°46'22  | 18°40 | 14°52 | 20°18 | 23°15 | 19°28 | 23°59 | 20°47 | 2°35 | 27°17  | 28° 5  | 27° 8 | 4°45 | 6° 2  | S 27 |
| S 28 | 16 22 38 | 6°43'54  | 2♍46  | 16°58 | 21°32 | 23°51 | 19°39 | 24° 2 | 20°50 | 2°35 | 27°18  | 28°R 5 | 27° 4 | 4°52 | 5°58  | S 28 |
| M29  | 16 26 35 | 7°41'26  | 17°13 | 19° 1 | 22°45 | 24°27 | 19°51 | 24° 6 | 20°52 | 2°36 | 27°19  | 28° 4  | 27° 1 | 4°58 | 5°55  | M29  |
| T 30 | 16 30 31 | 8°38'57  | 1♌58  | 21° 3 | 23°58 | 25° 3 | 20° 2 | 24°10 | 20°55 | 2°36 | 27°20  | 28° 0  | 26°58 | 5° 5 | 5°51  | T 30 |
| W31  | 16 34 28 | 9♐36'27  | 16♌56 | 23♐2  | 25♌12 | 25♎40 | 20♎14 | 24♏13 | 20♏58 | 2♏36 | 27°R21 | 27♐54  | 26♐55 | 5♐12 | 5♐48  | W31  |

Delta T = 8.75 sec

JUNE 1848

00:00 UT

| Day  | Sid.t    | ☉        | ☽     | ♀     | ♂     | ♂     | ♂     | ♂     | ♂      | ♂     | ♂      | ♂      | ♂     | ♂    | ♂     | Day  |
|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|-------|------|-------|------|
| T 1  | 16 38 24 | 10♐33'56 | 1♐59  | 25♐10 | 26♌25 | 26♎16 | 20♎25 | 24♏17 | 21♏0   | 2♏36  | 27°R22 | 27°R46 | 26♐52 | 5♐18 | 5°R45 | T 1  |
| F 2  | 16 42 21 | 11°31'24 | 16°58 | 26°54 | 27°38 | 26°52 | 20°37 | 24°20 | 21° 3  | 2°36  | 27°23  | 27♐36  | 26°48 | 5°25 | 5♐44  | F 2  |
| S 3  | 16 46 18 | 12°28'51 | 1♎43  | 28°47 | 28°52 | 27°29 | 20°49 | 24°23 | 21° 5  | 2°36  | 27°24  | 27°25  | 26°45 | 5°32 | 5°39  | S 3  |
| S 4  | 16 50 14 | 13°26'18 | 16° 6 | 0♎37  | 0♐15  | 28° 5 | 21° 1 | 24°27 | 21° 7  | 2°36  | 27°25  | 27°15  | 26°42 | 5°38 | 5°36  | S 4  |
| M 5  | 16 54 11 | 14°23'43 | 0♌2   | 2°24  | 1°18  | 28°42 | 21°12 | 24°30 | 21°10  | 2°R36 | 27°26  | 27° 7  | 26°39 | 5°45 | 5°33  | M 5  |
| T 6  | 16 58 7  | 15°21'07 | 13°30 | 4° 9  | 2°32  | 29°18 | 21°24 | 24°33 | 21°12  | 2°36  | 27°27  | 27° 1  | 26°36 | 5°52 | 5°30  | T 6  |
| W 7  | 17 2 4   | 16°18'30 | 26°30 | 5°51  | 3°45  | 29°54 | 21°36 | 24°36 | 21°14  | 2°36  | 27°28  | 26°58  | 26°33 | 5°58 | 5°27  | W 7  |
| T 8  | 17 6 0   | 17°15'52 | 9♐6   | 7°30  | 4°59  | 0♌31  | 21°48 | 24°38 | 21°17  | 2°36  | 27°29  | 26°56  | 26°29 | 6° 5 | 5°25  | T 8  |
| F 9  | 17 9 57  | 18°13'13 | 21°22 | 9° 7  | 6°12  | 1° 7  | 22° 1 | 24°41 | 21°19  | 2°36  | 27°30  | 26°56  | 26°26 | 6°12 | 5°22  | F 9  |
| S 10 | 17 13 53 | 19°10'33 | 3♌24  | 10°41 | 7°25  | 1°44  | 22°13 | 24°44 | 21°21  | 2°36  | 27°31  | 26°56  | 26°23 | 6°18 | 5°20  | S 10 |
| S 11 | 17 17 50 | 20° 7'52 | 15°16 | 12°13 | 8°39  | 2°20  | 22°25 | 24°46 | 21°23  | 2°36  | 27°32  | 26°55  | 26°20 | 6°25 | 5°17  | S 11 |
| M12  | 17 21 47 | 21° 5'09 | 27° 5 | 13°42 | 9°52  | 2°57  | 22°37 | 24°49 | 21°25  | 2°35  | 27°33  | 26°52  | 26°17 | 6°32 | 5°15  | M12  |
| T 13 | 17 25 43 | 22° 2'27 | 8♐4   | 15° 8 | 11° 6 | 3°34  | 22°50 | 24°51 | 21°27  | 2°35  | 27°34  | 26°47  | 26°14 | 6°38 | 5°13  | T 13 |
| W14  | 17 29 40 | 22°59'43 | 20°47 | 16°31 | 12°19 | 4°10  | 23° 2 | 24°53 | 21°29  | 2°35  | 27°35  | 26°39  | 26°10 | 6°45 | 5°11  | W14  |
| T 15 | 17 33 36 | 23°56'59 | 2♌48  | 17°52 | 13°33 | 4°47  | 23°14 | 24°55 | 21°31  | 2°35  | 27°36  | 26°28  | 26° 7 | 6°52 | 5° 9  | T 15 |
| F 16 | 17 37 33 | 24°54'14 | 14°58 | 19° 9 | 14°46 | 5°23  | 23°27 | 24°58 | 21°33  | 2°34  | 27°37  | 26°15  | 26° 4 | 6°58 | 5° 7  | F 16 |
| S 17 | 17 41 29 | 25°51'28 | 27°18 | 20°24 | 15°59 | 6° 0  | 23°39 | 25° 0 | 21°35  | 2°34  | 27°37  | 26° 2  | 26° 1 | 7° 5 | 5° 5  | S 17 |
| S 18 | 17 45 26 | 26°48'42 | 9♌50  | 21°36 | 17°13 | 6°37  | 23°52 | 25° 1 | 21°37  | 2°33  | 27°38  | 25°49  | 25°58 | 7°12 | 5° 3  | S 18 |
| M19  | 17 49 22 | 27°45'56 | 22°32 | 22°44 | 18°26 | 7°13  | 24° 4 | 25° 3 | 21°39  | 2°33  | 27°39  | 25°38  | 25°54 | 7°18 | 5° 2  | M19  |
| T 20 | 17 53 19 | 28°43'09 | 5♌26  | 23°50 | 19°40 | 7°50  | 24°17 | 25° 5 | 21°41  | 2°33  | 27°40  | 25°28  | 25°51 | 7°25 | 5° 0  | T 20 |
| W21  | 17 57 16 | 29°40'22 | 18°32 | 24°53 | 20°53 | 8°27  | 24°30 | 25° 6 | 21°43  | 2°32  | 27°41  | 25°22  | 25°48 | 7°32 | 4°59  | W21  |
| T 22 | 18 1 12  | 0♎37'35  | 1♌49  | 25°52 | 22° 7 | 9° 3  | 24°42 | 25° 8 | 21°44  | 2°32  | 27°41  | 25°18  | 25°45 | 7°39 | 4°58  | T 22 |
| F 23 | 18 5 9   | 1°34'48  | 15°19 | 26°48 | 23°21 | 9°40  | 24°55 | 25° 9 | 21°46  | 2°31  | 27°42  | 25°17  | 25°42 | 7°45 | 4°57  | F 23 |
| S 24 | 18 9 5   | 2°32'01  | 29° 3 | 27°41 | 24°34 | 10°17 | 25° 8 | 25°11 | 21°48  | 2°30  | 27°43  | 25°17  | 25°39 | 7°52 | 4°55  | S 24 |
| S 25 | 18 13 2  | 3°29'14  | 13♍2  | 28°30 | 25°48 | 10°54 | 25°21 | 25°12 | 21°49  | 2°30  | 27°43  | 25°17  | 25°35 | 7°59 | 4°54  | S 25 |
| M26  | 18 16 58 | 4°26'27  | 27°16 | 29°15 | 27° 1 | 11°31 | 25°34 | 25°13 | 21°51  | 2°29  | 27°44  | 25°15  | 25°32 | 8° 5 | 4°54  | M26  |
| T 27 | 18 20 55 | 5°23'40  | 11♌43 | 29°57 | 28°15 | 12° 7 | 25°46 | 25°14 | 21°52  | 2°28  | 27°45  | 25°12  | 25°29 | 8°12 | 4°53  | T 27 |
| W28  | 18 24 51 | 6°20'53  | 26°20 | 0♌35  | 29°28 | 12°44 | 25°59 | 25°15 | 21°54  | 2°28  | 27°45  | 25° 6  | 25°26 | 8°19 | 4°52  | W28  |
| T 29 | 18 28 48 | 7°18'06  | 11♐1  | 1° 8  | 0♎42  | 13°21 | 26°12 | 25°16 | 21°55  | 2°27  | 27°46  | 24°57  | 25°23 | 8°25 | 4°52  | T 29 |
| F 30 | 18 32 45 | 8♎15'19  | 25♐40 | 1♌38  | 1♎56  | 13♌58 | 26♎25 | 25♏16 | 21°R56 | 2♏26  | 27°R47 | 24♐47  | 25♐20 | 8♐32 | 4♐51  | F 30 |

