

INTENSITIES OF THE CORONAL EMISSION LINE 637.4 nm OBSERVED AT LOMNICKÝ ŠTÍT IN THE YEARS 1965—1976

V. RUŠIN, M. RYBANSKÝ, L. SCHEIRICH

*Astronomical Institute of the Slovak Academy of Sciences,
Skalnaté Pleso, Czechoslovakia*

Received 1 December 1977

Abstract: The tables bring the intensities of the coronal emission line 637.4 nm observed at Lomnický Štít in the years 1965—1976 obtained within the framework of the international service of corona.

The present paper brings the intensities of the coronal line 637.4 nm observed at the coronal station at Lomnický Štít contained within a framework of the international service of corona.

The intensities are taken in the height of 40' above the Sun's limb along the whole limb beginning in the North Pole of the Sun with the 5° step in the direction E, S, W, N. The intensities are expressed in the equivalent brightness of the Sun's spectrum in the centre of the same region (brightness of 10^{-7} nm is taken as a unit). The following data come from the period 1965—1976.

Lexa (1963) describes the coronagraph used for observation. Photometry of the coronal lines done at our station was organized according to the method described by Lexa (1965) and Rybanský (1967). Rušin and Rybanský (1969) proved certain systemic mistakes of this method and this was the reason, why we used new photometrical method proposed by Rybanský (1971) which did not have such defects. This method is used even today.

The intensities collected according to the new photometrical method are different from those which would have been collected by the help of the previous photometrical method. As we wanted to bring homogeneous sequence of intensities, we had to transfer the values of intensities taken according to the previous method into the values of the new method. Rybanský (1972) brings the table for the transfer of these values. The author states that the

accuracy of this method is $\pm 20\%$. The present paper comprises this transfer, so that all the data from the observed period are expressed in the same photometrical method and no other corrections are necessary. We must stress anyway that the accuracy of intensities from the period 1965—1976 is lower.

The first row shows the positional angle; the first column shows data of the observation; the second one time of observation expressed in UT. The sign x indicates that the intensity of particular positional angle was not taken for some reason.

Acknowledgment

We would like to express a great debt of gratitude to Dr. A. Futo from the Institute of Experimental Physics of the Slovak Academy of Sciences in Košice who processed the transfer of the values of intensities collected according to the previous photometrical method into the values of the new method using the computer NOVA.

References

- LEXA, J. (1963): Bull. Astron. Inst. Czechosl., 14, 107.
- LEXA, J. (1965): Publ. Astron. Inst. Czechosl., No. 51, 125.
- RUŠIN, V., RYBANSKÝ, M. (1969): Bull. Astron. Inst. Czechosl., 20, 300.
- RYBANSKÝ, M. (1967): Bull. Astron. Inst. Czechosl., 18, 51.
- RYBANSKÝ, M. (1971): Bull. Astron. Inst. Czechosl., 22, 122.
- RYBANSKÝ, M. (1972): Bull. Astron. Inst. Czechosl., 23, 239.

Table 1
Coronal intensities 637.4 nm

			1965																	1a			
Date	UT		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
July	24	07 ^h 36 ^m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	4	14	11	9	9
Aug.	6	10 36	0	0	0	0	0	0	0	0	9	8	11	5	3	0	0	5	14	8	11	9	0
	8	07 16	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	7	8	4	9	11	10
Sep.	18	09 59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	20	14	20
	21	08 13	0	0	0	0	0	0	0	0	0	0	0	0	3	9	0	0	0	0	0	14	10
	23	08 53	0	0	0	0	0	0	0	0	0	0	0	0	8	14	9	11	11	9	12	14	9
	24	08 18	0	0	0	0	0	0	0	0	0	0	8	11	13	5	0	0	0	14	9	14	20
Oct.	1	13 16	0	0	0	0	0	0	0	0	0	0	0	14	8	11	14	14	16	14	20	9	14
	2	09 35	0	0	0	0	0	0	0	11	0	0	0	9	16	17	25	21	18	14	27	21	20
	7	10 35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	10	10	8	20	15	12
	12	10 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	45	24	25
	14	09 37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	8	9	13	9	18	12
	18	13 20	0	0	5	0	0	0	7	0	0	0	0	12	13	11	13	7	10	14	9	11	10
	24	09 29	0	0	0	0	0	0	0	0	14	14	0	0	0	20	20	18	12	55	28	9	28
	25	09 28	0	0	0	0	0	0	0	0	0	0	8	3	3	6	5	4	30	38	15	2	18
	26	09 32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	10	16	22	12	14
	27	13 00	0	0	0	0	0	0	0	0	0	0	0	18	18	13	11	18	20	18	21	27	14
Nov.	6	09 44	0	0	0	0	0	0	0	0	0	0	0	0	9	11	12	15	17	8	13	18	15
	7	11 39	0	0	0	0	0	0	0	0	10	8	6	5	13	4	9	9	7	9	13	17	
	9	10 10	0	0	0	0	0	0	0	0	21	8	2	3	9	19	7	20	6	9	14	17	
	17	12 32	0	0	0	0	0	0	0	9	7	7	8	9	10	12	15	18	19	16	14	10	9
	24	12 45	0	0	0	0	0	0	0	3	10	20	13	9	14	18	16	14	16	26	21	18	20
Dec.	9	13 22	0	0	0	0	0	0	0	0	0	0	0	0	14	16	14	9	14	14	18	13	10

																							1b		
105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
9	3	12	10	9	5	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	14
13	9	11	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	8	7
22	13	14	22	14	12	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	13	19	14	16	18	14	9	9	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	15	14	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	17	
23	18	22	17	15	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	17	
14	15	15	14	14	15	16	0	0	12	0	0	0	0	0	0	0	12	12	9	9	9	9	13	21	14
14	26	10	12	10	10	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	14	11	13
10	12	6	9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	13	
16	19	11	15	20	11	14	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
24	15	34	20	12	18	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	8	7	7
5	9	14	14	12	14	13	14	8	0	0	0	5	0	0	0	0	0	8	0	0	10	9	11	8	14
20	21	14	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
13	13	16	20	2	6	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	
13	13	14	12	9	15	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	10	
22	17	15	14	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	11	

1b (Continued)

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
14	12	15	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	11	9	10
11	3	11	4	6	7	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	19	8	20	14	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	5	9	9	3	16	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	15	17	18	14	13	12	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

