

SWISS EPHEMERIS for the year 1688  
heliocentric

JANUARY 1688 GC

00:00 UT

| Day  | Sid.t   | Terra                  | ☾                   | ♃                   | ♄                   | ♅                   | ♆                  | ♁                   | ♂                   | ♆                  | ♁                   | ♂                   |
|------|---------|------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| T 1  | 6 42 6  | 10 <sup>h</sup> 37'27" | 10 <sup>h</sup> 42' | 28 <sup>h</sup> 29' | 5 <sup>h</sup> 58'  | 14 <sup>h</sup> 43' | 5 <sup>h</sup> 56' | 18 <sup>h</sup> 28' | 17 <sup>h</sup> 17' | 8 <sup>h</sup> 1'  | 22 <sup>h</sup> 36' | 20 <sup>h</sup> 52' |
| F 2  | 6 46 2  | 11 <sup>h</sup> 38'39" | 11 <sup>h</sup> 41' | 4 <sup>h</sup> 9'   | 7 <sup>h</sup> 36'  | 15 <sup>h</sup> 16' | 6 <sup>h</sup> 1'  | 18 <sup>h</sup> 30' | 17 <sup>h</sup> 18' | 8 <sup>h</sup> 1'  | 22 <sup>h</sup> 37' | 20 <sup>h</sup> 52' |
| S 3  | 6 49 59 | 12 <sup>h</sup> 39'51" | 12 <sup>h</sup> 41' | 9 <sup>h</sup> 40'  | 9 <sup>h</sup> 13'  | 15 <sup>h</sup> 50' | 6 <sup>h</sup> 6'  | 18 <sup>h</sup> 31' | 17 <sup>h</sup> 18' | 8 <sup>h</sup> 2'  | 22 <sup>h</sup> 37' | 20 <sup>h</sup> 53' |
| S 4  | 6 53 55 | 13 <sup>h</sup> 41'03" | 13 <sup>h</sup> 40' | 15 <sup>h</sup> 1'  | 10 <sup>h</sup> 51' | 16 <sup>h</sup> 23' | 6 <sup>h</sup> 11' | 18 <sup>h</sup> 33' | 17 <sup>h</sup> 19' | 8 <sup>h</sup> 2'  | 22 <sup>h</sup> 37' | 20 <sup>h</sup> 54' |
| M 5  | 6 57 52 | 14 <sup>h</sup> 42'14" | 14 <sup>h</sup> 39' | 20 <sup>h</sup> 13' | 12 <sup>h</sup> 28' | 16 <sup>h</sup> 56' | 6 <sup>h</sup> 16' | 18 <sup>h</sup> 35' | 17 <sup>h</sup> 20' | 8 <sup>h</sup> 2'  | 22 <sup>h</sup> 37' | 20 <sup>h</sup> 55' |
| T 6  | 7 1 48  | 15 <sup>h</sup> 43'25" | 15 <sup>h</sup> 39' | 25 <sup>h</sup> 15' | 14 <sup>h</sup> 6'  | 17 <sup>h</sup> 30' | 6 <sup>h</sup> 21' | 18 <sup>h</sup> 37' | 17 <sup>h</sup> 20' | 8 <sup>h</sup> 3'  | 22 <sup>h</sup> 37' | 20 <sup>h</sup> 56' |
| W 7  | 7 5 45  | 16 <sup>h</sup> 44'36" | 16 <sup>h</sup> 38' | 0 <sup>h</sup> 8'   | 15 <sup>h</sup> 43' | 18 <sup>h</sup> 3'  | 6 <sup>h</sup> 26' | 18 <sup>h</sup> 39' | 17 <sup>h</sup> 21' | 8 <sup>h</sup> 3'  | 22 <sup>h</sup> 38' | 20 <sup>h</sup> 57' |
| T 8  | 7 9 42  | 17 <sup>h</sup> 45'45" | 17 <sup>h</sup> 38' | 4 <sup>h</sup> 51'  | 17 <sup>h</sup> 21' | 18 <sup>h</sup> 36' | 6 <sup>h</sup> 31' | 18 <sup>h</sup> 41' | 17 <sup>h</sup> 22' | 8 <sup>h</sup> 3'  | 22 <sup>h</sup> 38' | 20 <sup>h</sup> 58' |
| F 9  | 7 13 38 | 18 <sup>h</sup> 46'54" | 18 <sup>h</sup> 39' | 9 <sup>h</sup> 25'  | 18 <sup>h</sup> 58' | 19 <sup>h</sup> 9'  | 6 <sup>h</sup> 36' | 18 <sup>h</sup> 43' | 17 <sup>h</sup> 22' | 8 <sup>h</sup> 4'  | 22 <sup>h</sup> 38' | 20 <sup>h</sup> 59' |
| S 10 | 7 17 35 | 19 <sup>h</sup> 48'03" | 19 <sup>h</sup> 39' | 13 <sup>h</sup> 50' | 20 <sup>h</sup> 36' | 19 <sup>h</sup> 42' | 6 <sup>h</sup> 41' | 18 <sup>h</sup> 45' | 17 <sup>h</sup> 23' | 8 <sup>h</sup> 4'  | 22 <sup>h</sup> 38' | 20 <sup>h</sup> 59' |
| S 11 | 7 21 31 | 20 <sup>h</sup> 49'10" | 20 <sup>h</sup> 41' | 18 <sup>h</sup> 7'  | 22 <sup>h</sup> 14' | 20 <sup>h</sup> 15' | 6 <sup>h</sup> 46' | 18 <sup>h</sup> 47' | 17 <sup>h</sup> 24' | 8 <sup>h</sup> 5'  | 22 <sup>h</sup> 39' | 21 <sup>h</sup> 0'  |
| M 12 | 7 25 28 | 21 <sup>h</sup> 50'17" | 21 <sup>h</sup> 42' | 22 <sup>h</sup> 16' | 23 <sup>h</sup> 51' | 20 <sup>h</sup> 48' | 6 <sup>h</sup> 50' | 18 <sup>h</sup> 49' | 17 <sup>h</sup> 24' | 8 <sup>h</sup> 5'  | 22 <sup>h</sup> 39' | 21 <sup>h</sup> 1'  |
| T 13 | 7 29 24 | 22 <sup>h</sup> 51'23" | 22 <sup>h</sup> 44' | 26 <sup>h</sup> 17' | 25 <sup>h</sup> 29' | 21 <sup>h</sup> 20' | 6 <sup>h</sup> 55' | 18 <sup>h</sup> 51' | 17 <sup>h</sup> 25' | 8 <sup>h</sup> 5'  | 22 <sup>h</sup> 39' | 21 <sup>h</sup> 2'  |
| W 14 | 7 33 21 | 23 <sup>h</sup> 52'29" | 23 <sup>h</sup> 46' | 0 <sup>h</sup> 11'  | 27 <sup>h</sup> 6'  | 21 <sup>h</sup> 53' | 7 <sup>h</sup> 0'  | 18 <sup>h</sup> 53' | 17 <sup>h</sup> 26' | 8 <sup>h</sup> 6'  | 22 <sup>h</sup> 39' | 21 <sup>h</sup> 3'  |
| T 15 | 7 37 17 | 24 <sup>h</sup> 53'33" | 24 <sup>h</sup> 49' | 3 <sup>h</sup> 59'  | 28 <sup>h</sup> 44' | 22 <sup>h</sup> 26' | 7 <sup>h</sup> 5'  | 18 <sup>h</sup> 55' | 17 <sup>h</sup> 26' | 8 <sup>h</sup> 6'  | 22 <sup>h</sup> 39' | 21 <sup>h</sup> 4'  |