Delta T = 8.78 sec

## ASTRODIENST EPHEMERIS for the year 1848

geocentric

JULY 1848

00:00 UT

| Day  | Sid.t    | ☉                     | ☽                   | ♀                 | ♂                  | ♂                   | ♂                   | ♂                   | ♂                   | ♂                   | ♂                   | ♂                    | ♂                   | ♂                   | ♂                   | Day  |
|------|----------|-----------------------|---------------------|-------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|------|
| S 1  | 18 36 41 | 9 <sup>52</sup> 12'33 | 10 <sup>52</sup> 9  | 2 <sup>52</sup> 4 | 3 <sup>52</sup> 9  | 14 <sup>52</sup> 35 | 26 <sup>52</sup> 38 | 25 <sup>52</sup> 17 | 21 <sup>52</sup> 58 | 2 <sup>52</sup> R25 | 27 <sup>52</sup> 47 | 24 <sup>52</sup> R36 | 25 <sup>52</sup> 16 | 8 <sup>52</sup> 39  | 4 <sup>52</sup> R51 | S 1  |
| S 2  | 18 40 38 | 10° 9'46              | 24°21               | 2°25              | 4°23               | 15°12               | 26°51               | 25°17               | 21°59               | 2 <sup>52</sup> 25  | 27°48               | 24 <sup>52</sup> 25  | 25°13               | 8°45                | 4 <sup>52</sup> M51 | S 2  |
| M 3  | 18 44 34 | 11° 6'59              | 8 <sup>52</sup> 10  | 2°41              | 5°37               | 15°49               | 27° 4               | 25°18               | 22° 0               | 2°24                | 27°48               | 24°17                | 25°10               | 8°52                | 4°50                | M 3  |
| T 4  | 18 48 31 | 12° 4'12              | 21°35               | 2°53              | 6°50               | 16°26               | 27°17               | 25°18               | 22° 1               | 2°23                | 27°49               | 24°10                | 25° 7               | 8°59                | 4°D50               | T 4  |
| W 5  | 18 52 27 | 13° 1'25              | 4 <sup>52</sup> 34  | 3° 1              | 8° 4               | 17° 3               | 27°31               | 25°18               | 22° 2               | 2°22                | 27°49               | 24° 7                | 25° 4               | 9° 5                | 4°51                | W 5  |
| T 6  | 18 56 24 | 13°58'38              | 17°11               | 3°R 4             | 9°18               | 17°40               | 27°44               | 25°R18              | 22° 4               | 2°21                | 27°50               | 24° 5                | 25° 0               | 9°12                | 4°51                | T 6  |
| F 7  | 19 0 21  | 14°55'50              | 29°29               | 3° 2              | 10°31              | 18°17               | 27°57               | 25°18               | 22° 5               | 2°20                | 27°50               | 24°D 5               | 24°57               | 9°19                | 4°51                | F 7  |
| S 8  | 19 4 17  | 15°53'03              | 11 <sup>52</sup> 32 | 2°55              | 11°45              | 18°54               | 28°10               | 25°18               | 22° 6               | 2°19                | 27°51               | 24°R 5               | 24°54               | 9°25                | 4°51                | S 8  |
| S 9  | 19 8 14  | 16°50'15              | 23°26               | 2°44              | 12°59              | 19°31               | 28°23               | 25°18               | 22° 7               | 2°18                | 27°51               | 24° 5                | 24°51               | 9°32                | 4°52                | S 9  |
| M10  | 19 12 10 | 17°47'28              | 5 <sup>52</sup> 16  | 2°28              | 14°13              | 20° 9               | 28°36               | 25°18               | 22° 7               | 2°17                | 27°51               | 24° 4                | 24°48               | 9°39                | 4°53                | M10  |
| T 11 | 19 16 7  | 18°44'40              | 17° 8               | 2° 7              | 15°26              | 20°46               | 28°50               | 25°17               | 22° 8               | 2°16                | 27°52               | 24° 0                | 24°45               | 9°45                | 4°53                | T 11 |
| W12  | 19 20 3  | 19°41'53              | 29° 5               | 1°43              | 16°40              | 21°23               | 29° 3               | 25°17               | 22° 9               | 2°15                | 27°52               | 23°54                | 24°41               | 9°52                | 4°54                | W12  |
| T 13 | 19 24 0  | 20°39'05              | 11 <sup>52</sup> 11 | 1°14              | 17°54              | 22° 0               | 29°16               | 25°16               | 22°10               | 2°14                | 27°52               | 23°46                | 24°38               | 9°59                | 4°55                | T 13 |
| F 14 | 19 27 56 | 21°36'18              | 23°30               | 0°42              | 19° 8              | 22°37               | 29°29               | 25°15               | 22°11               | 2°13                | 27°53               | 23°36                | 24°35               | 10° 6               | 4°56                | F 14 |
| S 15 | 19 31 53 | 22°33'31              | 6 <sup>52</sup> 3   | 0° 7              | 20°21              | 23°15               | 29°43               | 25°15               | 22°11               | 2°11                | 27°53               | 23°25                | 24°32               | 10°12               | 4°57                | S 15 |
| S 16 | 19 35 50 | 23°30'45              | 18°50               | 29°530            | 21°35              | 23°52               | 29°56               | 25°14               | 22°12               | 2°10                | 27°53               | 23°15                | 24°29               | 10°19               | 4°59                | S 16 |
| M17  | 19 39 46 | 24°27'58              | 1 <sup>52</sup> 52  | 28°50             | 22°49              | 24°29               | 0 <sup>52</sup> 9   | 25°13               | 22°12               | 2° 9                | 27°54               | 23° 6                | 24°25               | 10°26               | 5° 0                | M17  |
| T 18 | 19 43 43 | 25°25'13              | 15° 7               | 28°10             | 24° 3              | 25° 6               | 0°22                | 25°12               | 22°13               | 2° 8                | 27°54               | 22°59                | 24°22               | 10°32               | 5° 1                | T 18 |
| W19  | 19 47 39 | 26°22'28              | 28°33               | 27°28             | 25°17              | 25°44               | 0°36                | 25°10               | 22°13               | 2° 7                | 27°54               | 22°54                | 24°19               | 10°39               | 5° 3                | W19  |
| T 20 | 19 51 36 | 27°19'43              | 12 <sup>52</sup> 11 | 26°47             | 26°31              | 26°21               | 0°49                | 25° 9               | 22°14               | 2° 5                | 27°54               | 22°51                | 24°16               | 10°46               | 5° 5                | T 20 |
| F 21 | 19 55 32 | 28°16'59              | 25°57               | 26° 6             | 27°45              | 26°58               | 1° 2                | 25° 8               | 22°14               | 2° 4                | 27°54               | 22°D51               | 24°13               | 10°52               | 5° 7                | F 21 |
| S 22 | 19 59 29 | 29°14'17              | 9 <sup>52</sup> 52  | 25°27             | 28°58              | 27°36               | 1°16                | 25° 6               | 22°14               | 2° 3                | 27°55               | 22°52                | 24°10               | 10°59               | 5° 8                | S 22 |
| S 23 | 20 3 25  | 0 <sup>52</sup> 11'35 | 23°54               | 24°50             | 0 <sup>52</sup> 12 | 28°13               | 1°29                | 25° 5               | 22°15               | 2° 1                | 27°55               | 22°R52               | 24° 6               | 11° 6               | 5°11                | S 23 |
| M24  | 20 7 22  | 1° 8'54               | 8 <sup>52</sup> 3   | 24°16             | 1°26               | 28°51               | 1°42                | 25° 3               | 22°15               | 2° 0                | 27°55               | 22°52                | 24° 3               | 11°12               | 5°13                | M24  |
| T 25 | 20 11 19 | 2° 6'14               | 22°18               | 23°46             | 2°40               | 29°28               | 1°55                | 25° 1               | 22°15               | 1°59                | 27°55               | 22°51                | 24° 0               | 11°19               | 5°15                | T 25 |
| W26  | 20 15 15 | 3° 3'35               | 6 <sup>52</sup> 35  | 23°20             | 3°54               | 0 <sup>52</sup> 6   | 2° 9                | 24°59               | 22°15               | 1°57                | 27°55               | 22°47                | 23°57               | 11°26               | 5°17                | W26  |
| T 27 | 20 19 12 | 4° 0'57               | 20°52               | 22°59             | 5° 8               | 0°43                | 2°22                | 24°57               | 22°15               | 1°56                | 27°55               | 22°41                | 23°54               | 11°32               | 5°20                | T 27 |
| F 28 | 20 23 8  | 4°58'21               | 5 <sup>52</sup> 5   | 22°43             | 6°22               | 1°21                | 2°35                | 24°55               | 22°R15              | 1°55                | 27°R55              | 22°34                | 23°51               | 11°39               | 5°22                | F 28 |
| S 29 | 20 27 5  | 5°55'45               | 19° 8               | 22°32             | 7°36               | 1°58                | 2°49                | 24°53               | 22°15               | 1°53                | 27°55               | 22°27                | 23°47               | 11°46               | 5°25                | S 29 |
| S 30 | 20 31 1  | 6°53'10               | 2 <sup>52</sup> 58  | 22°D27            | 8°50               | 2°36                | 3° 2                | 24°51               | 22°15               | 1°52                | 27°55               | 22°20                | 23°44               | 11°53               | 5°27                | S 30 |
| M31  | 20 34 58 | 7 <sup>52</sup> 50'36 | 16 <sup>52</sup> 30 | 22°529            | 10 <sup>52</sup> 4 | 3°14                | 3 <sup>52</sup> 15  | 24°49               | 22°15               | 1°50                | 27°55               | 22°14                | 23°41               | 11 <sup>52</sup> 59 | 5 <sup>52</sup> 30  | M31  |