1c

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	12	12	14	16	9	12	12	14	19	22	16	11	0	0	0	0	0	0	0	0	0	0	0	0
11	10	7	7	16	15	9	7	10	14	15	14	9	4	8	0	0	0	0	0	0	0	0	0	0
0	0	27	22	20	16	19	34	25	25	19	20	17	14	0	0	0	0	0	0	0	0	0	0	0
0	11	10	17	15	9	14	17	14	22	16	20	14	0	0	0	0	0	0	0	0	0	0	0	0
19	15	9	14	15	16	20	19	25	22	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0
13	17	18	16	20	17	20	25	14	9	18	17	14	3	0	0	0	0	0	0	0	0	0	0	0
14	13	12	22	17	12	10	10	21	17	13	13	14	9	8	6	4	0	0	0	0	0	0	0	0
21	6	19	17	9	7	14	15	17	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0
24	18	23	57	57	19	15	12	9	15	28	13	21	14	11	4	0	0	0	0	0	0	0	0	0
12	48	45	8	21	21	26	19	38	39	33	11	6	13	16	0	0	0	0	0	0	0	0	0	0
9	18	9	11	16	15	18	15	19	16	20	19	14	8	9	0	0	0	0	0	0	0	0	0	0
9	17	17	10	12	10	13	20	14	13	20	14	21	19	17	9	5	3	9	6	0	0	0	0	0
14	16	16	12	14	12	12	11	11	20	13	9	7	0	0	0	0	0	0	0	0	0	0	0	0
5	9	12	13	9	9	10	8	4	3	8	16	9	0	0	0	0	0	0	0	0	0	0	0	0
14	18	17	28	3	14	14	16	10	15	19	22	22	0	0	0	0	0	0	0	0	0	0	0	0
17	16	20	16	25	12	19	9	12	14	6	20	35	15	0	0	0	0	0	0	0	0	0	0	0
8	7	14	21	16	12	15	24	56	32	11	21	21	9	7	8	0	0	0	0	0	0	0	0	0
8	12	5	9	3	18	17	10	42	17	11	3	11	0	0	0	0	0	0	0	0	0	0	0	0
12	20	18	14	21	21	19	15	19	13	14	14	4	23	9	17	5	0	0	0	0	0	0	0	0
0	11	3	14	13	14	15	19	19	13	14	32	29	14	14	0	0	0	0	0	0	0	0	0	0
0	12	10	18	12	22	11	15	19	18	16	19	17	5	0	0	0	0	0	0	0	0	0	0	0
0	0	11	12	7	4	14	14	9	11	11	11	9	0	0	0	0	0	0	0	0	0	0	0	0

1966

2a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	25 12 ^h 05 ^m	0	0	0	0	0	0	0	0	0	0	0	0	17	5	1	11	5	8	18	8	12
	26 13 50	0	0	0	0	0	0	0	0	0	0	8	19	18	25	15	13	0	0	0	0	7
	29 12 20	0	0	0	0	0	0	0	0	0	0	7	7	9	13	10	6	7	7	7	11	11
May	4 09 09	0	0	0	0	0	0	0	9	10	10	12	33	15	13	11	10	13	9	14	14	12
	5 09 46	0	0	0	0	0	0	0	6	10	6	17	12	12	7	10	15	7	6	7	9	11
	13 08 35	0	0	0	0	0	0	0	0	0	0	10	15	12	12	12	13	13	13	13	21	14
	25 06 56	0	0	0	0	0	0	0	0	0	0	0	0	6	19	10	5	8	3	5	10	7
June	1 06 30	0	0	0	0	0	0	0	0	0	0	10	9	30	24	23	15	13	14	6	13	0
	3 09 14	0	0	0	0	0	0	0	0	0	0	0	22	20	0	20	5	14	0	0	0	0
	4 12 35	0	0	0	0	0	0	0	0	0	0	0	0	8	14	26	20	18	18	18	17	17
	16 06 20	9	2	5	3	5	5	7	6	2	7	5	7	7	2	7	12	14	13	19	16	7

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
July	13 08 20	0	0	0	0	0	0	14	13	5	7	8	21	16	55	15	10	12	14	12	10	15
	30 09 27	0	0	0	0	0	0	0	5	5	8	8	13	18	35	18	9	5	9	8	10	13
Aug.	5 06 36	0	0	0	0	0	0	0	0	0	4	8	16	12	8	5	3	9	8	14	11	8
	11 07 06	0	0	0	0	9	8	9	13	14	12	13	23	14	12	12	14	10	2	11	14	7
	13 07 13	12	10	7	5	14	7	5	17	4	9	4	8	9	5	10	20	9	7	10	11	7
	14 07 40	5	6	6	4	7	5	7	10	16	13	7	6	4	15	14	8	8	19	16	13	8
	17 12 35	0	0	0	0	0	0	0	0	16	17	0	0	0	0	0	28	11	16	10	9	13
	18 08 22	0	0	0	0	0	0	0	0	0	11	20	19	11	21	16	11	5	7	9	7	8
	28 09 35	0	0	0	0	0	0	0	0	0	8	14	14	10	7	5	7	15	16	18	20	8
	29 08 07	15	5	0	0	0	0	0	0	0	0	6	10	16	10	16	17	12	6	9	14	9
	30 08 05	0	0	0	0	0	0	0	0	0	0	0	13	2	6	10	10	18	13	8	12	7
	Sep.	10 07 50	0	0	0	0	0	0	0	6	11	10	9	8	7	9	8	8	10	13	11	10
19 13 58		3	0	0	0	0	0	0	0	5	9	16	16	45	70	17	18	18	7	14	23	26
25 09 20		0	0	0	0	0	0	0	0	0	0	10	12	6	9	6	15	11	13	8	12	10
27 08 30		0	0	0	0	0	0	0	0	0	0	0	0	0	12	29	12	16	27	24	13	24
Oct.	5 11 00	0	0	0	0	0	0	0	0	0	0	0	14	23	43	57	24	20	21	18	12	15
	6 08 58	0	0	0	0	0	0	0	0	0	0	15	14	15	80	47	55	31	24	18	21	4
	7 08 35	0	0	0	0	0	0	0	0	0	0	0	0	15	22	73	21	20	18	12	16	15

2b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
12	7	10	12	8	9	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	22	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	6	10	14	11	9	9	10	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	14	15	13	14	13	12	12	11	11	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
11	11	12	10	11	8	8	8	7	6	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	9	11
31	23	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	9	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	11	7	12	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	13	14	13	9	10	12	14	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
11	16	8	4	10	10	12	8	7	6	12	0	0	14	0	0	0	0	4	0	4	11	10	7	10	10	
13	10	9	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	7	14	8	9	12	
12	11	10	11	18	13	12	11	10	8	11	9	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	3	
6	1	2	5	9	0	0	0	0	0	0	0	0	0	0	0	0	13	9	7	9	15	6	9	6	6	
7	10	5	9	2	9	9	0	0	0	0	0	0	6	4	0	0	0	0	0	15	9	6	8	8	8	
10	14	6	5	5	6	6	14	7	0	0	0	0	0	0	0	0	0	0	11	6	9	9	10	10	10	
19	13	21	12	5	13	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	6	7	2	9	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	19	10	12	13	6	16	0	0	0	0	0	0	0	0	0	0	0	0	0	11	15	10	32	32	32	
7	14	14	9	14	11	12	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	14	16	14	21	
13	7	8	6	11	11	10	10	5	1	0	0	0	0	0	0	0	0	0	0	0	9	10	4	3	3	
6	28	24	20	10	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	23	29	12	12	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11
20	19	11	14	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9
6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	35	31	11	8	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13	13	
25	13	40	19	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	13	10	
21	22	11	18	19	6	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	18	18	