| F 16 | 7 41 14 | 25 <sup>h</sup> 54'37" | 25 <sup>h</sup> 52' | 7 <sup>h</sup> 40'  | 0 <sup>h</sup> 21'  | 22 <sup>h</sup> 58' | 7 <sup>h</sup> 10' | 18 <sup>h</sup> 57' | 17 <sup>h</sup> 27' | 8 <sup>h</sup> 6'  | 22 <sup>h</sup> 40' | 21 <sup>h</sup> 5'  |
| S 17 | 7 45 11 | 26 <sup>h</sup> 55'40" | 26 <sup>h</sup> 55' | 11 <sup>h</sup> 15' | 1 <sup>h</sup> 59'  | 23 <sup>h</sup> 31' | 7 <sup>h</sup> 15' | 18 <sup>h</sup> 59' | 17 <sup>h</sup> 28' | 8 <sup>h</sup> 7'  | 22 <sup>h</sup> 40' | 21 <sup>h</sup> 5'  |
| S 18 | 7 49 7  | 27 <sup>h</sup> 56'42" | 27 <sup>h</sup> 58' | 14 <sup>h</sup> 45' | 3 <sup>h</sup> 36'  | 24 <sup>h</sup> 4'  | 7 <sup>h</sup> 20' | 19 <sup>h</sup> 1'  | 17 <sup>h</sup> 28' | 8 <sup>h</sup> 7'  | 22 <sup>h</sup> 40' | 21 <sup>h</sup> 6'  |
| M 19 | 7 53 4  | 28 <sup>h</sup> 57'43" | 29 <sup>h</sup> 0'  | 18 <sup>h</sup> 10' | 5 <sup>h</sup> 14'  | 24 <sup>h</sup> 36' | 7 <sup>h</sup> 25' | 19 <sup>h</sup> 3'  | 17 <sup>h</sup> 29' | 8 <sup>h</sup> 8'  | 22 <sup>h</sup> 40' | 21 <sup>h</sup> 7'  |
| T 20 | 7 57 0  | 29 <sup>h</sup> 58'44" | 0 <sup>h</sup> 3'   | 21 <sup>h</sup> 30' | 6 <sup>h</sup> 51'  | 25 <sup>h</sup> 8'  | 7 <sup>h</sup> 30' | 19 <sup>h</sup> 5'  | 17 <sup>h</sup> 30' | 8 <sup>h</sup> 8'  | 22 <sup>h</sup> 41' | 21 <sup>h</sup> 8'  |
| W 21 | 8 0 57  | 0 <sup>h</sup> 59'44"  | 1 <sup>h</sup> 6'   | 24 <sup>h</sup> 46' | 8 <sup>h</sup> 29'  | 25 <sup>h</sup> 41' | 7 <sup>h</sup> 35' | 19 <sup>h</sup> 6'  | 17 <sup>h</sup> 30' | 8 <sup>h</sup> 8'  | 22 <sup>h</sup> 41' | 21 <sup>h</sup> 9'  |
| T 22 | 8 4 53  | 2 <sup>h</sup> 0'43"   | 2 <sup>h</sup> 8'   | 27 <sup>h</sup> 58' | 10 <sup>h</sup> 6'  | 26 <sup>h</sup> 13' | 7 <sup>h</sup> 40' | 19 <sup>h</sup> 8'  | 17 <sup>h</sup> 31' | 8 <sup>h</sup> 9'  | 22 <sup>h</sup> 41' | 21 <sup>h</sup> 10' |
| F 23 | 8 8 50  | 3 <sup>h</sup> 1'42"   | 3 <sup>h</sup> 10'  | 1 <sup>h</sup> 11'  | 11 <sup>h</sup> 43' | 26 <sup>h</sup> 45' | 7 <sup>h</sup> 45' | 19 <sup>h</sup> 10' | 17 <sup>h</sup> 32' | 8 <sup>h</sup> 9'  | 22 <sup>h</sup> 41' | 21 <sup>h</sup> 11' |
| S 24 | 8 12 46 | 4 <sup>h</sup> 2'39"   | 4 <sup>h</sup> 12'  | 4 <sup>h</sup> 11'  | 13 <sup>h</sup> 21' | 27 <sup>h</sup> 18' | 7 <sup>h</sup> 50' | 19 <sup>h</sup> 12' | 17 <sup>h</sup> 32' | 8 <sup>h</sup> 9'  | 22 <sup>h</sup> 41' | 21 <sup>h</sup> 12' |
| S 25 | 8 16 43 | 5 <sup>h</sup> 3'37"   | 5 <sup>h</sup> 13'  | 7 <sup>h</sup> 12'  | 14 <sup>h</sup> 58' | 27 <sup>h</sup> 50' | 7 <sup>h</sup> 55' | 19 <sup>h</sup> 14' | 17 <sup>h</sup> 33' | 8 <sup>h</sup> 10' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 12' |
| M 26 | 8 20 40 | 6 <sup>h</sup> 4'33"   | 6 <sup>h</sup> 14'  | 10 <sup>h</sup> 11' | 16 <sup>h</sup> 36' | 28 <sup>h</sup> 22' | 8 <sup>h</sup> 0'  | 19 <sup>h</sup> 16' | 17 <sup>h</sup> 34' | 8 <sup>h</sup> 10' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 13' |
| T 27 | 8 24 36 | 7 <sup>h</sup> 5'29"   | 7 <sup>h</sup> 14'  | 13 <sup>h</sup> 8'  | 18 <sup>h</sup> 13' | 28 <sup>h</sup> 54' | 8 <sup>h</sup> 5'  | 19 <sup>h</sup> 18' | 17 <sup>h</sup> 35' | 8 <sup>h</sup> 10' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 14' |
| W 28 | 8 28 33 | 8 <sup>h</sup> 6'24"   | 8 <sup>h</sup> 15'  | 16 <sup>h</sup> 2'  | 19 <sup>h</sup> 50' | 29 <sup>h</sup> 26' | 8 <sup>h</sup> 10' | 19 <sup>h</sup> 20' | 17 <sup>h</sup> 35' | 8 <sup>h</sup> 11' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 15' |
| T 29 | 8 32 29 | 9 <sup>h</sup> 7'18"   | 9 <sup>h</sup> 14'  | 18 <sup>h</sup> 54' | 21 <sup>h</sup> 27' | 29 <sup>h</sup> 58' | 8 <sup>h</sup> 15' | 19 <sup>h</sup> 22' | 17 <sup>h</sup> 36' | 8 <sup>h</sup> 11' | 22 <sup>h</sup> 42' | 21 <sup>h</sup> 16' |
| F 30 | 8 36 26 | 10 <sup>h</sup> 8'11"  | 10 <sup>h</sup> 14' | 21 <sup>h</sup> 45' | 23 <sup>h</sup> 5'  | 0 <sup>h</sup> 11'  | 8 <sup>h</sup> 20' | 19 <sup>h</sup> 24' | 17 <sup>h</sup> 37' | 8 <sup>h</sup> 12' | 22 <sup>h</sup> 43' | 21 <sup>h</sup> 17' |
| S 31 | 8 40 22 | 11 <sup>h</sup> 9'04"  | 11 <sup>h</sup> 13' | 24 <sup>h</sup> 11' | 24 <sup>h</sup> 42' | 1 <sup>h</sup> 11'  | 8 <sup>h</sup> 25' | 19 <sup>h</sup> 26' | 17 <sup>h</sup> 37' | 8 <sup>h</sup> 12' | 22 <sup>h</sup> 43' | 21 <sup>h</sup> 18' |