Delta T = 8.80 sec

AUGUST 1848

00:00 UT

| Day  | Sid.t    | ☉                     | ☽                   | ♀                 | ♂                   | ♂     | ♂                  | ♂      | ♂      | ♂     | ♂      | ♂      | ♂     | ♂                  | ♂                  | Day  |
|------|----------|-----------------------|---------------------|-------------------|---------------------|-------|--------------------|--------|--------|-------|--------|--------|-------|--------------------|--------------------|------|
| T 1  | 20 38 54 | 8 <sup>52</sup> 48'03 | 29 <sup>52</sup> 42 | 22°537            | 11 <sup>52</sup> 18 | 3°11  | 3 <sup>52</sup> 29 | 24°R46 | 22°R15 | 1°R49 | 27°R55 | 22°R10 | 23°11 | 12 <sup>52</sup> 6 | 5 <sup>52</sup> 33 | T 1  |
| W 2  | 20 42 51 | 9°45'30               | 12 <sup>52</sup> 34 | 22°51             | 12°32               | 4°29  | 3°42               | 24°44  | 22°15  | 1°47  | 27°55  | 22°11  | 23°35 | 12°13              | 5°36               | W 2  |
| T 3  | 20 46 48 | 10°42'59              | 25° 7               | 23°12             | 13°46               | 5° 7  | 3°55               | 24°41  | 22°14  | 1°46  | 27°55  | 22°D 7 | 23°31 | 12°19              | 5°39               | T 3  |
| F 4  | 20 50 44 | 11°40'28              | 7 <sup>52</sup> 23  | 23°39             | 15° 0               | 5°44  | 4° 8               | 24°38  | 22°14  | 1°44  | 27°54  | 22° 8  | 23°28 | 12°26              | 5°43               | F 4  |
| S 5  | 20 54 41 | 12°37'58              | 19°27               | 24°13             | 16°15               | 6°22  | 4°22               | 24°36  | 22°14  | 1°43  | 27°54  | 22° 9  | 23°25 | 12°33              | 5°46               | S 5  |
| S 6  | 20 58 37 | 13°35'29              | 1 <sup>52</sup> 22  | 24°54             | 17°29               | 7° 0  | 4°35               | 24°33  | 22°13  | 1°41  | 27°54  | 22°11  | 23°22 | 12°39              | 5°49               | S 6  |
| M 7  | 21 2 34  | 14°33'00              | 13°13               | 25°41             | 18°43               | 7°38  | 4°48               | 24°30  | 22°13  | 1°40  | 27°54  | 22°R12 | 23°19 | 12°46              | 5°53               | M 7  |
| T 8  | 21 6 30  | 15°30'33              | 25° 5               | 26°34             | 19°57               | 8°16  | 5° 1               | 24°27  | 22°12  | 1°38  | 27°54  | 22°11  | 23°16 | 12°53              | 5°57               | T 8  |
| W 9  | 21 10 27 | 16°28'06              | 7 <sup>52</sup> 4   | 27°34             | 21°11               | 8°53  | 5°14               | 24°24  | 22°12  | 1°37  | 27°53  | 22° 9  | 23°12 | 12°59              | 6° 0               | W 9  |
| T 10 | 21 14 23 | 17°25'40              | 19°14               | 28°39             | 22°25               | 9°31  | 5°27               | 24°21  | 22°11  | 1°35  | 27°53  | 22° 6  | 23° 9 | 13° 6              | 6° 4               | T 10 |
| F 11 | 21 18 20 | 18°23'16              | 1 <sup>52</sup> 38  | 29°51             | 23°39               | 10° 9 | 5°41               | 24°17  | 22°10  | 1°33  | 27°53  | 22° 1  | 23° 6 | 13°13              | 6° 8               | F 11 |
| S 12 | 21 22 17 | 19°20'52              | 14°19               | 1 <sup>52</sup> 8 | 24°53               | 10°47 | 5°54               | 24°14  | 22°10  | 1°32  | 27°53  | 21°56  | 23° 3 | 13°20              | 6°12               | S 12 |
| S 13 | 21 26 13 | 20°18'29              | 27°18               | 2°31              | 26° 8               | 11°25 | 6° 7               | 24°11  | 22° 9  | 1°30  | 27°52  | 21°51  | 23° 0 | 13°26              | 6°16               | S 13 |
| M14  | 21 30 10 | 21°16'08              | 10 <sup>52</sup> 37 | 3°59              | 27°22               | 12° 3 | 6°20               | 24° 7  | 22° 8  | 1°29  | 27°52  | 21°46  | 23°57 | 13°33              | 6°20               | M14  |
| T 15 | 21 34 6  | 22°13'48              | 24°13               | 5°31              | 28°36               | 12°41 | 6°33               | 24° 4  | 22° 7  | 1°27  | 27°52  | 21°43  | 22°53 | 13°40              | 6°24               | T 15 |
| W16  | 21 38 3  | 23°11'29              | 8 <sup>52</sup> 4   | 7° 8              | 29°50               | 13°19 | 6°46               | 24° 0  | 22° 6  | 1°25  | 27°51  | 21°41  | 22°50 | 13°46              | 6°29               | W16  |
| T 17 | 21 41 59 | 24° 9'11              | 22° 6               | 8°49              | 1°11                | 13°57 | 6°59               | 23°57  | 22° 6  | 1°24  | 27°51  | 21°D40 | 22°47 | 13°53              | 6°33               | T 17 |
| F 18 | 21 45 56 | 25° 6'55              | 6 <sup>52</sup> 18  | 10°34             | 2°19                | 14°35 | 7°12               | 23°53  | 22° 5  | 1°22  | 27°50  | 21°41  | 22°44 | 14° 0              | 6°38               | F 18 |
| S 19 | 21 49 52 | 26° 4'40              | 20°33               | 12°21             | 3°33                | 15°14 | 7°25               | 23°49  | 22° 4  | 1°21  | 27°50  | 21°42  | 22°41 | 14° 6              | 6°42               | S 19 |
| S 20 | 21 53 49 | 27° 2'27              | 4 <sup>52</sup> 50  | 14°12             | 4°47                | 15°52 | 7°38               | 23°45  | 22° 2  | 1°19  | 27°50  | 21°43  | 22°37 | 14°13              | 6°47               | S 20 |
| M21  | 21 57 45 | 28° 0'16              | 19° 6               | 16° 5             | 6° 1                | 16°30 | 7°51               | 23°41  | 22° 1  | 1°17  | 27°49  | 21°44  | 22°34 | 14°20              | 6°52               | M21  |
| T 22 | 22 1 42  | 28°58'07              | 3 <sup>52</sup> 18  | 17°59             | 7°15                | 17° 8 | 8° 3               | 23°37  | 22° 0  | 1°16  | 27°49  | 21°R44 | 22°31 | 14°26              | 6°57               | T 22 |
| W23  | 22 5 39  | 29°56'00              | 17°23               | 19°56             | 8°30                | 17°46 | 8°16               | 23°33  | 21°59  | 1°14  | 27°48  | 21°44  | 22°28 | 14°33              | 7° 2               | W23  |
| T 24 | 22 9 35  | 0 <sup>52</sup> 53'54 | 1 <sup>52</sup> 21  | 21°53             | 9°44                | 18°25 | 8°29               | 23°29  | 21°58  | 1°12  | 27°47  | 21°42  | 22°25 | 14°40              | 7° 7               | T 24 |
| F 25 | 22 13 32 | 1°51'50               | 15° 9               | 23°51             | 10°58               | 19° 3 | 8°42               | 23°25  | 21°56  | 1°11  | 27°47  | 21°39  | 22°22 | 14°47              | 7°12               | F 25 |
| S 26 | 22 17 28 | 2°49'48               | 28°46               | 25°50             | 12°13               | 19°41 | 8°54               | 23°21  | 21°55  | 1° 9  | 27°46  | 21°37  | 22°18 | 14°53              | 7°17               | S 26 |
| S 27 | 22 21 25 | 3°47'48               | 12 <sup>52</sup> 9  | 27°48             | 13°27               | 20°20 | 9° 7               | 23°17  | 21°54  | 1° 7  | 27°46  | 21°34  | 22°15 | 15° 0              | 7°22               | S 27 |
| M28  | 22 25 21 | 4°45'49               | 25°17               | 29°47             | 14°41               | 20°58 | 9°20               | 23°13  | 21°52  | 1° 6  | 27°45  | 21°32  | 22°12 | 15° 7              | 7°28               | M28  |
| T 29 | 22 29 18 | 5°43'52               | 8 <sup>52</sup> 11  | 1°11              | 15°55               | 21°37 | 9°32               | 23° 8  | 21°51  | 1° 4  | 27°45  | 21°31  | 22° 9 | 15°13              | 7°33               | T 29 |
| W30  | 22 33 14 | 6°41'57               | 20°49               | 3°43              | 17°10               | 22°15 | 9°45               | 23° 4  | 21°49  | 1° 2  | 27°44  | 21°D30 | 22° 6 | 15°20              | 7°39               | W30  |
| T 31 | 22 37 11 | 7°40'03               | 3 <sup>52</sup> 13  | 5°11              | 18°24               | 22°54 | 9 <sup>52</sup> 57 | 23°11  | 21°48  | 1°11  | 27°43  | 21°31  | 22°11 | 15°27              | 7°44               | T 31 |