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
0	9	5	3	4	8	9	5	15	59	31	18	15	19	12	16	6	0	0	0	0	0	0	0	0
0	0	0	0	0	4	5	17	18	168	26	17	20	16	33	19	0	0	0	0	0	0	0	0	0
0	12	15	16	6	7	8	9	10	15	16	9	16	24	19	15	7	8	12	0	0	0	0	0	0
16	9	11	16	20	18	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	17	13	12	20	17	12	12	16	6	15	38	24	15	17	10	5	0	0	0	0	0	0	0	0
0	14	16	19	21	20	13	13	16	19	21	14	12	0	0	0	0	0	0	0	0	0	0	0	0
12	10	9	2	9	5	13	10	7	3	20	16	14	0	0	0	0	0	0	0	0	0	0	0	0
0	22	19	15	10	10	9	7	8	37	16	13	15	7	5	0	0	0	0	0	0	0	0	0	0
12	10	12	32	13	18	15	16	12	11	8	22	19	5	15	12	0	0	0	0	0	0	0	0	0
10	7	5	17	13	16	14	12	15	20	9	3	33	10	17	16	8	2	6	0	0	0	0	0	0
7	0	11	15	10	7	9	5	6	6	11	33	5	17	0	0	0	0	0	0	0	0	0	0	0
12	9	14	12	14	12	5	10	8	6	38	12	33	25	12	18	7	9	10	0	0	0	0	0	0
0	11	18	13	12	11	10	8	11	9	14	15	16	16	18	20	0	0	0	0	0	0	0	0	0
10	20	14	11	14	17	9	0	0	0	0	0	0	0	16	10	9	0	0	0	0	0	0	0	0
12	16	18	17	12	11	7	7	6	6	21	19	9	33	9	17	14	9	9	4	10	10	0	0	0
7	7	24	14	14	13	13	12	5	12	3	3	0	0	0	0	0	0	0	0	0	0	6	3	0
7	11	5	11	10	14	12	7	7	8	12	19	11	9	10	12	9	0	0	0	0	0	5	6	3
0	13	13	10	14	13	14	18	14	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	13	20	19	12	9	14	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	25	25	7	22	18	17	23	33	25	19	9	11	0	0	0	0	0	0	0	0	0	0	0	0
14	25	25	24	16	23	12	8	13	16	15	17	20	9	4	10	0	0	0	0	0	0	0	0	12
14	12	12	10	8	9	21	26	13	6	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
10	18	20	14	15	16	18	12	10	7	12	14	5	0	0	0	0	0	0	0	0	0	0	0	0
12	13	30	20	12	21	19	20	10	10	21	21	15	0	0	0	0	0	0	0	0	0	0	0	0
7	7	15	9	11	11	26	2	18	5	11	15	17	0	0	0	0	0	0	0	0	0	0	0	0
7	9	19	9	10	17	12	11	7	25	24	19	0	0	0	0	0	0	0	0	0	0	0	0	0
10	9	33	43	32	40	13	10	16	15	12	4	17	15	4	0	0	0	0	0	8	9	8	9	6
10	19	23	41	52	19	25	21	15	9	22	20	14	17	0	0	0	0	0	0	0	0	0	0	0
14	18	31	33	95	35	24	22	13	36	12	15	10	13	20	0	0	0	0	0	0	0	0	0	0

1967

3a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
Jan.	10 11 ^h 50 ^m	3	3	5	1	2	3	6	5	5	0	0	0	0	5	4	8	15	14	16	26	19	
	21 12 56	0	0	0	0	0	0	0	0	0	12	9	31	16	35	23	24	15	18	16	8	10	
Feb.	16 10 56	0	5	5	10	7	0	0	0	0	0	5	18	38	25	19	18	12	17	19	13	22	
March	5 10 37	0	0	0	0	0	0	0	0	0	18	17	17	28	28	59	31	18	18	17	21	17	
	7 09 14	0	0	0	0	0	0	0	0	0	12	10	9	20	39	41	39	16	13	19	12	17	
Apr.	16 14 51	0	0	0	0	0	0	0	0	0	0	10	10	20	14	9	22	7	2	10	17	16	
May	7 07 50	0	0	5	6	8	10	5	8	9	7	9	6	9	11	13	15	9	0	0	0	0	
	11 06 32	0	0	0	0	0	0	0	0	0	0	0	6	16	17	10	10	10	0	3	4	6	
	12 07 37	0	0	0	0	0	0	0	0	0	0	0	0	12	28	12	9	9	4	0	4	4	
	13 08 14	0	0	0	0	0	0	0	7	9	9	4	9	6	11	25	10	0	5	5	6	9	
	14 08 54	0	0	0	0	0	0	0	0	0	0	0	0	0	17	18	36	16	15	9	18	15	26
	21 09 05	3	10	6	4	5	0	0	0	0	6	10	8	8	9	45	12	19	15	6	5	5	
	29 14 15	0	3	6	0	0	0	0	0	0	0	0	7	7	9	18	12	5	9	10	11	12	
June	6 11 20	3	3	3	3	4	5	6	7	5	6	7	9	16	9	5	5	6	5	11	10	9	

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
July	1 08 20	4	7	7	7	5	6	5	6	5	7	5	5	29	22	23	6	8	5	12	14	17
	2 07 15	10	5	17	9	14	6	14	12	8	10	7	5	11	14	45	16	15	7	16	12	20
	25 07 20	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Aug.	1 08 12	0	0	0	0	0	0	0	0	0	0	0	19	27	36	18	22	16	12	11	0	0
	9 07 00	0	0	0	0	9	8	0	0	0	0	0	4	6	4	12	9	2	7	10	12	10
	17 07 50	0	0	0	0	0	0	0	0	0	0	12	19	12	32	12	20	37	6	7	9	7
	18 10 46	0	0	0	0	0	0	0	0	0	4	9	6	12	25	24	26	30	10	16	5	5
Sep.	23 09 15	0	0	0	0	0	0	0	0	0	0	0	0	14	29	20	30	24	22	0	0	0
	29 08 15	0	0	0	0	0	0	0	9	6	12	7	17	18	62	10	5	16	11	13	10	8
	30 09 10	0	5	0	1	6	6	6	5	13	8	8	10	22	13	10	11	15	14	8	7	8
Oct.	14 08 56	4	8	7	5	6	8	5	9	3	6	14	3	14	8	23	29	30	33	24	16	17
	22 12 04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	5	6	7	8	21
	23 12 17	0	0	0	0	0	0	0	0	0	0	0	0	0	7	4	17	7	7	14	17	18
	24 09 18	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	12	9	11	11	9	28
Nov.	2 09 16	7	0	0	7	3	0	0	4	12	5	5	10	10	11	26	7	9	9	11	14	17
	20 11 58	0	0	0	0	0	0	0	0	0	0	0	0	0	6	21	12	19	10	11	3	15
Dec.	1 17 07	0	0	0	0	0	0	0	0	8	9	10	7	11	17	24	19	18	5	4	3	7
	12 11 32	0	0	0	0	0	0	0	0	0	0	0	0	13	12	8	12	13	0	0	0	0
	28 12 43	8	9	5	0	0	0	0	0	0	0	7	9	10	8	14	56	23	11	0	0	7