Delta T = 9.70 sec. Greg. Calendar

FEBRUARY 1688 GC

00:00 UT

| Day  | Sid.t    | Terra                  | ☾                   | ♃                   | ♄                   | ♅                   | ♆                   | ♁                   | ♂                   | ♆                  | ♁                   | ♂                   |
|------|----------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| S 1  | 8 44 19  | 12 <sup>h</sup> 9'55"  | 12 <sup>h</sup> 12' | 27 <sup>h</sup> 11' | 26 <sup>h</sup> 19' | 1 <sup>h</sup> 11'  | 8 <sup>h</sup> 30'  | 19 <sup>h</sup> 28' | 17 <sup>h</sup> 38' | 8 <sup>h</sup> 12' | 22 <sup>h</sup> 43' | 21 <sup>h</sup> 19' |
| M 2  | 8 48 15  | 13 <sup>h</sup> 10'45" | 13 <sup>h</sup> 11' | 0 <sup>h</sup> 7'   | 27 <sup>h</sup> 56' | 2 <sup>h</sup> 5'   | 8 <sup>h</sup> 35'  | 19 <sup>h</sup> 30' | 17 <sup>h</sup> 39' | 8 <sup>h</sup> 13' | 22 <sup>h</sup> 43' | 21 <sup>h</sup> 19' |
| T 3  | 8 52 12  | 14 <sup>h</sup> 11'34" | 14 <sup>h</sup> 9'  | 2 <sup>h</sup> 54'  | 29 <sup>h</sup> 33' | 2 <sup>h</sup> 36'  | 8 <sup>h</sup> 40'  | 19 <sup>h</sup> 32' | 17 <sup>h</sup> 39' | 8 <sup>h</sup> 13' | 22 <sup>h</sup> 44' | 21 <sup>h</sup> 20' |
| W 4  | 8 56 9   | 15 <sup>h</sup> 12'21" | 15 <sup>h</sup> 8'  | 5 <sup>h</sup> 39'  | 1 <sup>h</sup> 10'  | 3 <sup>h</sup> 8'   | 8 <sup>h</sup> 45'  | 19 <sup>h</sup> 34' | 17 <sup>h</sup> 40' | 8 <sup>h</sup> 13' | 22 <sup>h</sup> 44' | 21 <sup>h</sup> 21' |
| T 5  | 9 0 5    | 16 <sup>h</sup> 13'07" | 16 <sup>h</sup> 7'  | 8 <sup>h</sup> 24'  | 2 <sup>h</sup> 47'  | 3 <sup>h</sup> 39'  | 8 <sup>h</sup> 50'  | 19 <sup>h</sup> 36' | 17 <sup>h</sup> 41' | 8 <sup>h</sup> 14' | 22 <sup>h</sup> 44' | 21 <sup>h</sup> 22' |
| F 6  | 9 4 2    | 17 <sup>h</sup> 13'52" | 17 <sup>h</sup> 7'  | 11 <sup>h</sup> 9'  | 4 <sup>h</sup> 24'  | 4 <sup>h</sup> 11'  | 8 <sup>h</sup> 55'  | 19 <sup>h</sup> 38' | 17 <sup>h</sup> 41' | 8 <sup>h</sup> 14' | 22 <sup>h</sup> 44' | 21 <sup>h</sup> 23' |
| S 7  | 9 7 58   | 18 <sup>h</sup> 14'34" | 18 <sup>h</sup> 6'  | 13 <sup>h</sup> 53' | 6 <sup>h</sup> 1'   | 4 <sup>h</sup> 42'  | 9 <sup>h</sup> 0'   | 19 <sup>h</sup> 40' | 17 <sup>h</sup> 42' | 8 <sup>h</sup> 14' | 22 <sup>h</sup> 44' | 21 <sup>h</sup> 24' |
| S 8  | 9 11 55  | 19 <sup>h</sup> 15'15" | 19 <sup>h</sup> 7'  | 16 <sup>h</sup> 38' | 7 <sup>h</sup> 38'  | 5 <sup>h</sup> 14'  | 9 <sup>h</sup> 5'   | 19 <sup>h</sup> 41' | 17 <sup>h</sup> 43' | 8 <sup>h</sup> 15' | 22 <sup>h</sup> 45' | 21 <sup>h</sup> 25' |
| M 9  | 9 15 51  | 20 <sup>h</sup> 15'55" | 20 <sup>h</sup> 7'  | 19 <sup>h</sup> 24' | 9 <sup>h</sup> 15'  | 5 <sup>h</sup> 45'  | 9 <sup>h</sup> 10'  | 19 <sup>h</sup> 43' | 17 <sup>h</sup> 43' | 8 <sup>h</sup> 15' | 22 <sup>h</sup> 45' | 21 <sup>h</sup> 26' |
| T 10 | 9 19 48  | 21 <sup>h</sup> 16'32" | 21 <sup>h</sup> 8'  | 22 <sup>h</sup> 9'  | 10 <sup>h</sup> 52' | 6 <sup>h</sup> 16'  | 9 <sup>h</sup> 15'  | 19 <sup>h</sup> 45' | 17 <sup>h</sup> 44' | 8 <sup>h</sup> 16' | 22 <sup>h</sup> 45' | 21 <sup>h</sup> 26' |
| W 11 | 9 23 44  | 22 <sup>h</sup> 17'08" | 22 <sup>h</sup> 9'  | 24 <sup>h</sup> 56' | 12 <sup>h</sup> 29' | 6 <sup>h</sup> 47'  | 9 <sup>h</sup> 20'  | 19 <sup>h</sup> 47' | 17 <sup>h</sup> 45' | 8 <sup>h</sup> 16' | 22 <sup>h</sup> 45' | 21 <sup>h</sup> 27' |
| T 12 | 9 27 41  | 23 <sup>h</sup> 17'42" | 23 <sup>h</sup> 11' | 27 <sup>h</sup> 44' | 14 <sup>h</sup> 6'  | 7 <sup>h</sup> 19'  | 9 <sup>h</sup> 25'  | 19 <sup>h</sup> 49' | 17 <sup>h</sup> 45' | 8 <sup>h</sup> 16' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 28' |
| F 13 | 9 31 38  | 24 <sup>h</sup> 18'15" | 24 <sup>h</sup> 13' | 0 <sup>h</sup> 33'  | 15 <sup>h</sup> 42' | 7 <sup>h</sup> 50'  | 9 <sup>h</sup> 30'  | 19 <sup>h</sup> 51' | 17 <sup>h</sup> 46' | 8 <sup>h</sup> 17' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 29' |
| S 14 | 9 35 34  | 25 <sup>h</sup> 18'45" | 25 <sup>h</sup> 15' | 3 <sup>h</sup> 23'  | 17 <sup>h</sup> 19' | 8 <sup>h</sup> 21'  | 9 <sup>h</sup> 35'  | 19 <sup>h</sup> 53' | 17 <sup>h</sup> 47' | 8 <sup>h</sup> 17' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 30' |
| S 15 | 9 39 31  | 26 <sup>h</sup> 19'14" | 26 <sup>h</sup> 17' | 6 <sup>h</sup> 15'  | 18 <sup>h</sup> 56' | 8 <sup>h</sup> 52'  | 9 <sup>h</sup> 40'  | 19 <sup>h</sup> 55' | 17 <sup>h</sup> 47' | 8 <sup>h</sup> 17' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 31' |
| M 16 | 9 43 27  | 27 <sup>h</sup> 19'42" | 27 <sup>h</sup> 19' | 9 <sup>h</sup> 9'   | 20 <sup>h</sup> 32' | 9 <sup>h</sup> 23'  | 9 <sup>h</sup> 45'  | 19 <sup>h</sup> 57' | 17 <sup>h</sup> 48' | 8 <sup>h</sup> 18' | 22 <sup>h</sup> 46' | 21 <sup>h</sup> 32' |
| T 17 | 9 47 24  | 28 <sup>h</sup> 20'07" | 28 <sup>h</sup> 21' | 12 <sup>h</sup> 6'  | 22 <sup>h</sup> 9'  | 9 <sup>h</sup> 54'  | 9 <sup>h</sup> 50'  | 19 <sup>h</sup> 59' | 17 <sup>h</sup> 49' | 8 <sup>h</sup> 18' | 22 <sup>h</sup> 47' | 21 <sup>h</sup> 33' |
| W 18 | 9 51 20  | 29 <sup>h</sup> 20'31" | 29 <sup>h</sup> 24' | 15 <sup>h</sup> 4'  | 23 <sup>h</sup> 45' | 10 <sup>h</sup> 24' | 9 <sup>h</sup> 55'  | 20 <sup>h</sup> 1'  | 17 <sup>h</sup> 49' | 8 <sup>h</sup> 18' | 22 <sup>h</sup> 47' | 21 <sup>h</sup> 33' |
| T 19 | 9 55 17  | 0 <sup>h</sup> 20'53"  | 0 <sup>h</sup> 26'  | 18 <sup>h</sup> 5'  | 25 <sup>h</sup> 22' | 10 <sup>h</sup> 55' | 10 <sup>h</sup> 0'  | 20 <sup>h</sup> 3'  | 17 <sup>h</sup> 50' | 8 <sup>h</sup> 19' | 22 <sup>h</sup> 47' | 21 <sup>h</sup> 34' |
| F 20 | 9 59 13  | 1 <sup>h</sup> 21'14"  | 1 <sup>h</sup> 27'  | 21 <sup>h</sup> 9'  | 26 <sup>h</sup> 58' | 11 <sup>h</sup> 26' | 10 <sup>h</sup> 5'  | 20 <sup>h</sup> 5'  | 17 <sup>h</sup> 51' | 8 <sup>h</sup> 19' | 22 <sup>h</sup> 47' | 21 <sup>h</sup> 35' |
| S 21 | 10 3 10  | 2 <sup>h</sup> 21'33"  | 2 <sup>h</sup> 29'  | 24 <sup>h</sup> 17' | 28 <sup>h</sup> 34' | 11 <sup>h</sup> 57' | 10 <sup>h</sup> 10' | 20 <sup>h</sup> 7'  | 17 <sup>h</sup> 51' | 8 <sup>h</sup> 20' | 22 <sup>h</sup> 48' | 21 <sup>h</sup> 36' |
| S 22 | 10 7 7   | 3 <sup>h</sup> 21'51"  | 3 <sup>h</sup> 30'  | 27 <sup>h</sup> 27' | 0 <sup>h</sup> 11'  | 12 <sup>h</sup> 27' | 10 <sup>h</sup> 15' | 20 <sup>h</sup> 9'  | 17 <sup>h</sup> 52' | 8 <sup>h</sup> 20' | 22 <sup>h</sup> 48' | 21 <sup>h</sup> 37' |
| M 23 | 10 11 3  | 4 <sup>h</sup> 22'07"  | 4 <sup>h</sup> 31'  | 0 <sup>h</sup> 42'  | 1 <sup>h</sup> 47'  | 12 <sup>h</sup> 58' | 10 <sup>h</sup> 20' | 20 <sup>h</sup> 11' | 17 <sup>h</sup> 53' | 8 <sup>h</sup> 20' | 22 <sup>h</sup> 48' | 21 <sup>h</sup> 38' |
| T 24 | 10 15 0  | 5 <sup>h</sup> 22'22"  | 5 <sup>h</sup> 31'  | 4 <sup>h</sup> 0'   | 3 <sup>h</sup> 23'  | 13 <sup>h</sup> 28' | 10 <sup>h</sup> 25' | 20 <sup>h</sup> 12' | 17 <sup>h</sup> 53' | 8 <sup>h</sup> 21' | 22 <sup>h</sup> 48' | 21 <sup>h</sup> 39' |
| W 25 | 10 18 56 | 6 <sup>h</sup> 22'35"  | 6 <sup>h</sup> 32'  | 7 <sup>h</sup> 23'  | 4 <sup>h</sup> 59'  | 13 <sup>h</sup> 59' | 10 <sup>h</sup> 30' | 20 <sup>h</sup> 14' | 17 <sup>h</sup> 54' | 8 <sup>h</sup> 21' | 22 <sup>h</sup> 48' | 21 <sup>h</sup> 40' |
| T 26 | 10 22 53 | 7 <sup>h</sup> 22'47"  | 7 <sup>h</sup> 31'  | 10 <sup>h</sup> 50' | 6 <sup>h</sup> 36'  | 14 <sup>h</sup> 29' | 10 <sup>h</sup> 35' | 20 <sup>h</sup> 16' | 17 <sup>h</sup> 55' | 8 <sup>h</sup> 21' | 22 <sup>h</sup> 49' | 21 <sup>h</sup> 40' |
| F 27 | 10 26 49 | 8 <sup>h</sup> 22'57"  | 8 <sup>h</sup> 30'  | 14 <sup>h</sup> 23' | 8 <sup>h</sup> 12'  | 15 <sup>h</sup> 0'  | 10 <sup>h</sup> 40' | 20 <sup>h</sup> 18' | 17 <sup>h</sup> 56' | 8 <sup>h</sup> 22' | 22 <sup>h</sup> 49' | 21 <sup>h</sup> 41' |
| S 28 | 10 30 46 | 9 <sup>h</sup> 23'06"  | 9 <sup>h</sup> 29'  | 18 <sup>h</sup> 1'  | 9 <sup>h</sup> 48'  | 15 <sup>h</sup> 30' | 10 <sup>h</sup> 45' | 20 <sup>h</sup> 20' | 17 <sup>h</sup> 56' | 8 <sup>h</sup> 22' | 22 <sup>h</sup> 49' | 21 <sup>h</sup> 42' |
| S 29 | 10 34 42 | 10 <sup>h</sup> 23'13" | 10 <sup>h</sup> 28' | 21 <sup>h</sup> 44' | 11 <sup>h</sup> 11' | 16 <sup></sup>      |                     |                     |                     |                    |                     |                     |