Delta T = 8.82 sec

## ASTRODIENST EPHEMERIS for the year 1848

geocentric

SEPTEMBER 1848

00:00 UT

| Day  | Sid.t    | ☉                      | ☽                   | ♀                   | ♂                   | ♂                   | ♂                   | ♂                   | ♂                   | ♂                  | ♂                   | ♂                   | ♂                   | ♂                   | ♂                   | Day  |
|------|----------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------|
| F 1  | 22 41 8  | 8 <sup>h</sup> 38'11"  | 15 <sup>h</sup> 24' | 7 <sup>h</sup> 37'  | 19 <sup>h</sup> 38' | 23 <sup>h</sup> 32' | 10 <sup>h</sup> 10' | 22 <sup>h</sup> 55' | 21 <sup>h</sup> 46' | 0 <sup>h</sup> 59' | 27 <sup>h</sup> 43' | 21 <sup>h</sup> 32' | 21 <sup>h</sup> 59' | 15 <sup>h</sup> 33' | 7 <sup>h</sup> 50'  | F 1  |
| S 2  | 22 45 4  | 9 <sup>h</sup> 36'20"  | 27 <sup>h</sup> 25' | 9 <sup>h</sup> 32'  | 20 <sup>h</sup> 53' | 24 <sup>h</sup> 11' | 10 <sup>h</sup> 22' | 22 <sup>h</sup> 51' | 21 <sup>h</sup> 45' | 0 <sup>h</sup> 58' | 27 <sup>h</sup> 42' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 56' | 15 <sup>h</sup> 40' | 7 <sup>h</sup> 55'  | S 2  |
| S 3  | 22 49 1  | 10 <sup>h</sup> 34'31" | 9 <sup>h</sup> 19'  | 11 <sup>h</sup> 27' | 22 <sup>h</sup> 7'  | 24 <sup>h</sup> 49' | 10 <sup>h</sup> 34' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 43' | 0 <sup>h</sup> 56' | 27 <sup>h</sup> 41' | 21 <sup>h</sup> 34' | 21 <sup>h</sup> 53' | 15 <sup>h</sup> 47' | 8 <sup>h</sup> 1'   | S 3  |
| M 4  | 22 52 57 | 11 <sup>h</sup> 32'43" | 21 <sup>h</sup> 10' | 13 <sup>h</sup> 21' | 23 <sup>h</sup> 21' | 25 <sup>h</sup> 28' | 10 <sup>h</sup> 47' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 42' | 0 <sup>h</sup> 54' | 27 <sup>h</sup> 40' | 21 <sup>h</sup> 35' | 21 <sup>h</sup> 50' | 15 <sup>h</sup> 53' | 8 <sup>h</sup> 7'   | M 4  |
| T 5  | 22 56 54 | 12 <sup>h</sup> 30'57" | 3 <sup>h</sup> 2'   | 15 <sup>h</sup> 13' | 24 <sup>h</sup> 36' | 26 <sup>h</sup> 7'  | 10 <sup>h</sup> 59' | 22 <sup>h</sup> 37' | 21 <sup>h</sup> 40' | 0 <sup>h</sup> 53' | 27 <sup>h</sup> 40' | 21 <sup>h</sup> 35' | 21 <sup>h</sup> 47' | 16 <sup>h</sup> 0'  | 8 <sup>h</sup> 13'  | T 5  |
| W 6  | 23 0 50  | 13 <sup>h</sup> 29'12" | 15 <sup>h</sup> 0'  | 17 <sup>h</sup> 5'  | 25 <sup>h</sup> 50' | 26 <sup>h</sup> 45' | 11 <sup>h</sup> 11' | 22 <sup>h</sup> 33' | 21 <sup>h</sup> 38' | 0 <sup>h</sup> 51' | 27 <sup>h</sup> 39' | 21 <sup>h</sup> 35' | 21 <sup>h</sup> 43' | 16 <sup>h</sup> 7'  | 8 <sup>h</sup> 19'  | W 6  |
| T 7  | 23 4 47  | 14 <sup>h</sup> 27'29" | 27 <sup>h</sup> 8'  | 18 <sup>h</sup> 55' | 27 <sup>h</sup> 4'  | 27 <sup>h</sup> 24' | 11 <sup>h</sup> 23' | 22 <sup>h</sup> 28' | 21 <sup>h</sup> 36' | 0 <sup>h</sup> 50' | 27 <sup>h</sup> 38' | 21 <sup>h</sup> 35' | 21 <sup>h</sup> 40' | 16 <sup>h</sup> 14' | 8 <sup>h</sup> 25'  | T 7  |
| F 8  | 23 8 43  | 15 <sup>h</sup> 25'48" | 9 <sup>h</sup> 32'  | 20 <sup>h</sup> 45' | 28 <sup>h</sup> 19' | 28 <sup>h</sup> 3'  | 11 <sup>h</sup> 35' | 22 <sup>h</sup> 24' | 21 <sup>h</sup> 34' | 0 <sup>h</sup> 48' | 27 <sup>h</sup> 37' | 21 <sup>h</sup> 35' | 21 <sup>h</sup> 37' | 16 <sup>h</sup> 20' | 8 <sup>h</sup> 31'  | F 8  |
| S 9  | 23 12 40 | 16 <sup>h</sup> 24'08" | 22 <sup>h</sup> 14' | 22 <sup>h</sup> 33' | 29 <sup>h</sup> 33' | 28 <sup>h</sup> 42' | 11 <sup>h</sup> 47' | 22 <sup>h</sup> 19' | 21 <sup>h</sup> 33' | 0 <sup>h</sup> 46' | 27 <sup>h</sup> 37' | 21 <sup>h</sup> 34' | 21 <sup>h</sup> 34' | 16 <sup>h</sup> 27' | 8 <sup>h</sup> 37'  | S 9  |
| S 10 | 23 16 37 | 17 <sup>h</sup> 22'29" | 5 <sup>h</sup> 18'  | 24 <sup>h</sup> 20' | 0 <sup>h</sup> 47'  | 29 <sup>h</sup> 21' | 11 <sup>h</sup> 59' | 22 <sup>h</sup> 15' | 21 <sup>h</sup> 31' | 0 <sup>h</sup> 45' | 27 <sup>h</sup> 36' | 21 <sup>h</sup> 34' | 21 <sup>h</sup> 31' | 16 <sup>h</sup> 34' | 8 <sup>h</sup> 44'  | S 10 |
| M 11 | 23 20 33 | 18 <sup>h</sup> 20'52" | 18 <sup>h</sup> 46' | 26 <sup>h</sup> 6'  | 2 <sup>h</sup> 2'   | 29 <sup>h</sup> 59' | 12 <sup>h</sup> 11' | 22 <sup>h</sup> 10' | 21 <sup>h</sup> 29' | 0 <sup>h</sup> 43' | 27 <sup>h</sup> 35' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 28' | 16 <sup>h</sup> 40' | 8 <sup>h</sup> 50'  | M 11 |
| T 12 | 23 24 30 | 19 <sup>h</sup> 19'17" | 2 <sup>h</sup> 36'  | 27 <sup>h</sup> 50' | 3 <sup>h</sup> 16'  | 0 <sup>h</sup> 38'  | 12 <sup>h</sup> 23' | 22 <sup>h</sup> 5'  | 21 <sup>h</sup> 27' | 0 <sup>h</sup> 42' | 27 <sup>h</sup> 34' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 24' | 16 <sup>h</sup> 47' | 8 <sup>h</sup> 56'  | T 12 |
| W 13 | 23 28 26 | 20 <sup>h</sup> 17'44" | 16 <sup>h</sup> 47' | 29 <sup>h</sup> 34' | 4 <sup>h</sup> 30'  | 1 <sup>h</sup> 17'  | 12 <sup>h</sup> 35' | 22 <sup>h</sup> 1'  | 21 <sup>h</sup> 25' | 0 <sup>h</sup> 40' | 27 <sup>h</sup> 33' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 21' | 16 <sup>h</sup> 54' | 9 <sup>h</sup> 3'   | W 13 |
| T 14 | 23 32 23 | 21 <sup>h</sup> 16'12" | 1 <sup>h</sup> 14'  | 1 <sup>h</sup> 17'  | 5 <sup>h</sup> 45'  | 1 <sup>h</sup> 56'  | 12 <sup>h</sup> 47' | 21 <sup>h</sup> 56' | 21 <sup>h</sup> 23' | 0 <sup>h</sup> 39' | 27 <sup>h</sup> 32' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 18' | 17 <sup>h</sup> 0'  | 9 <sup>h</sup> 9'   | T 14 |
| F 15 | 23 36 19 | 22 <sup>h</sup> 14'43" | 15 <sup>h</sup> 53' | 2 <sup>h</sup> 58'  | 6 <sup>h</sup> 59'  | 2 <sup>h</sup> 35'  | 12 <sup>h</sup> 58' | 21 <sup>h</sup> 51' | 21 <sup>h</sup> 21' | 0 <sup>h</sup> 37' | 27 <sup>h</sup> 31' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 15' | 17 <sup>h</sup> 7'  | 9 <sup>h</sup> 16'  | F 15 |
| S 16 | 23 40 16 | 23 <sup>h</sup> 13'15" | 0 <sup>h</sup> 35'  | 4 <sup>h</sup> 39'  | 8 <sup>h</sup> 13'  | 3 <sup>h</sup> 14'  | 13 <sup>h</sup> 10' | 21 <sup>h</sup> 47' | 21 <sup>h</sup> 19' | 0 <sup>h</sup> 36' | 27 <sup>h</sup> 31' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 12' | 17 <sup>h</sup> 14' | 9 <sup>h</sup> 23'  | S 16 |
| S 17 | 23 44 12 | 24 <sup>h</sup> 11'50" | 15 <sup>h</sup> 16' | 6 <sup>h</sup> 18'  | 9 <sup>h</sup> 28'  | 3 <sup>h</sup> 53'  | 13 <sup>h</sup> 21' | 21 <sup>h</sup> 42' | 21 <sup>h</sup> 17' | 0 <sup>h</sup> 34' | 27 <sup>h</sup> 30' | 21 <sup>h</sup> 32' | 21 <sup>h</sup> 8'  | 17 <sup>h</sup> 21' | 9 <sup>h</sup> 29'  | S 17 |
| M 18 | 23 48 9  | 25 <sup>h</sup> 10'27" | 29 <sup>h</sup> 49' | 7 <sup>h</sup> 57'  | 10 <sup>h</sup> 42' | 4 <sup>h</sup> 32'  | 13 <sup>h</sup> 33' | 21 <sup>h</sup> 38' | 21 <sup>h</sup> 15' | 0 <sup>h</sup> 33' | 27 <sup>h</sup> 29' | 21 <sup>h</sup> 32' | 21 <sup>h</sup> 5'  | 17 <sup>h</sup> 27' | 9 <sup>h</sup> 36'  | M 18 |
| T 19 | 23 52 5  | 26 <sup>h</sup> 9'06"  | 14 <sup>h</sup> 11' | 9 <sup>h</sup> 34'  | 11 <sup>h</sup> 56' | 5 <sup>h</sup> 12'  | 13 <sup>h</sup> 44' | 21 <sup>h</sup> 33' | 21 <sup>h</sup> 13' | 0 <sup>h</sup> 31' | 27 <sup>h</sup> 28' | 21 <sup>h</sup> 32' | 21 <sup>h</sup> 2'  | 17 <sup>h</sup> 34' | 9 <sup>h</sup> 43'  | T 19 |
| W 20 | 23 56 2  | 27 <sup>h</sup> 7'48"  | 28 <sup>h</sup> 14' | 11 <sup>h</sup> 11' | 13 <sup>h</sup> 11' | 5 <sup>h</sup> 51'  | 13 <sup>h</sup> 55' | 21 <sup>h</sup> 28' | 21 <sup>h</sup> 10' | 0 <sup>h</sup> 30' | 27 <sup>h</sup> 27' | 21 <sup>h</sup> 32' | 20 <sup>h</sup> 59' | 17 <sup>h</sup> 41' | 9 <sup>h</sup> 50'  | W 20 |
| T 21 | 23 59 59 | 28 <sup>h</sup> 6'31"  | 12 <sup>h</sup> 28' | 12 <sup>h</sup> 46' | 14 <sup>h</sup> 25' | 6 <sup>h</sup> 30'  | 14 <sup>h</sup> 7'  | 21 <sup>h</sup> 24' | 21 <sup>h</sup> 8'  | 0 <sup>h</sup> 28' | 27 <sup>h</sup> 26' | 21 <sup>h</sup> 32' | 20 <sup>h</sup> 56' | 17 <sup>h</sup> 47' | 9 <sup>h</sup> 57'  | T 21 |
| F 22 | 0 3 55   | 29 <sup>h</sup> 5'17"  | 25 <sup>h</sup> 33' | 14 <sup>h</sup> 21' | 15 <sup>h</sup> 39' | 7 <sup>h</sup> 9'   | 14 <sup>h</sup> 18' | 21 <sup>h</sup> 19' | 21 <sup>h</sup> 6'  | 0 <sup>h</sup> 27' | 27 <sup>h</sup> 25' | 21 <sup>h</sup> 33' | 20 <sup>h</sup> 53' | 17 <sup>h</sup> 54' | 10 <sup>h</sup> 4'  | F 22 |
| S 23 | 0 7 52   | 0 <sup>h</sup> 4'06"   | 8 <sup>h</sup> 14'  | 15 <sup>h</sup> 55' | 16 <sup>h</sup> 54' | 7 <sup>h</sup> 48'  | 14 <sup>h</sup> 29' | 21 <sup>h</sup> 15' | 21 <sup>h</sup> 4'  | 0 <sup>h</sup> 26' | 27 <sup>h</sup> 24' | 21 <sup>h</sup> 33' | 20 <sup>h</sup> 49' | 18 <sup>h</sup> 1'  | 10 <sup>h</sup> 11' | S 23 |
| S 24 | 0 11 48  | 1 <sup>h</sup> 2'56"   | 21 <sup>h</sup> 48' | 17 <sup>h</sup> 27' | 18 <sup>h</sup> 8'  | 8 <sup>h</sup> 28'  | 14 <sup>h</sup> 40' | 21 <sup>h</sup> 10' | 21 <sup>h</sup> 2'  | 0 <sup>h</sup> 24' | 27 <sup>h</sup> 23' | 21 <sup>h</sup> 34' | 20 <sup>h</sup> 46' | 18 <sup>h</sup> 7'  | 10 <sup>h</sup> 18' | S 24 |
| M 25 | 0 15 45  | 2 <sup>h</sup> 1'49"   | 4 <sup>h</sup> 13'  | 18 <sup>h</sup> 59' | 19 <sup>h</sup> 22' | 9 <sup>h</sup> 7'   | 14 <sup>h</sup> 51' | 21 <sup>h</sup> 5'  | 20 <sup>h</sup> 59' | 0 <sup>h</sup> 23' | 27 <sup>h</sup> 22' | 21 <sup>h</sup> 35' | 20 <sup>h</sup> 43' | 18 <sup>h</sup> 14' | 10 <sup>h</sup> 25' | M 25 |
| T 26 | 0 19 41  | 3 <sup>h</sup> 0'43"   | 17 <sup>h</sup> 8'  | 20 <sup>h</sup> 30' | 20 <sup>h</sup> 37' | 9 <sup>h</sup> 47'  | 15 <sup>h</sup> 2'  | 21 <sup>h</sup> 1'  | 20 <sup>h</sup> 57' | 0 <sup>h</sup> 22' | 27 <sup>h</sup> 21' | 21 <sup>h</sup> 35' | 20 <sup>h</sup> 40' | 18 <sup>h</sup> 21' | 10 <sup>h</sup> 32' | T 26 |
| W 27 | 0 23 38  | 3 <sup>h</sup> 59'40"  | 29 <sup>h</sup> 29' | 22 <sup>h</sup> 0'  | 21 <sup>h</sup> 51' | 10 <sup>h</sup> 26' | 15 <sup>h</sup> 12' | 20 <sup>h</sup> 56' | 20 <sup>h</sup> 55' | 0 <sup>h</sup> 20' | 27 <sup>h</sup> 20' | 21 <sup>h</sup> 35' | 20 <sup>h</sup> 37' | 18 <sup>h</sup> 28' | 10 <sup>h</sup> 39' | W 27 |
| T 28 | 0 27 34  | 4 <sup>h</sup> 58'39"  | 11 <sup>h</sup> 41' | 23 <sup>h</sup> 29' | 23 <sup>h</sup> 5'  | 11 <sup>h</sup> 5'  | 15 <sup>h</sup> 23' | 20 <sup>h</sup> 52' | 20 <sup>h</sup> 52' | 0 <sup>h</sup> 19' | 27 <sup>h</sup> 19' | 21 <sup>h</sup> 34' | 20 <sup>h</sup> 34' | 18 <sup>h</sup> 34' | 10 <sup>h</sup> 47' | T 28 |
| F 29 | 0 31 31  | 5 <sup>h</sup> 57'40"  | 23 <sup>h</sup> 45' | 24 <sup>h</sup> 57' | 24 <sup>h</sup> 20' | 11 <sup>h</sup> 45' | 15 <sup>h</sup> 34' | 20 <sup>h</sup> 48' | 20 <sup>h</sup> 50' | 0 <sup>h</sup> 18' | 27 <sup>h</sup> 18' | 21 <sup>h</sup> 33' | 20 <sup>h</sup> 30' | 18 <sup>h</sup> 41' | 10 <sup>h</sup> 54' | F 29 |
| S 30 | 0 35 28  | 6 <sup>h</sup> 56'42"  | 5 <sup>h</sup> 14'  | 26 <sup>h</sup> 24' | 25 <sup>h</sup> 34' | 12 <sup>h</sup> 25' | 15 <sup>h</sup> 14' | 20 <sup>h</sup> 43' | 20 <sup>h</sup> 48' | 0 <sup>h</sup> 16' | 27 <sup>h</sup> 17' | 21 <sup>h</sup> 31' | 20 <sup>h</sup> 27' | 18 <sup>h</sup> 48' | 11 <sup>h</sup> 1'  | S 30 |