3b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
12	9	16	14	13	11	x	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	27	21	0	0	0	0	9	5	5	10	6	0	0	0	0	0	0	0	0	0	0	0	8	16	4	9
10	24	29	9	11	0	0	5	11	9	8	8	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0
15	28	33	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	10	11	10	0	0	0	0
18	19	10	5	6	0	0	0	0	0	0	0	0	0	0	0	0	6	9	9	8	8	5	9	13		
17	24	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	14
0	12	16	25	18	9	16	9	2	0	0	0	7	3	7	7	2	0	8	0	0	8	0	0	0	0	0
17	16	8	23	9	11	7	4	11	5	0	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	9
17	5	7	15	14	4	4	4	4	2	3	3	0	0	0	0	0	3	0	0	0	4	3	2	2	3	
53	6	14	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8	8	3	9	7		
38	7	14	20	8	0	0	0	7	5	6	6	6	5	0	0	0	0	0	0	0	0	0	11	12	9	
7	3	13	6	12	9	15	18	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
9	9	10	14	7	6	5	0	0	6	9	5	0	0	0	0	0	0	0	0	0	0	7	6	5	5	
16	6	10	6	7	8	6	5	3	6	5	0	0	0	0	0	0	0	0	5	5	4	4	4	5	4	
27	52	88	22	11	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	7	14	7	9	
31	39	27	22	22	7	8	7	9	5	9	15	6	8	0	0	0	0	0	0	0	13	14	11	19	10	
x	x	x	x	x	x	x	x	x	x	x	x	x	4	2	3	3	3	4	5	12	11	4	3	10	3	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	14	20	
16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	7	35	22	18	7	11	8	10	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	11	15	43	52	18	2	4	6	7	8	0	0	0	0	0	0	0	0	8	3	5	8	11	7	5	
55	19	30	29	30	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	14	18	6	10	1	8	12	7	8	7	0	0	0	0	0	0	9	8	17	13	9	13	11	9		
19	19	20	9	8	7	7	10	8	10	13	9	13	9	4	3	5	5	11	11	7	11	10	7	7	7	

3b (Continued)

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
12	3	0	0	0	0	1	6	11	9	10	5	0	2	3	1	4	2	x	x	x	x	x	x	x	x
25	14	20	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	22	17	16	23	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	89	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	16	18	14	0	0	7	17	0	0	0	0	0	0	0	0	0	0	0	14	8	0	0	7	10	8
34	19	x	x	x	x	x	x	22	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	7	3
5	10	4	6	7	10	13	0	0	6	4	11	8	0	0	0	0	4	8	9	5	0	0	9	19	11
0	0	0	0	0	0	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	22	37	31	15	6	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	9

3c

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
4	5	9	6	7	7	5	7	14	17	20	18	32	12	9	10	9	4	8	0	0	0	0	0	0
11	13	24	16	9	12	23	13	12	5	10	8	6	0	0	0	0	0	0	0	0	0	0	0	0
0	15	17	9	6	14	8	12	22	38	21	26	13	22	12	0	0	0	0	0	10	9	8	0	0
18	16	70	19	23	20	23	26	15	15	22	24	35	15	10	0	0	0	0	0	0	0	0	0	0
10	5	19	20	39	28	14	7	12	18	21	23	22	10	9	8	0	0	0	0	11	10	8	8	0
24	31	16	19	11	9	8	22	22	10	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	19	15	7	8	9	11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	12	24	6	51	12	14	10	9	9	8	3	7	12	11	5	8	0	0	0	0	0	0	0	0
9	18	10	12	10	7	10	6	5	5	8	6	12	6	9	6	5	0	0	0	0	0	0	0	0
16	27	19	17	21	16	29	13	5	19	8	7	18	3	5	17	9	2	4	8	6	5	3	0	0
13	22	11	16	16	15	20	18	13	15	25	17	30	8	13	15	8	0	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	7	5	10	23	15	7	21	25	6	9	10	9	10	24	15	0	0	0	0	0	0	0	0	0
7	9	12	6	10	9	5	12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	8	8	7	15	9	8	9	5	33	55	55	9	5	42	35	7	0	0	0	0	0	0	10	13
8	24	16	19	12	14	12	16	16	25	58	32	37	7	x	x	13	7	11	8	9	9	10	11	14
3	2	3	12	4	11	1	8	9	8	17	24	8	6	6	7	7	2	7	10	8	8	10	9	4
49	15	26	15	17	14	14	15	12	11	9	14	9	0	0	0	0	0	0	0	0	0	0	0	0
11	24	12	14	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	8	15	0	0	0	8	12	11	6	14	28	51	6	4	4	5	12	0	0	0	0	0	0
4	15	14	55	3	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
0	0	0	0	0	0	0	0	35	26	17	20	27	10	0	0	0	0	0	0	0	0	0	0	0
8	6	22	14	18	17	15	18	17	9	31	15	14	30	17	4	3	0	0	0	0	0	0	0	0
6	9	12	15	12	21	14	18	13	14	21	15	8	6	9	4	2	7	7	8	3	4	5	4	4
x	11	5	13	11	12	6	14	4	16	10	1	22	9	9	9	4	3	x	8	x	x	x	8	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	14	19	28	14	7	8	14	18	16	16	17	12	14	9	12	10	0	0	0	0	0	0	0	0
0	0	0	11	29	9	9	5	11	16	28	19	0	0	0	0	0	0	0	0	0	0	0	0	0
11	15	14	20	8	15	18	19	18	9	19	3	5	16	2	0	0	0	0	0	0	0	8	7	8
18	15	24	13	x	18	0	0	0	24	34	22	14	0	0	0	0	9	10	13	10	8	0	0	0
14	14	19	0	0	11	18	10	5	4	8	8	14	5	0	0	6	5	6	0	1	2	0	0	0
0	0	10	11	24	25	12	9	12	18	16	9	13	15	6	9	x	x	x	x	0	13	0	0	0
7	0	13	43	60	47	22	8	x	8	22	74	32	10	12	7	0	0	0	0	0	0	9	6	0