SWISS EPHEMERIS for the year 1688  
heliocentric

MARCH 1688 GC

00:00 UT

| Day  | Sid.t    | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁     | ♃     |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| M 1  | 10 38 39 | 11♍23'18 | 11♍26 | 25♂34 | 13♌0  | 16♋31 | 10♌55 | 20♌24 | 17♌58 | 8♌23 | 22♌49 | 21♌44 |
| T 2  | 10 42 36 | 12°23'22 | 12°24 | 29°30 | 14°35 | 17° 1 | 11° 0 | 20°26 | 17°58 | 8°23 | 22°50 | 21°45 |
| W 3  | 10 46 32 | 13°23'23 | 13°22 | 3♂33  | 16°11 | 17°31 | 11° 5 | 20°28 | 17°59 | 8°24 | 22°50 | 21°46 |
| T 4  | 10 50 29 | 14°23'23 | 14°20 | 7°43  | 17°47 | 18° 1 | 11°10 | 20°30 | 18° 0 | 8°24 | 22°50 | 21°47 |
| F 5  | 10 54 25 | 15°23'20 | 15°18 | 12° 1 | 19°23 | 18°31 | 11°15 | 20°32 | 18° 0 | 8°24 | 22°50 | 21°48 |
| S 6  | 10 58 22 | 16°23'16 | 16°17 | 16°27 | 20°59 | 19° 1 | 11°20 | 20°34 | 18° 1 | 8°25 | 22°51 | 21°48 |
| S 7  | 11 2 18  | 17°23'09 | 17°15 | 21° 1 | 22°34 | 19°31 | 11°25 | 20°36 | 18° 2 | 8°25 | 22°51 | 21°49 |
| M 8  | 11 6 15  | 18°23'00 | 18°15 | 25°43 | 24°10 | 20° 1 | 11°30 | 20°38 | 18° 2 | 8°25 | 22°51 | 21°50 |
| T 9  | 11 10 11 | 19°22'49 | 19°14 | 0♂35  | 25°46 | 20°31 | 11°35 | 20°40 | 18° 3 | 8°26 | 22°51 | 21°51 |
| W10  | 11 14 8  | 20°22'35 | 20°14 | 5°35  | 27°21 | 21° 1 | 11°40 | 20°42 | 18° 4 | 8°26 | 22°51 | 21°52 |
| T 11 | 11 18 5  | 21°22'19 | 21°14 | 10°45 | 28°57 | 21°30 | 11°45 | 20°44 | 18° 4 | 8°26 | 22°52 | 21°53 |
| F 12 | 11 22 1  | 22°22'01 | 22°14 | 16° 3 | 0♂32  | 22° 0 | 11°50 | 20°45 | 18° 5 | 8°27 | 22°52 | 21°54 |
| S 13 | 11 25 58 | 23°21'41 | 23°15 | 21°31 | 2° 8  | 22°30 | 11°56 | 20°47 | 18° 6 | 8°27 | 22°52 | 21°55 |
| S 14 | 11 29 54 | 24°21'18 | 24°16 | 27° 7 | 3°43  | 22°59 | 12° 1 | 20°49 | 18° 6 | 8°28 | 22°52 | 21°55 |
| M15  | 11 33 51 | 25°20'53 | 25°17 | 2♂52  | 5°18  | 23°29 | 12° 6 | 20°51 | 18° 7 | 8°28 | 22°53 | 21°56 |
| T 16 | 11 37 47 | 26°20'26 | 26°19 | 8°44  | 6°54  | 23°59 | 12°11 | 20°53 | 18° 8 | 8°28 | 22°53 | 21°57 |
| W17  | 11 41 44 | 27°19'57 | 27°20 | 14°44 | 8°29  | 24°28 | 12°16 | 20°55 | 18° 8 | 8°29 | 22°53 | 21°58 |
| T 18 | 11 45 40 | 28°19'26 | 28°21 | 20°50 | 10° 4 | 24°57 | 12°21 | 20°57 | 18° 9 | 8°29 | 22°53 | 21°59 |
| F 19 | 11 49 37 | 29°18'53 | 29°22 | 27° 2 | 11°39 | 25°27 | 12°26 | 20°59 | 18°10 | 8°29 | 22°53 | 22° 0 |
| S 20 | 11 53 33 | 0♌18'18  | 0♌23  | 3♋17  | 13°15 | 25°56 | 12°31 | 21° 1 | 18°10 | 8°30 | 22°54 | 22° 1 |
| S 21 | 11 57 30 | 1°17'41  | 1°24  | 9°35  | 14°50 | 26°26 | 12°36 | 21° 3 | 18°11 | 8°30 | 22°54 | 22° 2 |
| M22  | 12 1 27  | 2°17'02  | 2°24  | 15°54 | 16°25 | 26°55 | 12°41 | 21° 5 | 18°12 | 8°30 | 22°54 | 22° 2 |
| T 23 | 12 5 23  | 3°16'21  | 3°25  | 22°13 | 18° 0 | 27°24 | 12°46 | 21° 7 | 18°12 | 8°31 | 22°54 | 22° 3 |
| W24  | 12 9 20  | 4°15'39  | 4°24  | 28°30 | 19°35 | 27°53 | 12°51 | 21° 9 | 18°13 | 8°31 | 22°54 | 22° 4 |
| T 25 | 12 13 16 | 5°14'55  | 5°24  | 4♂43  | 21°10 | 28°22 | 12°56 | 21°11 | 18°14 | 8°32 | 22°55 | 22° 5 |
| F 26 | 12 17 13 | 6°14'09  | 6°23  | 10°52 | 22°45 | 28°52 | 13° 1 | 21°13 | 18°14 | 8°32 | 22°55 | 22° 6 |
| S 27 | 12 21 9  | 7°13'21  | 7°21  | 16°56 | 24°20 | 29°21 | 13° 6 | 21°14 | 18°15 | 8°32 | 22°55 | 22° 7 |
| S 28 | 12 25 6  | 8°12'32  | 8°19  | 22°52 | 25°55 | 29°50 | 13°11 | 21°16 | 18°16 | 8°33 | 22°55 | 22° 8 |
| M29  | 12 29 3  | 9°11'40  | 9°17  | 28°40 | 27°30 | 0♌19  | 13°16 | 21°18 | 18°17 | 8°33 | 22°56 | 22° 9 |
| T 30 | 12 32 59 | 10°10'47 | 10°14 | 4♌20  | 29° 5 | 0°48  | 13°21 | 21°20 | 18°17 | 8°33 | 22°56 | 22°10 |
| W31  | 12 36 56 | 11♌9'52  | 11♌11 | 9♌50  | 0♌40  | 1♌16  | 13♌26 | 21♌22 | 18♌18 | 8♌34 | 22♌56 | 22♌10 |

Delta T = 9.56 sec.

Greg. Calendar

APRIL 1688 GC

00:00 UT

| Day  | Sid.t    | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁     | ♃     |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| T 1  | 12 40 52 | 12♌8'54  | 12♌8  | 15♌11 | 2♌15  | 1♌45  | 13♌31 | 21♌24 | 18♌19 | 8♌34 | 22♌56 | 22♌11 |
| F 2  | 12 44 49 | 13° 7'55 | 13° 5 | 20°23 | 3°50  | 2°14  | 13°36 | 21°26 | 18°19 | 8°34 | 22°56 | 22°12 |
| S 3  | 12 48 45 | 14° 6'54 | 14° 3 | 25°24 | 5°25  | 2°43  | 13°41 | 21°28 | 18°20 | 8°35 | 22°57 | 22°13 |
| S 4  | 12 52 42 | 15° 5'50 | 15° 0 | 0♍17  | 7° 0  | 3°12  | 13°46 | 21°30 | 18°21 | 8°35 | 22°57 | 22°14 |
| M 5  | 12 56 38 | 16° 4'45 | 15°57 | 4°59  | 8°35  | 3°40  | 13°51 | 21°32 | 18°21 | 8°36 | 22°57 | 22°15 |
| T 6  | 13 0 35  | 17° 3'37 | 16°55 | 9°33  | 10°10 | 4° 9  | 13°56 | 21°34 | 18°22 | 8°36 | 22°57 | 22°16 |
| W 7  | 13 4 31  | 18° 2'26 | 17°54 | 13°58 | 11°44 | 4°38  | 14° 1 | 21°36 | 18°23 | 8°36 | 22°58 | 22°17 |
| T 8  | 13 8 28  | 19° 1'14 | 18°52 | 18°15 | 13°19 | 5° 6  | 14° 6 | 21°38 | 18°23 | 8°37 | 22°58 | 22°18 |
| F 9  | 13 12 25 | 19°59'59 | 19°51 | 22°24 | 14°54 | 5°35  | 14°11 | 21°40 | 18°24 | 8°37 | 22°58 | 22°18 |
| S 10 | 13 16 21 | 20°58'42 | 20°51 | 26°25 | 16°29 | 6° 3  | 14°16 | 21°42 | 18°25 | 8°37 | 22°58 | 22°19 |
| S 11 | 13 20 18 | 21°57'22 | 21°50 | 0♌19  | 18° 4 | 6°32  | 14°21 | 21°44 | 18°25 | 8°38 | 22°58 | 22°20 |
| M12  | 13 24 14 | 22°56'00 | 22°50 | 4° 6  | 19°39 | 7° 0  | 14°26 | 21°45 | 18°26 | 8°38 | 22°59 | 22°21 |
| T 13 | 13 28 11 | 23°54'37 | 23°50 | 7°47  | 21°13 | 7°29  | 14°32 | 21°47 | 18°27 | 8°38 | 22°59 | 22°22 |
| W14  | 13 32 7  | 24°53'11 | 24°50 | 11°22 | 22°48 | 7°57  | 14°37 | 21°49 | 18°27 | 8°39 | 22°59 | 22°23 |
| T 15 | 13 36 4  | 25°51'43 | 25°50 | 14°52 | 24°23 | 8°25  | 14°42 | 21°51 | 18°28 | 8°39 | 22°59 | 22°24 |
| F 16 | 13 40 0  | 26°50'13 | 26°51 | 18°16 | 25°58 | 8°54  | 14°47 | 21°53 | 18°29 | 8°40 | 23° 0 | 22°25 |
| S 17 | 13 43 57 | 27°48'41 | 27°51 | 21°36 | 27°33 | 9°22  | 14°52 | 21°55 | 18°29 | 8°40 | 23° 0 | 22°25 |
| S 18 | 13 47 54 | 28°47'08 | 28°51 | 24°52 | 29° 7 | 9°50  | 14°57 | 21°57 | 18°30 | 8°40 | 23° 0 | 22°26 |
| M19  | 13 51 50 | 29°45'32 | 29°51 | 28° 4 | 0♎42  | 10°18 | 15° 2 | 21°59 | 18°31 | 8°41 | 23° 0 | 22°27 |
| T 20 | 13 55 47 | 0♍43'55  | 0♍51  | 1♌12  | 2°17  | 10°46 | 15° 7 | 22° 1 | 18°31 | 8°41 | 23° 0 | 22°28 |
| W21  | 13 59 43 | 1°42'17  | 1°50  | 4°16  | 3°52  | 11°14 | 15°12 | 22° 3 | 18°32 | 8°41 | 23° 1 | 22°29 |
| T 22 | 14 3 40  | 2°40'37  | 2°49  | 7°18  | 5°27  | 11°43 | 15°17 | 22° 5 | 18°33 | 8°42 | 23° 1 | 22°30 |
| F 23 | 14 7 36  | 3°38'55  | 3°47  | 10°17 | 7° 2  | 12°11 | 15°22 | 22° 7 | 18°33 | 8°42 | 23° 1 | 22°31 |
| S 24 | 14 11 33 | 4°37'12  | 4°46  | 13°13 | 8°37  | 12°39 | 15°27 | 22° 9 | 18°34 | 8°42 | 23° 1 | 22°32 |
| S 25 | 14 15 29 | 5°35'27  | 5°43  | 16° 7 | 10°11 | 13° 7 | 15°32 | 22°11 | 18°35 | 8°43 | 23° 1 | 22°33 |
| M26  | 14 19 26 | 6°33'41  | 6°41  | 19° 0 | 11°46 | 13°35 | 15°37 | 22°12 | 18°36 | 8°43 | 23° 2 | 22°33 |
| T 27 | 14 23 23 | 7°31'53  | 7°38  | 21°50 | 13°21 | 14° 2 | 15°42 | 22°14 | 18°36 | 8°44 | 23° 2 | 22°34 |
| W28  | 14 27 19 | 8°30'03  | 8°34  | 24°39 | 14°56 | 14°30 | 15°47 | 22°16 | 18°37 | 8°44 | 23° 2 | 22°35 |
| T 29 | 14 31 16 | 9°28'12  | 9°30  | 27°27 | 16°31 | 14°58 | 15°52 | 22°18 | 18°38 | 8°44 | 23° 2 | 22°36 |
| F 30 | 14 35 12 | 10♌26'20 | 10♌27 | 0♎13  | 18♌6  | 15♌26 | 15♌57 | 22♌20 | 18♌38 | 8♌45 | 23♌3  | 22♌37 |

Delta T = 9.48 sec.