Delta T = 8.85 sec

OCTOBER 1848

00:00 UT

| Day  | Sid.t   | ☉                     | ☾                     | ♂                     | ♀                     | ♂                   | ♂                     | ♂                   | ♂                   | ♂                  | ♂                   | ♂                   | ♂                     | ♂                     | ♂                    | Day  |
|------|---------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|-----------------------|---------------------|---------------------|--------------------|---------------------|---------------------|-----------------------|-----------------------|----------------------|------|
| S 1  | 0 39 24 | 7 <sup>h</sup> 55'47  | 17 <sup>h</sup> 13'33 | 27 <sup>h</sup> 50'50 | 26 <sup>h</sup> 48'48 | 13 <sup>h</sup> 4'4 | 15 <sup>h</sup> 54'54 | 20 <sup>h</sup> R39 | 20 <sup>h</sup> R45 | 0 <sup>h</sup> R15 | 27 <sup>h</sup> R16 | 21 <sup>h</sup> R28 | 20 <sup>h</sup> 24'24 | 18 <sup>h</sup> 15'54 | 11 <sup>h</sup> 11'9 | S 1  |
| M 2  | 0 43 21 | 8 <sup>h</sup> 54'54  | 29 <sup>h</sup> 23    | 29 <sup>h</sup> 16    | 28 <sup>h</sup> 3     | 13 <sup>h</sup> 44  | 16 <sup>h</sup> 5     | 20 <sup>h</sup> 35  | 20 <sup>h</sup> 43  | 0 <sup>h</sup> 14  | 27 <sup>h</sup> 15  | 21 <sup>h</sup> 26  | 20 <sup>h</sup> 21    | 19 <sup>h</sup> 1     | 11 <sup>h</sup> 16   | M 2  |
| T 3  | 0 47 17 | 9 <sup>h</sup> 54'02  | 11 <sup>h</sup> 15'15 | 0 <sup>h</sup> 14'40  | 29 <sup>h</sup> 17    | 14 <sup>h</sup> 23  | 16 <sup>h</sup> 15    | 20 <sup>h</sup> 30  | 20 <sup>h</sup> 41  | 0 <sup>h</sup> 13  | 27 <sup>h</sup> 14  | 21 <sup>h</sup> 23  | 20 <sup>h</sup> 18    | 19 <sup>h</sup> 8     | 11 <sup>h</sup> 24   | T 3  |
| W 4  | 0 51 14 | 10 <sup>h</sup> 53'13 | 23 <sup>h</sup> 11    | 2 <sup>h</sup> 3      | 0 <sup>h</sup> 13'31  | 15 <sup>h</sup> 3   | 16 <sup>h</sup> 25    | 20 <sup>h</sup> 26  | 20 <sup>h</sup> 38  | 0 <sup>h</sup> 12  | 27 <sup>h</sup> 12  | 21 <sup>h</sup> 21  | 20 <sup>h</sup> 14    | 19 <sup>h</sup> 14    | 11 <sup>h</sup> 31   | W 4  |
| T 5  | 0 55 10 | 11 <sup>h</sup> 52'25 | 5 <sup>h</sup> 51'7   | 3 <sup>h</sup> 26     | 1 <sup>h</sup> 46     | 15 <sup>h</sup> 43  | 16 <sup>h</sup> 35    | 20 <sup>h</sup> 22  | 20 <sup>h</sup> 36  | 0 <sup>h</sup> 11  | 27 <sup>h</sup> 11  | 21 <sup>h</sup> 20  | 20 <sup>h</sup> 11    | 19 <sup>h</sup> 21    | 11 <sup>h</sup> 39   | T 5  |
| F 6  | 0 59 7  | 12 <sup>h</sup> 51'39 | 17 <sup>h</sup> 37    | 4 <sup>h</sup> 47     | 3 <sup>h</sup> 0      | 16 <sup>h</sup> 23  | 16 <sup>h</sup> 45    | 20 <sup>h</sup> 18  | 20 <sup>h</sup> 34  | 0 <sup>h</sup> 9   | 27 <sup>h</sup> 10  | 21 <sup>h</sup> D20 | 20 <sup>h</sup> 8     | 19 <sup>h</sup> 28    | 11 <sup>h</sup> 46   | F 6  |
| S 7  | 1 3 3   | 13 <sup>h</sup> 50'54 | 0 <sup>h</sup> 14     | 6 <sup>h</sup> 7      | 4 <sup>h</sup> 14     | 17 <sup>h</sup> 2   | 16 <sup>h</sup> 55    | 20 <sup>h</sup> 14  | 20 <sup>h</sup> 31  | 0 <sup>h</sup> 8   | 27 <sup>h</sup> 9   | 21 <sup>h</sup> 21  | 20 <sup>h</sup> 5     | 19 <sup>h</sup> 35    | 11 <sup>h</sup> 54   | S 7  |
| S 8  | 1 7 0   | 14 <sup>h</sup> 50'12 | 13 <sup>h</sup> 14    | 7 <sup>h</sup> 26     | 5 <sup>h</sup> 28     | 17 <sup>h</sup> 42  | 17 <sup>h</sup> 4     | 20 <sup>h</sup> 10  | 20 <sup>h</sup> 29  | 0 <sup>h</sup> 7   | 27 <sup>h</sup> 8   | 21 <sup>h</sup> 22  | 20 <sup>h</sup> 2     | 19 <sup>h</sup> 41    | 12 <sup>h</sup> 2    | S 8  |
| M 9  | 1 10 57 | 15 <sup>h</sup> 49'31 | 26 <sup>h</sup> 39    | 8 <sup>h</sup> 43     | 6 <sup>h</sup> 43     | 18 <sup>h</sup> 22  | 17 <sup>h</sup> 14    | 20 <sup>h</sup> 6   | 20 <sup>h</sup> 26  | 0 <sup>h</sup> 6   | 27 <sup>h</sup> 7   | 21 <sup>h</sup> 24  | 19 <sup>h</sup> 59    | 19 <sup>h</sup> 48    | 12 <sup>h</sup> 9    | M 9  |
| T 10 | 1 14 53 | 16 <sup>h</sup> 48'52 | 10 <sup>h</sup> 32    | 9 <sup>h</sup> 59     | 7 <sup>h</sup> 57     | 19 <sup>h</sup> 2   | 17 <sup>h</sup> 24    | 20 <sup>h</sup> 2   | 20 <sup>h</sup> 24  | 0 <sup>h</sup> 5   | 27 <sup>h</sup> 6   | 21 <sup>h</sup> 25  | 19 <sup>h</sup> 55    | 19 <sup>h</sup> 55    | 12 <sup>h</sup> 17   | T 10 |
| W 11 | 1 18 50 | 17 <sup>h</sup> 48'15 | 24 <sup>h</sup> 50    | 11 <sup>h</sup> 14    | 9 <sup>h</sup> 11     | 19 <sup>h</sup> 42  | 17 <sup>h</sup> 33    | 19 <sup>h</sup> 58  | 20 <sup>h</sup> 21  | 0 <sup>h</sup> 4   | 27 <sup>h</sup> 5   | 21 <sup>h</sup> R25 | 19 <sup>h</sup> 52    | 20 <sup>h</sup> 1     | 12 <sup>h</sup> 25   | W 11 |
| T 12 | 1 22 46 | 18 <sup>h</sup> 47'39 | 9 <sup>h</sup> 32     | 12 <sup>h</sup> 28    | 10 <sup>h</sup> 25    | 20 <sup>h</sup> 22  | 17 <sup>h</sup> 42    | 19 <sup>h</sup> 54  | 20 <sup>h</sup> 19  | 0 <sup>h</sup> 3   | 27 <sup>h</sup> 4   | 21 <sup>h</sup> 24  | 19 <sup>h</sup> 49    | 20 <sup>h</sup> 8     | 12 <sup>h</sup> 33   | T 12 |
| F 13 | 1 26 43 | 19 <sup>h</sup> 47'06 | 24 <sup>h</sup> 31    | 13 <sup>h</sup> 39    | 11 <sup>h</sup> 40    | 21 <sup>h</sup> 2   | 17 <sup>h</sup> 51    | 19 <sup>h</sup> 51  | 20 <sup>h</sup> 16  | 0 <sup>h</sup> 2   | 27 <sup>h</sup> 2   | 21 <sup>h</sup> 22  | 19 <sup>h</sup> 46    | 20 <sup>h</sup> 15    | 12 <sup>h</sup> 40   | F 13 |
| S 14 | 1 30 39 | 20 <sup>h</sup> 46'35 | 9 <sup>h</sup> 38     | 14 <sup>h</sup> 49    | 12 <sup>h</sup> 54    | 21 <sup>h</sup> 42  | 18 <sup>h</sup> 0     | 19 <sup>h</sup> 47  | 20 <sup>h</sup> 14  | 0 <sup>h</sup> 2   | 27 <sup>h</sup> 1   | 21 <sup>h</sup> 19  | 19 <sup>h</sup> 43    | 20 <sup>h</sup> 21    | 12 <sup>h</sup> 48   | S 14 |
| S 15 | 1 34 36 | 21 <sup>h</sup> 46'06 | 24 <sup>h</sup> 43    | 15 <sup>h</sup> 57    | 14 <sup>h</sup> 8     | 22 <sup>h</sup> 22  | 18 <sup>h</sup> 9     | 19 <sup>h</sup> 43  | 20 <sup>h</sup> 12  | 0 <sup>h</sup> 1   | 27 <sup>h</sup> 0   | 21 <sup>h</sup> 14  | 19 <sup>h</sup> 39    | 20 <sup>h</sup> 28    | 12 <sup>h</sup> 56   | S 15 |