1968

4a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
Jan.	4 12 ^h 00 ^m	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	8	x
Feb.	6 12 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	15	0	0	0	0	0	13
March	3 12 53	0	0	0	0	0	0	0	0	0	0	14	10	13	10	9	0	0	11	15	14	x	
	29 08 26	8	7	6	8	3	7	0	0	0	0	0	3	10	11	3	6	2	8	5	10	24	
	31 08 58	x	x	9	10	x	8	13	8	6	10	9	20	17	27	13	8	6	8	11	19	13	
Apr.	20 08 07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	
May	9 06 12	0	0	0	0	0	0	0	0	0	0	0	0	15	7	11	13	9	5	18	5	0	
	11 08 10	11	8	13	0	0	0	0	0	0	0	0	0	18	20	13	8	25	11	12	0	0	
	16 07 14	0	0	0	0	0	0	0	0	0	0	0	9	7	12	6	10	0	0	0	0	8	
	24 09 01	16	15	10	0	0	0	0	0	0	0	6	14	50	14	54	11	13	15	7	6	15	
June	7 06 01	9	10	3	6	6	6	9	13	7	0	0	0	5	7	4	14	12	12	9	0	0	
	12 06 12	0	0	0	0	0	0	0	0	0	0	0	7	18	11	15	18	7	0	0	8	25	
	13 06 04		0	0	0	0	0	0	0	0	0	0	6	17	13	41	44	4	0	0	20	32	
	14 08 45	0	0	0	0	0	0	0	0	0	0	0	0	0	10	14	36	12	9	12	13	9	
	15 06 57	0	0	0	0	0	0	0	0	0	0	4	6	7	6	4	12	2	8	8	5	5	
	16 07 00	7	7	12	7	6	11	14	14	7	4	5	7	3	4	5	6	17	10	8	11	4	
	23 07 35	7	9	8	8	5	12	6	5	8	5	7	13	17	9	21	25	14	10	11	34	31	
July	1 07 52	0	0	0	0	0	0	0	0	0	0	0	0	9	10	7	23	8	11	11	11	16	
	4 07 15	5	7	6	6	7	7	5	0	0	0	0	0	0	5	7	9	27	19	6	0	0	
	5 07 15	0	0	0	0	0	0	0	0	0	0	0	26	33	21	18	9	7	0	0	0	0	
	6 08 52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	19	33	20	19	0	0	
	8 08 19	0	0	0	0	0	0	0	0	0	0	0	0	0	11	14	11	21	16	19	5	7	10
	10 13 56	0	0	0	0	0	0	0	0	0	0	0	0	0	11	9	14	6	10	11	8	20	
Aug.	1 08 35	8	5	5	1	5	7	7	12	11	4	5	7	30	8	7	18	40	26	12	9	14	
	5 07 15	4	6	7	3	3	7	12	8	4	4	3	5	6	9	85	51	10	7	13	21	9	
Sep.	27 09 35	10	4	10	12	7	10	13	21	5	1	6	4	7	13	6	7	9	3	6	17	12	
	28 09 57	16	8	8	9	10	7	4	3	4	4	7	13	7	13	40	5	12	16	12	11	24	
	29 12 45	8	12	6	7	6	5	4	12	6	9	6	8	12	15	59	18	7	18	4	10	14	
Oct.	4 08 33	8	6	1	2	3	4	8	9	7	0	0	0	0	1	4	16	18	14	9	18	5	
	17 10 50	1	7	4	4	6	5	4	3	2	4	4	3	6	15	13	10	11	9	2	4	6	
	27 08 55	5	9	10	10	9	7	9	12	4	0	0	0	0	20	12	9	8	14	15	7	20	
	28 09 24	9	4	19	7	11	11	14	12	4	3	3	3	8	23	14	6	23	15	7	15	24	
Nov.	23 10 23	7	8	7	9	9	8	7	10	12	5	4	6	3	2	4	8	3	5	0	0	8	
	26 10 57	7	7	8	8	5	6	7	7	6	7	8	5	3	7	10	13	7	0	0	0	0	
	27 10 35	4	4	2	5	3	4	4	5	0	4	12	7	4	4	5	4	7	4	4	0	0	
	28 10 10	13	11	10	8	11	8	6	9	6	6	22	16	11	11	13	13	12	0	0	0	0	
	30 09 55	6	3	6	2	8	8	4	5	5	4	6	4	17	13	11	21	15	15	7	7	11	
Dec.	1 10 20	1	5	4	5	7	6	9	3	2	4	11	16	6	23	21	26	9	9	6	6	7	
	2 09 40	0	0	0	0	0	0	0	0	0	8	7	11	13	47	22	28	5	8	8	8	13	
	3 10 14	0	0	0	0	0	0	0	0	0	0	10	19	24	21	17	9	8	6	9	10	18	
	6 09 47	0	0	0	0	0	0	0	0	0	0	0	16	17	21	20	25	32	15	19	16	22	
	7 09 58	6	12	9	8	4	8	12	12	6	5	5	4	4	18	20	19	11	8	10	9	13	
	8 10 10	8	9	10	12	13	15	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	
	9 09 36	12	7	6	8	7	10	9	7	8	3	4	5	6	8	26	15	10	8	7	13	9	
	10 10 26	10	11	8	5	8	8	10	11	8	8	7	6	5	14	14	20	13	6	14	9	6	
	11 10 48	0	0	0	0	0	0	0	0	0	0	0	0	9	9	7	11	4	5	6	7	8	
	12 11 39	0	0	0	0	11	9	8	14	15	8	11	10	9	8	10	8	11	9	10	2	2	
	15 12 46	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	27	17