Greg. Calendar

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SWISS EPHEMERIS for the year 1688  
heliocentric

MAY 1688 GC

00:00 UT

| Day  | Sid.t    | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁    | ♂     |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|
| S 1  | 14 39 9  | 11♈24'26 | 11♈23 | 2♃59  | 19♉41 | 15♊54 | 16♋2  | 22♌22 | 18♍39 | 8♎45 | 23♏3 | 22♐38 |
| S 2  | 14 43 5  | 12°22'30 | 12°19 | 5°44  | 21°16 | 16°22 | 16°7  | 22°24 | 18°40 | 8°45 | 23°3 | 22°39 |
| M 3  | 14 47 2  | 13°20'32 | 13°15 | 8°29  | 22°51 | 16°49 | 16°13 | 22°26 | 18°40 | 8°46 | 23°3 | 22°40 |
| T 4  | 14 50 58 | 14°18'33 | 14°12 | 11°14 | 24°26 | 17°17 | 16°18 | 22°28 | 18°41 | 8°46 | 23°3 | 22°41 |
| W 5  | 14 54 55 | 15°16'32 | 15°9  | 13°59 | 26°1  | 17°45 | 16°23 | 22°30 | 18°42 | 8°46 | 23°4 | 22°41 |
| T 6  | 14 58 52 | 16°14'29 | 16°6  | 16°43 | 27°36 | 18°12 | 16°28 | 22°32 | 18°42 | 8°47 | 23°4 | 22°42 |
| F 7  | 15 2 48  | 17°12'24 | 17°3  | 19°29 | 29°11 | 18°40 | 16°33 | 22°34 | 18°43 | 8°47 | 23°4 | 22°43 |
| S 8  | 15 6 45  | 18°10'17 | 18°1  | 22°15 | 0♋46  | 19°7  | 16°38 | 22°36 | 18°44 | 8°48 | 23°4 | 22°44 |
| S 9  | 15 10 41 | 19°8'08  | 19°0  | 25°1  | 2°21  | 19°35 | 16°43 | 22°38 | 18°44 | 8°48 | 23°5 | 22°45 |
| M10  | 15 14 38 | 20°5'58  | 19°58 | 27°49 | 3°56  | 20°2  | 16°48 | 22°40 | 18°45 | 8°48 | 23°5 | 22°46 |
| T 11 | 15 18 34 | 21°3'46  | 20°57 | 0♃38  | 5°31  | 20°30 | 16°53 | 22°41 | 18°46 | 8°49 | 23°5 | 22°47 |
| W12  | 15 22 31 | 22°1'32  | 21°56 | 3°29  | 7°7   | 20°57 | 16°58 | 22°43 | 18°46 | 8°49 | 23°5 | 22°48 |
| T 13 | 15 26 27 | 22°59'17 | 22°55 | 6°21  | 8°42  | 21°25 | 17°3  | 22°45 | 18°47 | 8°49 | 23°5 | 22°49 |
| F 14 | 15 30 24 | 23°57'00 | 23°55 | 9°15  | 10°17 | 21°52 | 17°8  | 22°47 | 18°48 | 8°50 | 23°6 | 22°50 |
| S 15 | 15 34 21 | 24°54'42 | 24°54 | 12°11 | 11°52 | 22°20 | 17°13 | 22°49 | 18°48 | 8°50 | 23°6 | 22°50 |
| S 16 | 15 38 17 | 25°52'23 | 25°53 | 15°10 | 13°27 | 22°47 | 17°18 | 22°51 | 18°49 | 8°50 | 23°6 | 22°51 |
| M17  | 15 42 14 | 26°50'02 | 26°53 | 18°11 | 15°3  | 23°14 | 17°23 | 22°53 | 18°50 | 8°51 | 23°6 | 22°52 |
| T 18 | 15 46 10 | 27°47'40 | 27°52 | 21°15 | 16°38 | 23°42 | 17°29 | 22°55 | 18°50 | 8°51 | 23°7 | 22°53 |
| W19  | 15 50 7  | 28°45'17 | 28°51 | 24°23 | 18°13 | 24°9  | 17°34 | 22°57 | 18°51 | 8°52 | 23°7 | 22°54 |
| T 20 | 15 54 3  | 29°42'53 | 29°50 | 27°33 | 19°48 | 24°36 | 17°39 | 22°59 | 18°52 | 8°52 | 23°7 | 22°55 |
| F 21 | 15 58 0  | 0♃40'28  | 0♃48  | 0♃48  | 21°24 | 25°3  | 17°44 | 23°1  | 18°52 | 8°52 | 23°7 | 22°56 |
| S 22 | 16 1 56  | 1°38'02  | 1°46  | 4°7   | 22°59 | 25°31 | 17°49 | 23°3  | 18°53 | 8°53 | 23°7 | 22°57 |
| S 23 | 16 5 53  | 2°35'35  | 2°44  | 7°30  | 24°35 | 25°58 | 17°54 | 23°5  | 18°54 | 8°53 | 23°8 | 22°58 |
| M24  | 16 9 50  | 3°33'07  | 3°41  | 10°57 | 26°10 | 26°25 | 17°59 | 23°7  | 18°55 | 8°53 | 23°8 | 22°58 |
| T 25 | 16 13 46 | 4°30'38  | 4°38  | 14°30 | 27°45 | 26°52 | 18°4  | 23°8  | 18°55 | 8°54 | 23°8 | 22°59 |
| W26  | 16 17 43 | 5°28'09  | 5°34  | 18°8  | 29°21 | 27°19 | 18°9  | 23°10 | 18°56 | 8°54 | 23°8 | 23°0  |
| T 27 | 16 21 39 | 6°25'39  | 6°30  | 21°52 | 0♃56  | 27°46 | 18°14 | 23°12 | 18°57 | 8°54 | 23°8 | 23°1  |
| F 28 | 16 25 36 | 7°23'08  | 7°26  | 25°42 | 2°32  | 28°13 | 18°19 | 23°14 | 18°57 | 8°55 | 23°9 | 23°2  |
| S 29 | 16 29 32 | 8°20'36  | 8°21  | 29°38 | 4°7   | 28°40 | 18°24 | 23°16 | 18°58 | 8°55 | 23°9 | 23°3  |
| S 30 | 16 33 29 | 9°18'03  | 9°17  | 3♋41  | 5°43  | 29°7  | 18°29 | 23°18 | 18°59 | 8°56 | 23°9 | 23°4  |
| MB1  | 16 37 26 | 10♃15'29 | 10♃13 | 7♋51  | 7♋19  | 29♃34 | 18♃34 | 23♌20 | 18♌59 | 8♌56 | 23♍9 | 23♎5  |

Delta T = 9.40 sec.