| M 16 | 1 38 32 | 22 <sup>h</sup> 45'39 | 9 <sup>h</sup> 11     | 17 <sup>h</sup> 3     | 15 <sup>h</sup> 22    | 23 <sup>h</sup> 2   | 18 <sup>h</sup> 18    | 19 <sup>h</sup> 40  | 20 <sup>h</sup> 9   | 29 <sup>h</sup> 59 | 26 <sup>h</sup> 59  | 21 <sup>h</sup> 10  | 19 <sup>h</sup> 36    | 20 <sup>h</sup> 35    | 13 <sup>h</sup> 4    | M 16 |
| T 17 | 1 42 29 | 23 <sup>h</sup> 45'15 | 24 <sup>h</sup> 16    | 18 <sup>h</sup> 7     | 16 <sup>h</sup> 37    | 23 <sup>h</sup> 42  | 18 <sup>h</sup> 27    | 19 <sup>h</sup> 37  | 20 <sup>h</sup> 7   | 29 <sup>h</sup> 59 | 26 <sup>h</sup> 58  | 21 <sup>h</sup> 6   | 19 <sup>h</sup> 33    | 20 <sup>h</sup> 42    | 13 <sup>h</sup> 12   | T 17 |
| W 18 | 1 46 26 | 24 <sup>h</sup> 44'53 | 8 <sup>h</sup> 53     | 19 <sup>h</sup> 8     | 17 <sup>h</sup> 51    | 24 <sup>h</sup> 23  | 18 <sup>h</sup> 35    | 19 <sup>h</sup> 33  | 20 <sup>h</sup> 4   | 29 <sup>h</sup> 58 | 26 <sup>h</sup> 57  | 21 <sup>h</sup> 3   | 19 <sup>h</sup> 30    | 20 <sup>h</sup> 48    | 13 <sup>h</sup> 20   | W 18 |
| T 19 | 1 50 22 | 25 <sup>h</sup> 44'33 | 22 <sup>h</sup> 21    | 20 <sup>h</sup> 7     | 19 <sup>h</sup> 5     | 25 <sup>h</sup> 3   | 18 <sup>h</sup> 44    | 19 <sup>h</sup> 30  | 20 <sup>h</sup> 2   | 29 <sup>h</sup> 57 | 26 <sup>h</sup> 56  | 21 <sup>h</sup> D 2 | 19 <sup>h</sup> 27    | 20 <sup>h</sup> 55    | 13 <sup>h</sup> 28   | T 19 |
| F 20 | 1 54 19 | 26 <sup>h</sup> 44'15 | 5 <sup>h</sup> 14     | 21 <sup>h</sup> 2     | 20 <sup>h</sup> 19    | 25 <sup>h</sup> 43  | 18 <sup>h</sup> 52    | 19 <sup>h</sup> 27  | 19 <sup>h</sup> 59  | 29 <sup>h</sup> 57 | 26 <sup>h</sup> 55  | 21 <sup>h</sup> 3   | 19 <sup>h</sup> 24    | 21 <sup>h</sup> 2     | 13 <sup>h</sup> 36   | F 20 |
| S 21 | 1 58 15 | 27 <sup>h</sup> 44'00 | 18 <sup>h</sup> 51    | 21 <sup>h</sup> 54    | 21 <sup>h</sup> 34    | 26 <sup>h</sup> 24  | 19 <sup>h</sup> 0     | 19 <sup>h</sup> 24  | 19 <sup>h</sup> 57  | 29 <sup>h</sup> 56 | 26 <sup>h</sup> 53  | 21 <sup>h</sup> 4   | 19 <sup>h</sup> 20    | 21 <sup>h</sup> 8     | 13 <sup>h</sup> 44   | S 21 |
| S 22 | 2 2 12  | 28 <sup>h</sup> 43'47 | 1 <sup>h</sup> 36     | 22 <sup>h</sup> 43    | 22 <sup>h</sup> 48    | 27 <sup>h</sup> 4   | 19 <sup>h</sup> 9     | 19 <sup>h</sup> 21  | 19 <sup>h</sup> 55  | 29 <sup>h</sup> 55 | 26 <sup>h</sup> 52  | 21 <sup>h</sup> 6   | 19 <sup>h</sup> 17    | 21 <sup>h</sup> 15    | 13 <sup>h</sup> 52   | S 22 |
| M 23 | 2 6 8   | 29 <sup>h</sup> 43'36 | 14 <sup>h</sup> 6     | 23 <sup>h</sup> 27    | 24 <sup>h</sup> 2     | 27 <sup>h</sup> 44  | 19 <sup>h</sup> 17    | 19 <sup>h</sup> 18  | 19 <sup>h</sup> 52  | 29 <sup>h</sup> 55 | 26 <sup>h</sup> 51  | 21 <sup>h</sup> 7   | 19 <sup>h</sup> 14    | 21 <sup>h</sup> 22    | 14 <sup>h</sup> 0    | M 23 |
| T 24 | 2 10 5  | 0 <sup>h</sup> 14'32  | 26 <sup>h</sup> 23    | 24 <sup>h</sup> 7     | 25 <sup>h</sup> 16    | 28 <sup>h</sup> 25  | 19 <sup>h</sup> 24    | 19 <sup>h</sup> 15  | 19 <sup>h</sup> 50  | 29 <sup>h</sup> 54 | 26 <sup>h</sup> 50  | 21 <sup>h</sup> R 7 | 19 <sup>h</sup> 11    | 21 <sup>h</sup> 29    | 14 <sup>h</sup> 8    | T 24 |
| W 25 | 2 14 1  | 1 <sup>h</sup> 43'20  | 8 <sup>h</sup> 53     | 24 <sup>h</sup> 42    | 26 <sup>h</sup> 30    | 29 <sup>h</sup> 5   | 19 <sup>h</sup> 32    | 19 <sup>h</sup> 12  | 19 <sup>h</sup> 47  | 29 <sup>h</sup> 54 | 26 <sup>h</sup> 49  | 21 <sup>h</sup> 5   | 19 <sup>h</sup> 8     | 21 <sup>h</sup> 35    | 14 <sup>h</sup> 16   | W 25 |
| T 26 | 2 17 58 | 2 <sup>h</sup> 43'16  | 20 <sup>h</sup> 32    | 25 <sup>h</sup> 11    | 27 <sup>h</sup> 45    | 29 <sup>h</sup> 46  | 19 <sup>h</sup> 40    | 19 <sup>h</sup> 9   | 19 <sup>h</sup> 45  | 29 <sup>h</sup> 53 | 26 <sup>h</sup> 48  | 21 <sup>h</sup> 1   | 19 <sup>h</sup> 5     | 21 <sup>h</sup> 42    | 14 <sup>h</sup> 24   | T 26 |
| F 27 | 2 21 54 | 3 <sup>h</sup> 43'13  | 2 <sup>h</sup> 12     | 25 <sup>h</sup> 34    | 28 <sup>h</sup> 59    | 0 <sup>h</sup> 12   | 19 <sup>h</sup> 47    | 19 <sup>h</sup> 6   | 19 <sup>h</sup> 43  | 29 <sup>h</sup> 52 | 26 <sup>h</sup> 47  | 20 <sup>h</sup> 56  | 19 <sup>h</sup> 1     | 21 <sup>h</sup> 49    | 14 <sup>h</sup> 32   | F 27 |
| S 28 | 2 25 51 | 4 <sup>h</sup> 43'12  | 14 <sup>h</sup> 20    | 25 <sup>h</sup> 51    | 0 <sup>h</sup> 13     | 1 <sup>h</sup> 7    | 19 <sup>h</sup> 54    | 19 <sup>h</sup> 4   | 19 <sup>h</sup> 40  | 29 <sup>h</sup> 52 | 26 <sup>h</sup> 45  | 20 <sup>h</sup> 48  | 18 <sup>h</sup> 58    | 21 <sup>h</sup> 55    | 14 <sup>h</sup> 41   | S 28 |
| S 29 | 2 29 48 | 5 <sup>h</sup> 43'14  | 26 <sup>h</sup> 11    | 26 <sup>h</sup> 0     | 1 <sup>h</sup> 27     | 1 <sup>h</sup> 48   | 20 <sup>h</sup> 1     | 19 <sup>h</sup> 1   | 19 <sup>h</sup> 38  | 29 <sup>h</sup> 52 | 26 <sup>h</sup> 44  | 20 <sup>h</sup> 39  | 18 <sup>h</sup> 55    | 22 <sup>h</sup> 2     | 14 <sup>h</sup> 49   | S 29 |
| M 30 | 2 33 44 | 6 <sup>h</sup> 43'17  | 8 <sup>h</sup> 21     | 26 <sup>h</sup> R 1   | 2 <sup>h</sup> 41     | 2 <sup>h</sup> 29   | 20 <sup>h</sup> 8     | 18 <sup>h</sup> 59  | 19 <sup>h</sup> 36  | 29 <sup>h</sup> 51 | 26 <sup>h</sup> 43  | 20 <sup>h</sup> 30  | 18 <sup>h</sup> 52    | 22 <sup>h</sup> 9     | 14 <sup>h</sup> 57   | M 30 |
| T 31 | 2 37 41 | 7 <sup>h</sup> 14'32  | 19 <sup>h</sup> 55    | 25 <sup>h</sup> 15    | 3 <sup>h</sup> 55     | 3 <sup>h</sup> 11   | 20 <sup>h</sup> 15    | 18 <sup>h</sup> 57  | 19 <sup>h</sup> 33  | 29 <sup>h</sup> 51 | 26 <sup>h</sup> 42  | 20 <sup>h</sup> 21  | 18 <sup>h</sup> 49    | 22 <sup>h</sup> 15    | 15 <sup>h</sup> 11   | T 31 |