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
x	x	16	26	x	x	x	x	27	32	13	13	16	29	0	0	0	0	0	0	0	13	10	5	x	x
11	10	7	x	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
x	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	16	17	19
38	6	9	6	3	0	0	0	0	0	0	0	0	0	0	0	6	2	6	3	0	0	11	7	8	7
15	7	13	21	20	19	91	106	19	23	52	x	x	0	0	7	4	x	9	5	9	12	9	18	11	6
26	21	15	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	21	7	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	21	16	16	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x
6	22	11	9	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	14	9	5	7	16	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
0	0	8	15	5	5	5	8	14	5	5	5	4	0	0	0	0	0	0	0	0	6	7	10	10	15
10	19	16	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	6
10	8	11	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	10	4	7
19	19	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	26	13	8	5	0	0	0	0	1	8	4	3	5	1	5	6	6	0	0	0	0	0	0	0	0
68	78	1	3	5	0	0	0	0	0	0	0	0	6	7	0	0	0	0	0	0	0	0	0	0	0
20	14	22	53	10	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8	13	11	5	3	19
3	11	0	0	0	0	0	0	0	0	0	7	5	6	9	13	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	7	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
12	15	8	4	10	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	12	7	5	8	9	11	6	5	0	0	0	0	9	5	0	0	0	0	0	0	0	0	8	14	7
1	2	7	10	1	0	0	0	0	0	0	0	0	5	5	4	0	0	0	0	0	0	0	0	0	0
14	5	21	11	10	5	8	12	4	0	0	0	0	0	0	0	0	0	0	0	0	0	7	11	12	
24	24	23	24	20	19	20	15	3	6	3	7	4	9	7	5	4	5	2	5	5	4	6	7	9	7
52	29	58	10	17	14	14	15	8	9	9	10	10	4	6	8	5	6	5	6	7	6	5	7	6	2
5	37	7	6	7	9	11	14	15	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	7	6	6	3	3	5	4	4	4	4	4	4	3	3	0	0	0	0	0	0	4	4	6	7	3
38	19	0	0	0	0	0	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	31	4	9	15	4	12	15	9	2	5	5	6	6	5	6	3	5	5	6	8	10	5	5	3	2
12	9	9	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
0	0	0	0	6	5	14	5	4	3	3	3	11	9	0	0	0	0	5	5	5	5	0	0	0	0
0	0	0	0	1	2	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	9	0	0	0	0	0	16	13	5	5	5	10	8	0	0	0	0	0	0	0	0	0	0	0	0
3	10	19	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8	4	33	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	12	31	9	3	5	12	6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	10	14	12	9	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	12	15	19	11	6	12	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	8	15	14	15	11	7	7	6	7	10	6	4	3	0	0	0	0	0	0	6	11	9	10	11
22	7	12	13	4	10	8	12	11	11	10	9	8	5	3	0	0	0	8	6	5	9	14	10	5	6
2	12	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	4	2	6
9	20	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	23	12	18	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
11	x	x	x	x	x	22	9	16	16	29	19	5	10	0	0	0	0	0	0	0	0	0	x	x
8	14	9	75	51	16	16	10	5	27	16	8	0	0	0	0	0	0	0	0	0	0	0	0	0
8	10	10	14	2	8	12	14	19	22	9	15	0	0	0	0	10	15	10	8	5	14	x	7	x
5	11	9	11	16	7	4	7	16	19	12	7	2	3	6	6	7	8	7	8	5	0	0	0	0
7	21	20	19	91	106	19	23	52	x	x	25	29	33	9	7	6	9	10	8	12	5	9	6	7
0	0	0	0	0	0	0	0	14	10	17	14	14	10	10	0	0	0	0	0	0	0	0	0	0
0	0	0	11	10	19	5	9	27	27	22	13	3	0	0	0	0	0	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
0	0	0	0	0	0	0	0	0	11	44	26	15	18	0	0	0	0	0	0	0	0	0	0	0
8	25	10	4	0	0	0	7	16	22	8	17	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	9	14	4	6	9	5	9	21	46	23	28	13	10	7	10	7	8	8	8	5	5	6	6
11	8	13	7	8	9	9	5	14	11	16	14	25	7	8	4	15	0	0	0	0	0	0	0	0
7	9	5	9	14	8	6	6	8	11	17	12	14	11	11	10	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	6	16	14	23	6	11	8	26	23	49	49	17	16	0	0	0	0	0	0	0	0	0	0	0
0	0	5	5	28	12	4	5	22	43	32	75	27	15	11	8	6	9	9	7	0	0	0	0	0
17	5	3	19	3	9	7	4	16	14	11	5	5	3	0	0	0	0	0	0	0	0	0	0	0
0	0	4	38	24	15	6	4	15	11	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0
6	8	6	19	37	14	9	12	42	20	4	5	11	10	16	10	6	8	3	7	7	5	5	3	5
29	21	17	15	39	5	14	10	19	16	16	11	7	18	9	0	0	0	0	0	0	0	0	0	0
18	10	5	13	27	14	11	12	x	21	30	10	11	32	21	10	0	0	0	0	0	0	0	0	0
12	5	10	9	21	12	5	15	13	13	15	11	10	14	13	10	0	0	0	0	0	0	0	0	0
0	0	0	9	10	9	9	12	9	14	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	9	18	11	9	9	11	12	22	27	16	35	33	20	8	4	7	3	4	6	7	8	8	6	6
5	5	8	7	6	8	12	18	14	11	10	14	8	7	18	8	6	10	9	10	8	4	7	6	6
6	5	18	7	22	49	9	13	11	10	26	29	36	12	10	7	0	0	0	6	9	7	9	11	9
4	3	9	15	13	33	13	13	12	20	19	19	33	20	11	6	9	6	1	7	9	12	9	13	1
6	9	13	6	17	16	5	15	14	9	9	9	23	7	8	7	5	5	3	3	7	7	8	10	9
0	0	0	11	7	7	5	12	25	21	33	19	12	8	5	6	10	10	12	8	2	0	0	0	0
5	4	4	4	5	5	3	2	7	7	4	5	3	4	6	6	5	4	4	4	4	5	4	7	7
0	0	0	0	27	16	37	4	13	15	6	13	15	27	12	7	6	1	4	9	6	4	4	10	7
5	2	7	3	8	4	40	18	15	25	36	25	9	20	15	10	10	10	6	10	14	5	5	5	10
5	5	10	7	6	6	4	4	10	15	18	14	9	9	9	0	0	0	0	0	0	0	5	6	7
0	0	0	0	0	0	0	0	4	4	17	7	4	3	4	4	5	6	9	8	7	6	4	5	8
0	0	0	0	0	0	5	2	4	4	6	5	4	5	3	3	4	5	6	5	5	5	4	1	5
10	16	19	16	0	0	0	11	7	9	19	x	6	7	4	10	10	10	12	16	13	8	9	12	3
8	10	19	9	11	6	8	5	3	2	9	24	4	8	4	6	9	8	7	11	6	7	4	9	8
6	12	16	5	38	9	0	0	0	0	12	9	8	7	3	9	8	9	9	5	6	4	10	4	4
15	11	26	11	27	20	7	7	6	9	3	6	13	7	9	7	10	10	11	12	11	12	0	0	0
11	14	9	13	21	24	23	20	10	12	6	5	9	8	8	7	8	13	17	8	13	14	8	8	8
0	0	49	26	44	11	12	23	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	12	13	12	7	7	8	16	19	11	13	3	9	8	11	15	14	14	9	9	8	9	11	9
12	14	17	15	15	4	0	8	24	18	7	7	10	8	18	11	13	12	16	6	7	6	7	8	10
8	8	8	8	14	13	14	15	15	13	4	8	9	10	6	7	11	13	15	12	7	9	10	9	10
7	8	5	7	15	17	5	1	3	6	9	4	11	5	5	16	8	0	0	0	0	0	0	0	0
0	13	9	14	23	32	4	10	6	18	13	7	8	4	7	7	9	9	8	8	8	8	6	10	9
0	12	13	14	36	31	4	11	26	44	40	17	5	11	15	0	0	0	0	0	0	0	0	0	0
9	15	7	10	17	10	7	5	4	24	2	14	19	14	0	0	0	0	0	0	0	0	0	0	0