Greg. Calendar

JUNE 1688 GC

00:00 UT

| Day  | Sid.t    | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁     | ♂     |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| T 1  | 16 41 22 | 11♈12'55 | 11♈8  | 12♋10 | 8♃54  | 0♌1   | 18♍40 | 23♎22 | 19♏0  | 8♐56 | 23♑10 | 23♒6  |
| W 2  | 16 45 19 | 12°10'19 | 12°4  | 16°35 | 10°30 | 0°28  | 18°45 | 23°24 | 19°1  | 8°57 | 23°10 | 23°7  |
| T 3  | 16 49 15 | 13°7'42  | 13°0  | 21°10 | 12°5  | 0°55  | 18°50 | 23°26 | 19°1  | 8°57 | 23°10 | 23°7  |
| F 4  | 16 53 12 | 14°5'04  | 13°57 | 25°52 | 13°41 | 1°22  | 18°55 | 23°28 | 19°2  | 8°57 | 23°10 | 23°8  |
| S 5  | 16 57 8  | 15°2'25  | 14°54 | 0♃44  | 15°17 | 1°49  | 19°0  | 23°30 | 19°3  | 8°58 | 23°10 | 23°9  |
| S 6  | 17 1 5   | 15°59'45 | 15°51 | 5°45  | 16°53 | 2°16  | 19°5  | 23°32 | 19°3  | 8°58 | 23°11 | 23°10 |
| M 7  | 17 5 1   | 16°57'04 | 16°48 | 10°54 | 18°28 | 2°43  | 19°10 | 23°34 | 19°4  | 8°58 | 23°11 | 23°11 |
| T 8  | 17 8 58  | 17°54'22 | 17°46 | 16°13 | 20°4  | 3°9   | 19°15 | 23°35 | 19°5  | 8°59 | 23°11 | 23°12 |
| W 9  | 17 12 55 | 18°51'39 | 18°44 | 21°41 | 21°40 | 3°36  | 19°20 | 23°37 | 19°5  | 8°59 | 23°11 | 23°13 |
| T 10 | 17 16 51 | 19°48'55 | 19°42 | 27°18 | 23°16 | 4°3   | 19°25 | 23°39 | 19°6  | 9°0  | 23°12 | 23°14 |
| F 11 | 17 20 48 | 20°46'11 | 20°41 | 3♋3   | 24°52 | 4°30  | 19°30 | 23°41 | 19°7  | 9°0  | 23°12 | 23°15 |
| S 12 | 17 24 44 | 21°43'26 | 21°40 | 8°56  | 26°28 | 4°57  | 19°35 | 23°43 | 19°7  | 9°0  | 23°12 | 23°15 |
| S 13 | 17 28 41 | 22°40'40 | 22°39 | 14°56 | 28°3  | 5°23  | 19°41 | 23°45 | 19°8  | 9°1  | 23°12 | 23°16 |
| M14  | 17 32 37 | 23°37'54 | 23°38 | 21°2  | 29°39 | 5°50  | 19°46 | 23°47 | 19°9  | 9°1  | 23°12 | 23°17 |
| T 15 | 17 36 34 | 24°35'07 | 24°37 | 27°13 | 1♋15  | 6°17  | 19°51 | 23°49 | 19°9  | 9°1  | 23°13 | 23°18 |
| W16  | 17 40 30 | 25°32'20 | 25°36 | 3♈29  | 2°51  | 6°43  | 19°56 | 23°51 | 19°10 | 9°2  | 23°13 | 23°19 |
| T 17 | 17 44 27 | 26°29'33 | 26°35 | 9°47  | 4°27  | 7°10  | 20°1  | 23°53 | 19°11 | 9°2  | 23°13 | 23°20 |
| F 18 | 17 48 24 | 27°26'45 | 27°33 | 16°6  | 6°3   | 7°37  | 20°6  | 23°55 | 19°12 | 9°3  | 23°13 | 23°21 |
| S 19 | 17 52 20 | 28°23'57 | 28°32 | 22°25 | 7°40  | 8°3   | 20°11 | 23°57 | 19°12 | 9°3  | 23°14 | 23°22 |
| S 20 | 17 56 17 | 29°21'09 | 29°29 | 28°42 | 9°16  | 8°30  | 20°16 | 23°59 | 19°13 | 9°3  | 23°14 | 23°23 |
| M21  | 18 0 13  | 0♃18'21  | 0♃27  | 4♃55  | 10°52 | 8°56  | 20°21 | 24°1  | 19°14 | 9°4  | 23°14 | 23°24 |
| T 22 | 18 4 10  | 1°15'33  | 1°24  | 11°4  | 12°28 | 9°23  | 20°26 | 24°2  | 19°14 | 9°4  | 23°14 | 23°24 |
| W23  | 18 8 6   | 2°12'46  | 2°20  | 17°7  | 14°4  | 9°50  | 20°31 | 24°4  | 19°15 | 9°4  | 23°14 | 23°25 |
| T 24 | 18 12 3  | 3°9'58   | 3°16  | 23°3  | 15°40 | 10°16 | 20°37 | 24°6  | 19°16 | 9°5  | 23°15 | 23°26 |
| F 25 | 18 15 59 | 4°7'10   | 4°12  | 28°51 | 17°17 | 10°43 | 20°42 | 24°8  | 19°16 | 9°5  | 23°15 | 23°27 |
| S 26 | 18 19 56 | 5°4'23   | 5°8   | 4♌30  | 18°53 | 11°9  | 20°47 | 24°10 | 19°17 | 9°5  | 23°15 | 23°28 |
| S 27 | 18 23 53 | 6°1'36   | 6°3   | 10°0  | 20°29 | 11°36 | 20°52 | 24°12 | 19°18 | 9°6  | 23°15 | 23°29 |
| M28  | 18 27 49 | 6°58'49  | 6°59  | 15°21 | 22°6  | 12°2  | 20°57 | 24°14 | 19°18 | 9°6  | 23°16 | 23°30 |
| T 29 | 18 31 46 | 7°56'01  | 7°54  | 20°32 | 23°42 | 12°29 | 21°2  | 24°16 | 19°19 | 9°7  | 23°16 | 23°31 |
| W30  | 18 35 42 | 8♃53'14  | 8♃49  | 25♌34 | 25♌18 | 12♌55 | 21♋7  | 24♌18 | 19♌20 | 9♌7  | 23♍16 | 23♎32 |

Delta T = 9.31 sec.

Greg. Calendar

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SWISS EPHEMERIS for the year 1688  
heliocentric

JULY 1688 GC

00:00 UT

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

Delta T = 9.22 sec. Greg. Calendar

AUGUST 1688 GC

00:00 UT

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

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SWISS EPHEMERIS for the year 1688  
heliocentric

SEPTEMBER 1688 GC

00:00 UT

| Day  | Sid.t    | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁     | ♂     |
|------|----------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| W 1  | 22 44 5  | 9°18'55  | 9°10  | 0°53  | 7°21  | 10°31 | 26°30 | 26°19 | 20°2  | 9°30 | 23°30 | 24°29 |
| T 2  | 22 48 2  | 10°17'09 | 10° 8 | 5°54  | 8°58  | 10°57 | 26°35 | 26°21 | 20° 3 | 9°30 | 23°30 | 24°30 |
| F 3  | 22 51 58 | 11°15'25 | 11° 6 | 11° 4 | 10°36 | 11°23 | 26°40 | 26°23 | 20° 4 | 9°31 | 23°30 | 24°31 |
| S 4  | 22 55 55 | 12°13'42 | 12° 5 | 16°23 | 12°13 | 11°50 | 26°45 | 26°25 | 20° 5 | 9°31 | 23°30 | 24°32 |
| S 5  | 22 59 52 | 13°12'02 | 13° 4 | 21°52 | 13°51 | 12°16 | 26°50 | 26°27 | 20° 5 | 9°31 | 23°31 | 24°32 |
| M 6  | 23 3 48  | 14°10'22 | 14° 3 | 27°28 | 15°28 | 12°42 | 26°56 | 26°28 | 20° 6 | 9°32 | 23°31 | 24°33 |
| T 7  | 23 7 45  | 15° 8'44 | 15° 3 | 3°14  | 17° 5 | 13° 9 | 27° 1 | 26°30 | 20° 7 | 9°32 | 23°31 | 24°34 |
| W 8  | 23 11 41 | 16° 7'08 | 16° 3 | 9° 7  | 18°43 | 13°35 | 27° 6 | 26°32 | 20° 7 | 9°32 | 23°31 | 24°35 |
| T 9  | 23 15 38 | 17° 5'34 | 17° 3 | 15° 7 | 20°20 | 14° 1 | 27°11 | 26°34 | 20° 8 | 9°33 | 23°32 | 24°36 |
| F 10 | 23 19 34 | 18° 4'01 | 18° 4 | 21°13 | 21°57 | 14°28 | 27°16 | 26°36 | 20° 9 | 9°33 | 23°32 | 24°37 |
| S 11 | 23 23 31 | 19° 2'30 | 19° 4 | 27°25 | 23°34 | 14°54 | 27°21 | 26°38 | 20° 9 | 9°34 | 23°32 | 24°38 |
| S 12 | 23 27 27 | 20° 1'01 | 20° 5 | 3°11  | 25°12 | 15°20 | 27°27 | 26°40 | 20°10 | 9°34 | 23°32 | 24°39 |
| M13  | 23 31 24 | 20°59'34 | 21° 5 | 9°59  | 26°49 | 15°47 | 27°32 | 26°42 | 20°11 | 9°34 | 23°32 | 24°40 |
| T 14 | 23 35 21 | 21°58'09 | 22° 5 | 16°18 | 28°26 | 16°13 | 27°37 | 26°44 | 20°11 | 9°35 | 23°33 | 24°41 |
| W15  | 23 39 17 | 22°56'47 | 23° 5 | 22°36 | 0° 3  | 16°40 | 27°42 | 26°46 | 20°12 | 9°35 | 23°33 | 24°42 |
| T 16 | 23 43 14 | 23°55'27 | 24° 4 | 28°53 | 1°40  | 17° 6 | 27°47 | 26°48 | 20°13 | 9°35 | 23°33 | 24°42 |
| F 17 | 23 47 10 | 24°54'09 | 25° 3 | 5° 7  | 3°17  | 17°33 | 27°52 | 26°50 | 20°13 | 9°36 | 23°33 | 24°43 |
| S 18 | 23 51 7  | 25°52'54 | 26° 1 | 11°15 | 4°54  | 17°59 | 27°57 | 26°51 | 20°14 | 9°36 | 23°34 | 24°44 |
| S 19 | 23 55 3  | 26°51'41 | 27° 0 | 17°18 | 6°31  | 18°25 | 28° 3 | 26°53 | 20°15 | 9°36 | 23°34 | 24°45 |
| M20  | 23 59 0  | 27°50'30 | 27°57 | 23°14 | 8° 8  | 18°52 | 28° 8 | 26°55 | 20°15 | 9°37 | 23°34 | 24°46 |
| T 21 | 0 2 56   | 28°49'21 | 28°55 | 29° 1 | 9°45  | 19°18 | 28°13 | 26°57 | 20°16 | 9°37 | 23°34 | 24°47 |
| W22  | 0 6 53   | 29°48'14 | 29°53 | 4°14  | 11°22 | 19°45 | 28°18 | 26°59 | 20°17 | 9°38 | 23°34 | 24°48 |
| T 23 | 0 10 50  | 0°47'10  | 0°50  | 10°10 | 12°58 | 20°11 | 28°23 | 27° 1 | 20°17 | 9°38 | 23°35 | 24°49 |
| F 24 | 0 14 46  | 1°46'07  | 1°47  | 15°31 | 14°35 | 20°38 | 28°28 | 27° 3 | 20°18 | 9°38 | 23°35 | 24°50 |
| S 25 | 0 18 43  | 2°45'07  | 2°44  | 20°42 | 16°12 | 21° 5 | 28°34 | 27° 5 | 20°19 | 9°39 | 23°35 | 24°51 |
| S 26 | 0 22 39  | 3°44'08  | 3°42  | 25°43 | 17°49 | 21°31 | 28°39 | 27° 7 | 20°19 | 9°39 | 23°35 | 24°52 |
| M27  | 0 26 36  | 4°43'12  | 4°39  | 0°35  | 19°25 | 21°58 | 28°44 | 27° 9 | 20°20 | 9°39 | 23°36 | 24°53 |
| T 28 | 0 30 32  | 5°42'18  | 5°37  | 5°17  | 21° 2 | 22°24 | 28°49 | 27°11 | 20°21 | 9°40 | 23°36 | 24°53 |
| W29  | 0 34 29  | 6°41'25  | 6°35  | 9°50  | 22°38 | 22°51 | 28°54 | 27°13 | 20°22 | 9°40 | 23°36 | 24°54 |
| T 30 | 0 38 25  | 7°40'34  | 7°33  | 14°15 | 24°15 | 23°17 | 28°59 | 27°14 | 20°22 | 9°40 | 23°36 | 24°55 |

Delta T = 9.04 sec.