## ASTRODIENST EPHEMERIS for the year 1848

geocentric

NOVEMBER 1848

00:00 UT

| Day  | Sid.t   | ☉        | ☽     | ♀      | ♂     | ♂     | ♂     | ♂      | ♂      | ♂      | ♂      | ♂      | ♂      | ♂     | ♂     | Day  |
|------|---------|----------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|-------|------|
| W 1  | 2 41 37 | 8♈43'28  | 1♈52  | 25°R37 | 5♈10  | 3♈50  | 20♈22 | 18°R55 | 19°R31 | 29°R50 | 26°R41 | 20°R14 | 18♈45  | 22♈22 | 15♈13 | W 1  |
| T 2  | 2 45 34 | 9°43'36  | 13°58 | 25♈11  | 6°24  | 4°31  | 20°29 | 18♈53  | 19°Y29 | 29°≈50 | 26°Y40 | 20♈8   | 18°42  | 22°29 | 15°21 | T 2  |
| F 3  | 2 49 30 | 10°43'46 | 26°14 | 24°35  | 7°38  | 5°12  | 20°35 | 18°51  | 19°27  | 29°50  | 26°39  | 20°5   | 18°39  | 22°36 | 15°30 | F 3  |
| S 4  | 2 53 27 | 11°43'57 | 8♈46  | 23°50  | 8°52  | 5°53  | 20°41 | 18°49  | 19°24  | 29°49  | 26°38  | 20°D 4 | 18°36  | 22°42 | 15°38 | S 4  |
| S 5  | 2 57 23 | 12°44'10 | 21°39 | 22°55  | 10°6  | 6°34  | 20°47 | 18°47  | 19°22  | 29°49  | 26°37  | 20°4   | 18°33  | 22°49 | 15°46 | S 5  |
| M 6  | 3 1 20  | 13°44'24 | 4♈55  | 21°52  | 11°20 | 7°15  | 20°53 | 18°45  | 19°20  | 29°49  | 26°35  | 20°5   | 18°30  | 22°56 | 15°54 | M 6  |
| T 7  | 3 5 17  | 14°44'40 | 18°38 | 20°42  | 12°34 | 7°56  | 20°59 | 18°44  | 19°18  | 29°49  | 26°34  | 20°R 6 | 18°26  | 23°2  | 16°2  | T 7  |
| W 8  | 3 9 13  | 15°44'57 | 2°Y50 | 19°26  | 13°48 | 8°37  | 21°5  | 18°42  | 19°16  | 29°49  | 26°33  | 20°5   | 18°23  | 23°9  | 16°11 | W 8  |
| T 9  | 3 13 10 | 16°45'15 | 17°30 | 18°6   | 15°2  | 9°18  | 21°10 | 18°41  | 19°14  | 29°49  | 26°32  | 20°2   | 18°20  | 23°16 | 16°19 | T 9  |
| F 10 | 3 17 6  | 17°45'36 | 2♈32  | 16°46  | 16°16 | 9°59  | 21°15 | 18°40  | 19°12  | 29°49  | 26°31  | 19°57  | 18°17  | 23°23 | 16°27 | F 10 |
| S 11 | 3 21 3  | 18°45'57 | 17°49 | 15°28  | 17°30 | 10°40 | 21°21 | 18°38  | 19°10  | 29°D49 | 26°30  | 19°49  | 18°14  | 23°29 | 16°35 | S 11 |
| S 12 | 3 24 59 | 19°46'21 | 3♈10  | 14°14  | 18°44 | 11°22 | 21°26 | 18°37  | 19°8   | 29°49  | 26°29  | 19°40  | 18°11  | 23°36 | 16°43 | S 12 |
| M13  | 3 28 56 | 20°46'46 | 18°23 | 13°6   | 19°58 | 12°3  | 21°30 | 18°36  | 19°6   | 29°49  | 26°28  | 19°31  | 18°7   | 23°43 | 16°52 | M13  |
| T 14 | 3 32 52 | 21°47'13 | 3♈19  | 12°7   | 21°12 | 12°44 | 21°35 | 18°35  | 19°4   | 29°49  | 26°27  | 19°22  | 18°4   | 23°49 | 17°0  | T 14 |
| W15  | 3 36 49 | 22°47'42 | 17°49 | 11°19  | 22°26 | 13°26 | 21°40 | 18°35  | 19°2   | 29°49  | 26°26  | 19°15  | 18°1   | 23°56 | 17°8  | W15  |
| T 16 | 3 40 46 | 23°48'13 | 1♈49  | 10°41  | 23°40 | 14°7  | 21°44 | 18°34  | 19°0   | 29°49  | 26°25  | 19°11  | 17°58  | 24°3  | 17°16 | T 16 |
| F 17 | 3 44 42 | 24°48'45 | 15°20 | 10°15  | 24°54 | 14°49 | 21°48 | 18°33  | 18°58  | 29°49  | 26°24  | 19°9   | 17°55  | 24°10 | 17°24 | F 17 |
| S 18 | 3 48 39 | 25°49'19 | 28°24 | 10°1   | 26°8  | 15°30 | 21°52 | 18°33  | 18°56  | 29°50  | 26°23  | 19°D 8 | 17°51  | 24°16 | 17°32 | S 18 |
| S 19 | 3 52 35 | 26°49'55 | 11♈5  | 9°D58  | 27°22 | 16°12 | 21°56 | 18°33  | 18°54  | 29°50  | 26°22  | 19°9   | 17°48  | 24°23 | 17°41 | S 19 |
| M20  | 3 56 32 | 27°50'33 | 23°28 | 10°6   | 28°36 | 16°53 | 21°59 | 18°32  | 18°53  | 29°50  | 26°21  | 19°R 9 | 17°45  | 24°30 | 17°49 | M20  |
| T 21 | 4 0 28  | 28°51'12 | 5♈36  | 10°24  | 29°50 | 17°35 | 22°3  | 18°32  | 18°51  | 29°50  | 26°20  | 19°7   | 17°42  | 24°36 | 17°57 | T 21 |
| W22  | 4 4 25  | 29°51'53 | 17°35 | 10°51  | 1♈4   | 18°17 | 22°6  | 18°D32 | 18°49  | 29°51  | 26°19  | 19°4   | 17°39  | 24°43 | 18°5  | W22  |
| T 23 | 4 8 21  | 0♈52'36  | 29°29 | 11°27  | 2°18  | 18°58 | 22°9  | 18°32  | 18°48  | 29°51  | 26°18  | 18°57  | 17°36  | 24°50 | 18°13 | T 23 |
| F 24 | 4 12 18 | 1°53'20  | 11♈20 | 12°10  | 3°31  | 19°40 | 22°12 | 18°32  | 18°46  | 29°52  | 26°17  | 18°47  | 17°32  | 24°57 | 18°21 | F 24 |
| S 25 | 4 16 15 | 2°54'05  | 23°11 | 13°0   | 4°45  | 20°22 | 22°15 | 18°33  | 18°45  | 29°52  | 26°17  | 18°35  | 17°29  | 25°3  | 18°29 | S 25 |
| S 26 | 4 20 11 | 3°54'52  | 5♈3   | 13°55  | 5°59  | 21°4  | 22°17 | 18°33  | 18°43  | 29°53  | 26°16  | 18°21  | 17°26  | 25°10 | 18°37 | S 26 |
| M27  | 4 24 8  | 4°55'40  | 16°57 | 14°56  | 7°13  | 21°46 | 22°19 | 18°34  | 18°42  | 29°53  | 26°15  | 18°7   | 17°23  | 25°17 | 18°45 | M27  |
| T 28 | 4 28 4  | 5°56'30  | 28°56 | 16°1   | 8°27  | 22°28 | 22°21 | 18°34  | 18°40  | 29°54  | 26°14  | 17°53  | 17°20  | 25°23 | 18°53 | T 28 |
| W29  | 4 32 1  | 6°57'20  | 11♈0  | 17°10  | 9°40  | 23°10 | 22°23 | 18°35  | 18°39  | 29°54  | 26°13  | 17°40  | 17°17  | 25°30 | 19°1  | W29  |
| T 30 | 4 35 57 | 7♈58'12  | 23♈11 | 18♈22  | 10♈54 | 23♈52 | 22♈25 | 18♈36  | 18°Y37 | 29°≈55 | 26°Y12 | 17°D30 | 17°D13 | 25♈37 | 19♈9  | T 30 |