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
Jan.	7 10 ^h 04 ^m	10	9	10	11	13	13	12	12	9	x	7	6	9	7	6	3	10	8	11	22	11	
	8 10 07	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	9 10 10	12	12	9	10	16	14	9	14	10	10	9	16	5	10	6	4	15	9	9	11	9	
	10 9 59	14	11	11	10	8	14	7	10	11	14	15	8	4	12	14	10	11	16	22	32	36	
	11 11 22	11	13	9	5	11	12	8	9	9	10	6	8	9	8	10	12	8	4	3	18	21	
	27 12 20	0	0	0	0	9	16	8	9	15	16	53	25	8	18	18	15	12	14	7	7	14	
Feb.	12 11 17	0	0	0	0	0	0	0	0	0	0	0	13	26	21	5	9	20	13	18	38	23	
	28 10 28	0	0	0	0	0	0	0	0	0	0	0	0	0	33	34	39	69	23	19	20	6	
March	6 10 56	7	7	8	8	7	8	8	6	0	0	0	0	0	0	0	0	0	18	8	22	14	
	7 10 58	9	7	4	9	8	11	8	7	7	6	10	14	8	11	9	7	8	6	8	7	20	
	21 12 16	10	6	4	10	11	6	7	7	8	9	3	x	9	7	0	0	0	0	0	5	28	
Apr.	4 8 10	0	9	7	9	10	10	11	10	8	15	14	10	17	19	22	61	3	7	11	14	55	
	5 8 29	12	11	11	14	12	13	11	14	8	10	16	6	10	8	18	13	12	11	11	10	17	
	6 8 18	7	7	11	7	8	9	8	10	7	7	8	9	8	20	11	7	7	7	6	9	6	
	7 10 20	7	8	11	11	13	10	9	3	6	7	7	6	6	14	7	10	14	11	9	15	14	
	8 9 02	0	12	14	12	19	13	0	0	0	0	6	16	11	6	10	19	20	19	3	11	5	
	9 14 05	0	0	0	0	0	0	0	0	0	0	0	0	0	9	21	20	22	11	11	0	0	
	10 9 09	14	14	14	13	22	20	13	0	0	0	0	0	0	0	12	10	12	17	9	7	10	
	May	24 7 50	5	7	7	8	7	5	4	3	2	6	2	2	3	4	5	6	10	6	7	5	7
25 8 47		10	12	12	9	8	9	0	0	0	0	0	0	0	0	0	0	26	15	9	9	16	
July	15 11 39	9	10	3	0	0	0	0	0	0	0	0	0	11	8	6	8	16	13	7	14	16	
	16 9 25	8	12	15	8	11	10	0	0	0	0	0	9	7	7	12	23	15	15	15	13	14	
	17 6 15	1	11	10	12	11	11	6	0	0	0	0	0	0	0	15	22	53	25	14	19	13	
	24 6 22	14	14	8	13	16	14	17	7	0	0	0	0	0	12	20	26	8	9	7	8	18	
	25 6 28	15	12	15	14	7	17	15	9	0	0	0	0	0	8	29	33	21	14	7	26	16	
	27 16 39	8	8	7	10	8	10	10	10	5	10	9	9	8	8	25	11	16	36	6	7	19	
	28 12 45	0	2	8	7	7	7	7	4	4	0	0	0	0	0	17	8	4	7	7	4	12	
	Aug.	5 7 05	5	4	8	11	14	9	0	0	0	0	0	0	0	4	28	11	7	20	18	23	10
6 8 29		8	10	9	8	10	8	15	7	8	5	8	4	7	7	16	5	12	11	4	1	10	
Sep.	8 8 38	17	17	14	10	10	11	9	8	8	8	8	6	9	18	9	9	9	16	17	15	35	
	9 7 50	9	10	7	10	5	8	8	0	0	0	0	0	0	17	20	7	11	6	21	6		
	10 8 42	4	7	5	8	2	0	0	0	0	0	0	0	0	4	13	14	10	14	15	21		
	19 10 17	10	11	16	17	11	6	0	0	0	0	0	7	2	10	14	12	11	15	14	28	19	
	20 8 59	13	15	12	13	9	13	11	10	10	9	8	7	6	12	17	29	16	28	12	27	69	
	24 9 04	12	18	16	16	17	15	14	13	8	3	0	0	0	10	13	18	14	18	6	6		
	25 9 10	37	25	18	23	8	13	6	0	0	0	0	0	0	0	0	0	0	0	10	6	11	
	26 7 29	9	11	10	9	12	11	14	10	11	9	6	0	0	0	0	0	0	0	0	0	0	
	29 8 08	14	18	15	18	x	14	14	10	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30 7 53	13	x	9	17	0	0	0	0	0	0	0	0	0	7	6	9	9	20	7	6	10	
	Oct.	6 9 21	11	16	13	7	10	13	5	5	6	7	8	9	9	7	55	40	19	17	43	26	17
13 8 52		8	9	16	16	0	0	0	0	0	0	0	24	10	9	1	9	14	40	17	7	9	
14 8 50		12	13	13	22	2	0	0	0	0	0	0	13	9	14	5	x	13	10	14	8	18	
16 13 05		17	9	9	9	11	7	8	8	8	5	7	9	18	6	18	11	4	11	7	32	24	
17 13 00		3	4	7	6	8	7	7	0	0	0	0	0	0	33	12	7	5	5	15	8		
19 9 25		10	14	7	5	12	6	7	10	0	0	0	0	3	14	27	32	22	12	12	17	25	
20 11 53		9	9	9	12	7	16	6	5	11	8	5	3	2	5	9	10	13	6	5	12	25	
21 9 43		11	5	7	12	13	16	10	6	13	9	8	8	8	7	26	19	14	16	10	14	49	
22 9 12		8	13	10	12	13	13	10	4	7	10	9	10	11	12	4	10	14	14	17	12	14	
Nov.		6 10 55	10	12	5	12	12	10	8	6	4	9	x	1	10	9	12	x	40	7	0	0	0
		7 9 33	12	11	10	12	15	12	13	14	14	14	9	9	8	8	10	14	44	9	12	15	18
	21 11 05	10	16	21	12	17	14	18	13	10	16	27	27	25	9	26	16	18	13	63	47	33	

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Dec.	3 11 23	7	11	10	15	9	14	8	9	9	10	11	10	13	12	11	9	0	0	0	0	0
	12 11 57	13	9	16	4	15	16	x	x	x	x	0	11	7	12	93	43	43	50	10	18	36
	25 11 46	12	12	12	22	14	21	20	10	14	18	13	6	22	40	23	48	15	0	0	0	0
	27 12 00	0	0	0	0	0	0	0	0	0	0	0	0	11	12	17	11	8	3	0	0	0

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
18	19	19	9	3	7	18	12	0	0	0	0	0	0	0	6	5	6	6	12	17	8	15	3	14	24	
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	0	0	0	9
40	18	14	9	5	6	3	12	11	10	6	6	8	7	10	5	6	6	8	6	6	12	9	10	11	9	
43	21	15	11	8	5	7	9	10	5	4	14	8	0	0	0	0	0	0	0	0	9	16	12	9	10	
14	9	12	8	6	11	4	14	7	9	0	0	0	0	0	0	0	0	0	0	0	9	15	12	9	10	
17	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
38	18	21	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	12	8	25	4	9	12	
11	2	5	4	6	6	5	5	0	0	0	0	0	0	0	0	0	0	7	11	8	5	8	5	5	5	
34	14	4	7	7	4	8	16	9	6	6	0	0	0	0	0	0	0	0	0	0	12	11	8	0	0	
18	89	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	8	4	4	6	
12	20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	12	11	8	7	
7	8	0	0	0	0	0	0	0	0	0	0	0	5	7	0	0	0	0	0	0	0	0	0	0	4	
0	0	0	0	0	0	9	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	6	5	6	6	6	6	7	13	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	16	20	14	9	12	13	11	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	6	6	6	12	7	6	8	6	0	0	0	0	0	0	0	5	6	6	6	6	6	6	5	4	4	3
5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	22	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13	14	15	4	
10	9	12	10	5	5	10	8	11	9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
9	14	16	14	11	7	11	14	7	11	13	15	15	15	10	9	11	6	8	10	6	9	14	17	12	21	
77	13	8	8	9	9	7	9	0	0	0	0	0	0	0	11	10	8	0	0	0	0	0	0	0	8	
16	13	7	7	9	12	13	14	11	16	6	6	7	10	13	5	9	5	2	8	8	10	12	6	7	7	
70	18	9	5	3	5	8	11	10	12	0	0	0	0	0	0	0	9	6	5	7	6	12	8	11	6	
21	4	5	3	3	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x	x	
18	22	8	22	19	17	15	14	13	11	8	0	0	0	0	0	0	0	0	0	0	8	10	0	0	0	
18	6	16	6	7	5	5	8	11	4	6	10	3	7	6	6	0	6	9	7	5	9	12	10	6	6	
52	67	14	12	19	19	9	9	11	x	x	x	8	7	16	0	0	0	0	8	11	9	11	10	4	6	
66	35	7	7	7	8	6	6	4	0	0	0	0	0	10	6	5	6	7	7	8	9	6	8	7	2	
6	21	11	10	8	8	7	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	16	7	3	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	10	16	11	
48	9	10	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	9	13	10	
13	7	11	2	6	13	26	17	11	0	0	0	0	0	0	10	11	14	11	22	11	21	19	17	22		
12	38	5	15	10	8	7	15	7	10	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	7	5	17	10	7	16	9	7	0	0	0	0	13	8	6	6	9	6	12	12	10	6	10		
18	22	27	22	20	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	14	13	15	
18	17	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	14	16	5	14	
23	40	13	5	9	9	5	7	10	10	0	0	0	0	0	11	10	0	0	0	0	14	18	11	19	26	