Greg. Calendar

OCTOBER 1688 GC

00:00 UT

| Day  | Sid.t   | Terra    | ☾     | ♃     | ♄     | ♅     | ♆     | ♁     | ♂     | ♆    | ♁     | ♂     |
|------|---------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| F 1  | 0 42 22 | 8°39'46  | 8°31  | 18°31 | 25°51 | 23°44 | 29° 5 | 27°16 | 20°23 | 9°41 | 23°36 | 24°56 |
| S 2  | 0 46 18 | 9°38'59  | 9°30  | 22°39 | 27°28 | 24°11 | 29°10 | 27°18 | 20°24 | 9°41 | 23°37 | 24°57 |
| S 3  | 0 50 15 | 10°38'14 | 10°29 | 26°40 | 29° 4 | 24°37 | 29°15 | 27°20 | 20°24 | 9°42 | 23°37 | 24°58 |
| M 4  | 0 54 12 | 11°37'30 | 11°29 | 0°33  | 0°14  | 25° 4 | 29°20 | 27°22 | 20°25 | 9°42 | 23°37 | 24°59 |
| T 5  | 0 58 8  | 12°36'49 | 12°29 | 4°20  | 2°16  | 25°31 | 29°25 | 27°24 | 20°26 | 9°42 | 23°37 | 25° 0 |
| W 6  | 1 2 5   | 13°36'09 | 13°30 | 8° 1  | 3°53  | 25°58 | 29°30 | 27°26 | 20°26 | 9°43 | 23°38 | 25° 1 |
| T 7  | 1 6 1   | 14°35'31 | 14°31 | 11°36 | 5°29  | 26°24 | 29°36 | 27°28 | 20°27 | 9°43 | 23°38 | 25° 2 |
| F 8  | 1 9 58  | 15°34'55 | 15°32 | 15° 5 | 7° 5  | 26°51 | 29°41 | 27°30 | 20°28 | 9°43 | 23°38 | 25° 3 |
| S 9  | 1 13 54 | 16°34'20 | 16°33 | 18°29 | 8°41  | 27°18 | 29°46 | 27°32 | 20°28 | 9°44 | 23°38 | 25° 4 |
| S 10 | 1 17 51 | 17°33'48 | 17°35 | 21°49 | 10°17 | 27°45 | 29°51 | 27°34 | 20°29 | 9°44 | 23°38 | 25° 4 |
| M11  | 1 21 47 | 18°33'18 | 18°36 | 25° 4 | 11°53 | 28°11 | 29°56 | 27°35 | 20°30 | 9°44 | 23°39 | 25° 5 |
| T 12 | 1 25 44 | 19°32'50 | 19°38 | 28°16 | 13°29 | 28°38 | 0° 1  | 27°37 | 20°30 | 9°45 | 23°39 | 25° 6 |
| W13  | 1 29 41 | 20°32'24 | 20°39 | 1°14  | 15° 5 | 29° 5 | 0° 7  | 27°39 | 20°31 | 9°45 | 23°39 | 25° 7 |
| T 14 | 1 33 37 | 21°32'01 | 21°40 | 4°28  | 16°41 | 29°32 | 0°12  | 27°41 | 20°32 | 9°46 | 23°39 | 25° 8 |
| F 15 | 1 37 34 | 22°31'40 | 22°40 | 7°29  | 18°16 | 29°59 | 0°17  | 27°43 | 20°32 | 9°46 | 23°40 | 25° 9 |
| S 16 | 1 41 30 | 23°31'21 | 23°40 | 10°28 | 19°52 | 0°26  | 0°22  | 27°45 | 20°33 | 9°46 | 23°40 | 25°10 |
| S 17 | 1 45 27 | 24°31'05 | 24°40 | 13°24 | 21°28 | 0°53  | 0°27  | 27°47 | 20°34 | 9°47 | 23°40 | 25°11 |
| M18  | 1 49 23 | 25°30'50 | 25°39 | 16°18 | 23° 4 | 1°20  | 0°32  | 27°49 | 20°34 | 9°47 | 23°40 | 25°12 |
| T 19 | 1 53 20 | 26°30'38 | 26°38 | 19°10 | 24°39 | 1°47  | 0°38  | 27°51 | 20°35 | 9°47 | 23°40 | 25°13 |
| W20  | 1 57 16 | 27°30'28 | 27°37 | 22° 1 | 26°15 | 2°14  | 0°43  | 27°53 | 20°36 | 9°48 | 23°41 | 25°14 |
| T 21 | 2 1 13  | 28°30'21 | 28°36 | 24°50 | 27°50 | 2°41  | 0°48  | 27°55 | 20°37 | 9°48 | 23°41 | 25°15 |
| F 22 | 2 5 10  | 29°30'15 | 29°34 | 27°37 | 29°26 | 3° 8  | 0°53  | 27°57 | 20°37 | 9°48 | 23°41 | 25°16 |
| S 23 | 2 9 6   | 0°30'12  | 0°32  | 0°24  | 1° 1  | 3°35  | 0°58  | 27°58 | 20°38 | 9°49 | 23°41 | 25°16 |
| S 24 | 2 13 3  | 1°30'10  | 1°31  | 3°10  | 2°37  | 4° 2  | 1° 4  | 28° 0 | 20°39 | 9°49 | 23°41 | 25°17 |
| M25  | 2 16 59 | 2°30'10  | 2°29  | 5°55  | 4°12  | 4°29  | 1° 9  | 28° 2 | 20°39 | 9°50 | 23°42 | 25°18 |
| T 26 | 2 20 56 | 3°30'13  | 3°27  | 8°40  | 5°47  | 4°56  | 1°14  | 28° 4 | 20°40 | 9°50 | 23°42 | 25°19 |
| W27  | 2 24 52 | 4°30'17  | 4°26  | 11°24 | 7°23  | 5°23  | 1°19  | 28° 6 | 20°41 | 9°50 | 23°42 | 25°20 |
| T 28 | 2 28 49 | 5°30'23  | 5°24  | 14° 9 | 8°58  | 5°51  | 1°24  | 28° 8 | 20°41 | 9°51 | 23°42 | 25°21 |
| F 29 | 2 32 45 | 6°30'31  | 6°23  | 16°54 | 10°33 | 6°18  | 1°29  | 28°10 | 20°42 | 9°51 | 23°43 | 25°22 |
| S 30 | 2 36 42 | 7°30'40  | 7°23  | 19°39 | 12° 9 | 6°45  | 1°35  | 28°12 | 20°43 | 9°51 | 23°43 | 25°23 |
| S 31 | 2 40 39 | 8°30'51  | 8°22  | 22°25 | 13°44 | 7°12  | 1°40  | 28°14 | 20°43 | 9°52 | 23°43 | 25°24 |

Delta T = 8.95 sec.

Greg. Calendar

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SWISS EPHEMERIS for the year 1688  
heliocentric