Delta T = 8.90 sec

DECEMBER 1848

00:00 UT

| Day  | Sid.t   | ☉        | ☽      | ♀     | ♂      | ♂     | ♂      | ♂     | ♂      | ♂      | ♂      | ♂      | ♂     | ♂     | ♂     | Day  |
|------|---------|----------|--------|-------|--------|-------|--------|-------|--------|--------|--------|--------|-------|-------|-------|------|
| F 1  | 4 39 54 | 8♈59'04  | 5♈31   | 19♈37 | 12♈8   | 24♈34 | 22♈27  | 18♈37 | 18°R36 | 29°≈56 | 26°R12 | 17°R23 | 17♈10 | 25♈44 | 19♈17 | F 1  |
| S 2  | 4 43 50 | 9°59'58  | 18°4   | 20°54 | 13°21  | 25°16 | 22°28  | 18°38 | 18°Y35 | 29°56  | 26°Y11 | 17°D19 | 17°7  | 25°50 | 19°25 | S 2  |
| S 3  | 4 47 47 | 11°0'52  | 0♈53   | 22°14 | 14°35  | 25°58 | 22°29  | 18°39 | 18°34  | 29°57  | 26°10  | 17°18  | 17°4  | 25°57 | 19°32 | S 3  |
| M 4  | 4 51 44 | 12°1'47  | 14°1   | 23°35 | 15°49  | 26°40 | 22°30  | 18°40 | 18°32  | 29°58  | 26°9   | 17°18  | 17°1  | 26°4  | 19°40 | M 4  |
| T 5  | 4 55 40 | 13°2'42  | 27°33  | 24°58 | 17°2   | 27°22 | 22°31  | 18°42 | 18°31  | 29°59  | 26°9   | 17°17  | 16°57 | 26°10 | 19°48 | T 5  |
| W 6  | 4 59 37 | 14°3'38  | 11°Y31 | 26°22 | 18°16  | 28°5  | 22°31  | 18°43 | 18°30  | 29°59  | 26°8   | 17°16  | 16°54 | 26°17 | 19°56 | W 6  |
| T 7  | 5 3 33  | 15°4'35  | 25°56  | 27°47 | 19°29  | 28°47 | 22°32  | 18°45 | 18°29  | 0♈0    | 26°7   | 17°12  | 16°51 | 26°24 | 20°3  | T 7  |
| F 8  | 5 7 30  | 16°5'33  | 10♈45  | 29°14 | 20°43  | 29°29 | 22°R32 | 18°46 | 18°28  | 0°1    | 26°6   | 17°6   | 16°48 | 26°30 | 20°11 | F 8  |
| S 9  | 5 11 26 | 17°6'31  | 25°52  | 0♈41  | 21°56  | 0♈12  | 22°32  | 18°48 | 18°27  | 0°2    | 26°6   | 16°56  | 16°45 | 26°37 | 20°19 | S 9  |
| S 10 | 5 15 23 | 18°7'30  | 11♈9   | 2°9   | 23°9   | 0°54  | 22°32  | 18°50 | 18°26  | 0°3    | 26°5   | 16°45  | 16°42 | 26°44 | 20°26 | S 10 |
| M11  | 5 19 19 | 19°8'30  | 26°24  | 3°37  | 24°23  | 1°37  | 22°31  | 18°52 | 18°25  | 0°4    | 26°4   | 16°33  | 16°38 | 26°51 | 20°34 | M11  |
| T 12 | 5 23 16 | 20°9'31  | 11♈26  | 5°6   | 25°36  | 2°19  | 22°31  | 18°54 | 18°25  | 0°5    | 26°4   | 16°22  | 16°35 | 26°57 | 20°41 | T 12 |
| W13  | 5 27 13 | 21°10'32 | 26°5   | 6°35  | 26°49  | 3°2   | 22°30  | 18°56 | 18°24  | 0°6    | 26°3   | 16°13  | 16°32 | 27°4  | 20°49 | W13  |
| T 14 | 5 31 9  | 22°11'35 | 10♈16  | 8°5   | 28°3   | 3°44  | 22°29  | 18°59 | 18°23  | 0°7    | 26°3   | 16°6   | 16°29 | 27°11 | 20°56 | T 14 |
| F 15 | 5 35 6  | 23°12'38 | 23°57  | 9°36  | 29°16  | 4°27  | 22°28  | 19°1  | 18°22  | 0°8    | 26°2   | 16°3   | 16°26 | 27°18 | 21°4  | F 15 |
| S 16 | 5 39 2  | 24°13'42 | 7♈8    | 11°6  | 0♈29   | 5°10  | 22°27  | 19°4  | 18°22  | 0°10   | 26°2   | 16°1   | 16°22 | 27°24 | 21°11 | S 16 |
| S 17 | 5 42 59 | 25°14'47 | 19°53  | 12°37 | 1°42   | 5°52  | 22°25  | 19°6  | 18°21  | 0°11   | 26°1   | 16°1   | 16°19 | 27°31 | 21°18 | S 17 |
| M18  | 5 46 55 | 26°15'53 | 2♈17   | 14°8  | 2°55   | 6°35  | 22°23  | 19°9  | 18°21  | 0°12   | 26°1   | 16°1   | 16°16 | 27°38 | 21°25 | M18  |
| T 19 | 5 50 52 | 27°17'00 | 14°25  | 15°40 | 4°8    | 7°18  | 22°21  | 19°12 | 18°20  | 0°13   | 26°0   | 16°0   | 16°13 | 27°44 | 21°33 | T 19 |
| W20  | 5 54 48 | 28°18'07 | 26°22  | 17°11 | 5°21   | 8°1   | 22°19  | 19°15 | 18°20  | 0°14   | 26°0   | 15°57  | 16°10 | 27°51 | 21°40 | W20  |
| T 21 | 5 58 45 | 29°19'15 | 8♈14   | 18°43 | 6°34   | 8°44  | 22°17  | 19°18 | 18°20  | 0°16   | 25°59  | 15°50  | 16°7  | 27°58 | 21°47 | T 21 |
| F 22 | 6 2 42  | 0♈20'24  | 20°3   | 20°16 | 7°47   | 9°27  | 22°14  | 19°21 | 18°19  | 0°17   | 25°59  | 15°41  | 16°3  | 28°5  | 21°54 | F 22 |
| S 23 | 6 6 38  | 1°21'33  | 1♈54   | 21°48 | 9°0    | 10°10 | 22°11  | 19°24 | 18°19  | 0°18   | 25°58  | 15°30  | 16°0  | 28°11 | 22°1  | S 23 |
| S 24 | 6 10 35 | 2°22'43  | 13°49  | 23°21 | 10°12  | 10°53 | 22°8   | 19°27 | 18°19  | 0°20   | 25°58  | 15°16  | 15°57 | 28°18 | 22°8  | S 24 |
| M25  | 6 14 31 | 3°23'53  | 25°50  | 24°54 | 11°25  | 11°36 | 22°5   | 19°31 | 18°19  | 0°21   | 25°58  | 15°2   | 15°54 | 28°25 | 22°15 | M25  |
| T 26 | 6 18 28 | 4°25'04  | 7♈58   | 26°27 | 12°38  | 12°19 | 22°2   | 19°34 | 18°18  | 0°23   | 25°57  | 14°49  | 15°51 | 28°31 | 22°22 | T 26 |
| W27  | 6 22 24 | 5°26'15  | 20°13  | 28°1  | 13°50  | 13°2  | 21°59  | 19°38 | 18°D18 | 0°24   | 25°57  | 14°36  | 15°48 | 28°38 | 22°28 | W27  |
| T 28 | 6 26 21 | 6°27'26  | 2♈37   | 29°34 | 15°3   | 13°45 | 21°55  | 19°41 | 18°18  | 0°26   | 25°57  | 14°27  | 15°44 | 28°45 | 22°35 | T 28 |
| F 29 | 6 30 18 | 7°28'37  | 15°10  | 1♈9   | 16°15  | 14°29 | 21°51  | 19°45 | 18°19  | 0°27   | 25°57  | 14°20  | 15°41 | 28°52 | 22°42 | F 29 |
| S 30 | 6 34 14 | 8°29'47  | 27°54  | 2°43  | 17°28  | 15°12 | 21°47  | 19°49 | 18°19  | 0°29   | 25°56  | 14°16  | 15°38 | 28°58 | 22°48 | S 30 |
| S 31 | 6 38 11 | 9♈30'58  | 10♈51  | 4♈18  | 18°≈40 | 15♈55 | 21♈43  | 19♈53 | 18°Y19 | 0♈30   | 25°Y56 | 14°D15 | 15♈35 | 29♈5  | 22♈55 | S 31 |

Delta T = 8.92 sec