NOVEMBER 1688 GC

00:00 UT

| Day  | Sid.t   | Terra    | ☾     | ♃     | ♄     | ♅     | ♆    | ♁     | ♂     | ♆     | ♁     | ♂     |
|------|---------|----------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| M 1  | 2 44 35 | 9♁31'04  | 9♁22  | 25♂12 | 15♂19 | 7♁40  | 1♁45 | 28♁16 | 20♁44 | 9♁52  | 23♁43 | 25♁25 |
| T 2  | 2 48 32 | 10°31'17 | 10°23 | 28° 0 | 16°54 | 8° 7  | 1°50 | 28°18 | 20°45 | 9°52  | 23°43 | 25°26 |
| W 3  | 2 52 28 | 11°31'33 | 11°24 | 0♁49  | 18°29 | 8°34  | 1°55 | 28°19 | 20°45 | 9°53  | 23°44 | 25°27 |
| T 4  | 2 56 25 | 12°31'50 | 12°25 | 3°40  | 20° 4 | 9° 2  | 2° 1 | 28°21 | 20°46 | 9°53  | 23°44 | 25°28 |
| F 5  | 3 0 21  | 13°32'08 | 13°27 | 6°32  | 21°39 | 9°29  | 2° 6 | 28°23 | 20°47 | 9°54  | 23°44 | 25°28 |
| S 6  | 3 4 18  | 14°32'27 | 14°29 | 9°26  | 23°14 | 9°57  | 2°11 | 28°25 | 20°47 | 9°54  | 23°44 | 25°29 |
| S 7  | 3 8 14  | 15°32'49 | 15°31 | 12°23 | 24°49 | 10°24 | 2°16 | 28°27 | 20°48 | 9°54  | 23°45 | 25°30 |
| M 8  | 3 12 11 | 16°33'12 | 16°33 | 15°21 | 26°24 | 10°51 | 2°21 | 28°29 | 20°49 | 9°55  | 23°45 | 25°31 |
| T 9  | 3 16 8  | 17°33'37 | 17°36 | 18°23 | 27°59 | 11°19 | 2°27 | 28°31 | 20°49 | 9°55  | 23°45 | 25°32 |
| W10  | 3 20 4  | 18°34'03 | 18°38 | 21°27 | 29°34 | 11°47 | 2°32 | 28°33 | 20°50 | 9°55  | 23°45 | 25°33 |
| T 11 | 3 24 1  | 19°34'31 | 19°40 | 24°35 | 1♁ 9  | 12°14 | 2°37 | 28°35 | 20°51 | 9°56  | 23°45 | 25°34 |
| F 12 | 3 27 57 | 20°35'01 | 20°42 | 27°46 | 2°44  | 12°42 | 2°42 | 28°37 | 20°51 | 9°56  | 23°46 | 25°35 |
| S 13 | 3 31 54 | 21°35'33 | 21°44 | 1♁ 0  | 4°19  | 13° 9 | 2°47 | 28°39 | 20°52 | 9°56  | 23°46 | 25°36 |
| S 14 | 3 35 50 | 22°36'07 | 22°45 | 4°19  | 5°54  | 13°37 | 2°53 | 28°40 | 20°53 | 9°57  | 23°46 | 25°37 |
| M15  | 3 39 47 | 23°36'42 | 23°46 | 7°43  | 7°29  | 14° 5 | 2°58 | 28°42 | 20°54 | 9°57  | 23°46 | 25°38 |
| T 16 | 3 43 43 | 24°37'20 | 24°46 | 11°10 | 9° 4  | 14°32 | 3° 3 | 28°44 | 20°54 | 9°58  | 23°47 | 25°39 |
| W17  | 3 47 40 | 25°37'58 | 25°47 | 14°43 | 10°39 | 15° 0 | 3° 8 | 28°46 | 20°55 | 9°58  | 23°47 | 25°40 |
| T 18 | 3 51 37 | 26°38'39 | 26°46 | 18°22 | 12°13 | 15°28 | 3°13 | 28°48 | 20°56 | 9°58  | 23°47 | 25°40 |
| F 19 | 3 55 33 | 27°39'21 | 27°46 | 22° 6 | 13°48 | 15°56 | 3°19 | 28°50 | 20°56 | 9°59  | 23°47 | 25°41 |
| S 20 | 3 59 30 | 28°40'05 | 28°45 | 25°56 | 15°23 | 16°24 | 3°24 | 28°52 | 20°57 | 9°59  | 23°47 | 25°42 |
| S 21 | 4 3 26  | 29°40'50 | 29°44 | 29°53 | 16°58 | 16°51 | 3°29 | 28°54 | 20°58 | 9°59  | 23°48 | 25°43 |
| M22  | 4 7 23  | 0♁41'36  | 0♁44  | 3♁57  | 18°33 | 17°19 | 3°34 | 28°56 | 20°58 | 10° 0 | 23°48 | 25°44 |
| T 23 | 4 11 19 | 1°42'25  | 1°43  | 8° 7  | 20° 8 | 17°47 | 3°39 | 28°58 | 20°59 | 10° 0 | 23°48 | 25°45 |
| W24  | 4 15 16 | 2°43'14  | 2°42  | 12°26 | 21°42 | 18°15 | 3°45 | 29° 0 | 21° 0 | 10° 0 | 23°48 | 25°46 |
| T 25 | 4 19 12 | 3°44'05  | 3°41  | 16°52 | 23°17 | 18°43 | 3°50 | 29° 1 | 21° 0 | 10° 1 | 23°49 | 25°47 |
| F 26 | 4 23 9  | 4°44'56  | 4°40  | 21°27 | 24°52 | 19°11 | 3°55 | 29° 3 | 21° 1 | 10° 1 | 23°49 | 25°48 |
| S 27 | 4 27 6  | 5°45'49  | 5°39  | 26°10 | 26°27 | 19°39 | 4° 0 | 29° 5 | 21° 2 | 10° 2 | 23°49 | 25°49 |
| S 28 | 4 31 2  | 6°46'43  | 6°39  | 1♁ 3  | 28° 2 | 20° 8 | 4° 5 | 29° 7 | 21° 2 | 10° 2 | 23°49 | 25°50 |
| M29  | 4 34 59 | 7°47'37  | 7°39  | 6° 4  | 29°36 | 20°36 | 4°11 | 29° 9 | 21° 3 | 10° 2 | 23°49 | 25°51 |
| T 30 | 4 38 55 | 8♁48'32  | 8♁40  | 11♁14 | 1♁11  | 21♁ 4 | 4♁16 | 29♁11 | 21♁ 4 | 10♁ 3 | 23♁50 | 25♁52 |

Delta T = 8.87 sec.

Greg. Calendar

DECEMBER 1688 GC

00:00 UT

| Day  | Sid.t   | Terra    | ☾     | ♃     | ♄     | ♅     | ♆    | ♁     | ♂     | ♆     | ♁     | ♂     |
|------|---------|----------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| W 1  | 4 42 52 | 9♁49'28  | 9♁41  | 16♁33 | 2♁46  | 21♁32 | 4♁21 | 29♁13 | 21♁ 4 | 10♁ 3 | 23♁50 | 25♁53 |
| T 2  | 4 46 48 | 10°50'25 | 10°42 | 22° 2 | 4°21  | 22° 0 | 4°26 | 29°15 | 21° 5 | 10° 3 | 23°50 | 25°53 |
| F 3  | 4 50 45 | 11°51'22 | 11°44 | 27°39 | 5°56  | 22°29 | 4°31 | 29°17 | 21° 6 | 10° 4 | 23°50 | 25°54 |
| S 4  | 4 54 41 | 12°52'20 | 12°46 | 3♁24  | 7°31  | 22°57 | 4°37 | 29°19 | 21° 6 | 10° 4 | 23°51 | 25°55 |
| S 5  | 4 58 38 | 13°53'19 | 13°49 | 9°18  | 9° 6  | 23°25 | 4°42 | 29°21 | 21° 7 | 10° 4 | 23°51 | 25°56 |
| M 6  | 5 2 35  | 14°54'18 | 14°52 | 15°18 | 10°40 | 23°54 | 4°47 | 29°22 | 21° 8 | 10° 5 | 23°51 | 25°57 |
| T 7  | 5 6 31  | 15°55'18 | 15°55 | 21°25 | 12°15 | 24°22 | 4°52 | 29°24 | 21° 9 | 10° 5 | 23°51 | 25°58 |
| W 8  | 5 10 28 | 16°56'19 | 16°58 | 27°36 | 13°50 | 24°51 | 4°58 | 29°26 | 21° 9 | 10° 6 | 23°51 | 25°59 |
| T 9  | 5 14 24 | 17°57'21 | 18° 1 | 3♁52  | 15°25 | 25°19 | 5° 3 | 29°28 | 21°10 | 10° 6 | 23°52 | 26° 0 |
| F 10 | 5 18 21 | 18°58'24 | 19° 3 | 10°10 | 17° 0 | 25°48 | 5° 8 | 29°30 | 21°11 | 10° 6 | 23°52 | 26° 1 |
| S 11 | 5 22 17 | 19°59'27 | 20° 6 | 16°29 | 18°35 | 26°16 | 5°13 | 29°32 | 21°11 | 10° 7 | 23°52 | 26° 2 |
| S 12 | 5 26 14 | 21° 0'32 | 21° 8 | 22°48 | 20°10 | 26°45 | 5°18 | 29°34 | 21°12 | 10° 7 | 23°52 | 26° 3 |
| M13  | 5 30 11 | 22° 1'37 | 22°10 | 29° 5 | 21°45 | 27°14 | 5°24 | 29°36 | 21°13 | 10° 7 | 23°53 | 26° 4 |
| T 14 | 5 34 7  | 23° 2'43 | 23°12 | 5♁18  | 23°20 | 27°42 | 5°29 | 29°38 | 21°13 | 10° 8 | 23°53 | 26° 5 |
| W15  | 5 38 4  | 24° 3'50 | 24°13 | 11°26 | 24°55 | 28°11 | 5°34 | 29°40 | 21°14 | 10° 8 | 23°53 | 26° 6 |
| T 16 | 5 42 0  | 25° 4'57 | 25°14 | 17°29 | 26°30 | 28°40 | 5°39 | 29°42 | 21°15 | 10° 9 | 23°53 | 26° 7 |
| F 17 | 5 45 57 | 26° 6'05 | 26°15 | 23°24 | 28° 5 | 29° 9 | 5°44 | 29°43 | 21°15 | 10° 9 | 23°53 | 26° 7 |
| S 18 | 5 49 53 | 27° 7'14 | 27°15 | 29°12 | 29°40 | 29°38 | 5°50 | 29°45 | 21°16 | 10° 9 | 23°54 | 26° 8 |
| S 19 | 5 53 50 | 28° 8'24 | 28°15 | 4♁51  | 1♁15  | 0♁ 6  | 5°55 | 29°47 | 21°17 | 10°10 | 23°54 | 26° 9 |
| M20  | 5 57 46 | 29° 9'34 | 29°15 | 10°20 | 2°50  | 0°35  | 6° 0 | 29°49 | 21°17 | 10°10 | 23°54 | 26°10 |
| T 21 | 6 1 43  | 0♁10'45  | 0♁14  | 15°41 | 4°25  | 1° 4  | 6° 5 | 29°51 | 21°18 | 10°10 | 23°54 | 26°11 |
| W22  | 6 5 40  | 1°11'56  | 1°13  | 20°51 | 6° 0  | 1°33  | 6°11 | 29°53 | 21°19 | 10°11 | 23°55 | 26°12 |
| T 23 | 6 9 36  | 2°13'08  | 2°13  | 25°52 | 7°36  | 2° 2  | 6°16 | 29°55 | 21°19 | 10°11 | 23°55 | 26°13 |
| F 24 | 6 13 33 | 3°14'19  | 3°12  | 0♁44  | 9°11  | 2°32  | 6°21 | 29°57 | 21°20 | 10°11 | 23°55 | 26°14 |
| S 25 | 6 17 29 | 4°15'31  | 4°12  | 5°26  | 10°46 | 3° 1  | 6°26 | 29°59 | 21°21 | 10°12 | 23°55 | 26°15 |
| S 26 | 6 21 26 | 5°16'43  | 5°11  | 9°59  | 12°21 | 3°30  | 6°31 | 0♁ 1  | 21°21 | 10°12 | 23°55 | 26°16 |
| M27  | 6 25 22 | 6°17'55  | 6°11  | 14°23 | 13°56 | 3°59  | 6°37 | 0° 3  | 21°22 | 10°13 | 23°56 | 26°17 |
| T 28 | 6 29 19 | 7°19'06  | 7°11  | 18°39 | 15°32 | 4°28  | 6°42 | 0° 4  | 21°23 | 10°13 | 23°56 | 26°18 |
| W29  | 6 33 15 | 8°20'17  | 8°12  | 22°47 | 17° 7 | 4°58  | 6°47 | 0° 6  | 21°24 | 10°13 | 23°56 | 26°19 |
| T 30 | 6 37 12 | 9°21'28  | 9°13  | 26°47 | 18°42 | 5°27  | 6°52 | 0° 8  | 21°24 | 10°14 | 23°56 | 26°20 |
| F 31 | 6 41 9  | 10♁22'38 | 10♁14 | 0♁40  | 20♁18 | 5♁57  | 6♁58 | 0♁10  | 21♁25 | 10♁14 | 23♁57 | 26♁21 |

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