	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
12	0	0	0	0	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	1	9	14	9	9	8	7	8	9	0	0	0	0	0	0	0	0	0	0	0	15	14	6	0	0	0
15	11	43	31	14	9	17	12	10	10	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	9
6	6	16	12	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	8	7	1
20	12	7	11	11	10	13	14	9	13	0	0	0	0	0	0	0	0	0	0	0	6	11	10	9	9	8
39	8	12	7	12	14	10	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	12
27	4	15	14	14	11	10	13	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
14	10	16	9	18	14	10	5	13	10	7	5	2	0	x	x	x	x	x	x	x	x	x	x	x	x	x
0	0	0	0	0	0	0	0	0	0	0	0	0	18	14	6	13	2	0	0	0	0	0	7	x	6	10
20	19	4	0	0	0	0	0	0	0	0	0	0	11	10	8	15	14	12	10	10	20	10	8	9	10	
24	10	11	7	13	12	19	15	26	15	5	0	0	0	0	9	8	7	0	0	0	0	0	0	0	0	0
5	13	0	0	0	0	0	3	12	10	2	7	0	0	0	0	8	10	15	11	7	8	10	11	14	10	
22	15	9	8	11	x	0	0	15	16	16	17	17	0	0	0	0	x	x	x	x	x	x	x	16	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	11	9	10	15	14	16	13	16	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
11	9	12	15	17	10	9	8	7	7	5	14	6	17	12	10	9	13	14	15	10	13	9	10	10	
6	2	7	6	14	8	5	5	7	12	10	10	8	22	23	29	17	13	13	11	11	8	12	8	10	
6	9	10	14	24	8	9	6	5	20	6	16	13	7	5	9	8	4	9	12	9	8	10	9	16	
11	14	18	20	15	18	6	8	14	16	7	28	3	3	5	10	5	5	10	14	12	10	9	9	15	
11	13	17	20	14	18	6	8	14	16	7	26	3	3	5	10	5	5	10	14	12	10	9	9	15	
0	0	22	19	20	14	14	14	14	17	42	39	92	24	18	15	3	8	9	23	19	17	12	15	8	
14	19	34	9	8	51	68	23	32	26	44	54	19	25	0	0	0	0	0	0	0	0	0	0	0	0
7	51	32	19	44	30	17	11	74	36	34	41	37	56	13	18	42	18	0	0	0	0	0	0	0	0
4	9	18	21	43	24	13	11	6	13	10	13	9	0	0	0	0	0	0	0	0	0	0	0	0	0
2	10	13	24	60	18	5	5	5	0	0	0	0	0	0	0	0	0	0	10	11	10	5	6	7	
0	0	18	17	20	63	16	16	16	15	18	31	16	18	25	15	9	9	15	2	8	18	18	16	16	
9	12	15	39	8	52	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	16	10	8	13	31	11	9	17	7	7	16	17	8	15	7	0	0	0	0	0	0	0	0	0	0
6	10	10	7	15	15	3	5	8	26	36	10	17	10	5	4	0	0	0	0	0	0	9	10	7	9
17	10	x	3	18	8	3	15	11	7	16	18	9	12	0	0	0	0	0	0	5	3	6	6	9	
9	6	8	11	14	4	6	7	10	13	10	24	12	11	0	0	0	0	0	0	0	0	0	0	0	0
0	20	3	0	0	0	0	19	19	14	17	13	15	0	0	0	0	0	0	0	17	17	15	0	0	0
8	8	5	7	7	8	8	5	5	12	7	48	21	14	0	0	0	0	0	0	0	0	0	0	0	0
6	5	12	9	3	6	4	9	14	17	21	19	12	9	9	9	9	9	9	10	9	14	13	7	9	
0	9	8	12	7	9	6	14	8	13	18	12	13	9	0	0	0	0	0	0	0	0	14	12	6	9
15	16	23	12	42	9	13	17	22	23	11	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	10	23	18	18	10	9	12	32	51	16	4	0	0	0	0	0	0	0	7	9	10	6	10	8	5
9	10	11	18	21	7	15	5	22	25	10	32	13	20	28	6	5	7	9	11	10	10	9	3	14	
8	6	9	14	16	8	18	5	8	20	14	28	5	0	0	0	0	6	9	7	13	9	9	9	15	
11	11	9	11	11	9	5	8	11	11	10	9	14	3	0	0	0	0	0	0	0	9	8	7	5	10
x	x	x	x	x	x	x	8	13	21	16	7	11	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	5	15	19	19	10	8	4	9	2	0	0	0	0	0	0	0	0	0	11	11	4	2	10	8
3	8	10	12	33	11	3	15	4	6	10	8	7	2	0	0	0	0	0	7	6	10	10	10	7	8
4	17	4	21	47	58	10	22	102	21	78	15	9	8	9	8	7	5	10	13	6	23	16	9	15	
9	7	11	10	18	19	11	8	25	78	29	16	7	5	5	6	7	7	7	9	5	12	9	10	5	

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
4	5	20	3	24	8	6	5	10	20	14	11	7	6	6	6	6	5	7	x	11	10	9	7	4
9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	22	16	16	25	42	21	9	17	28	7	2	8	7	7	7	8	8	9	12	5	6	10	9	11
14	16	24	20	15	26	37	21	22	21	47	17	7	8	17	0	0	0	0	9	13	11	15	12	8
0	16	15	4	10	23	32	28	40	63	34	19	10	7	7	8	9	10	11	13	12	11	3	8	11
8	6	4	18	11	18	22	13	14	16	8	8	10	4	8	8	8	8	8	9	8	9	10	0	0
16	18	19	21	12	20	11	36	42	44	39	16	0	0	0	0	0	0	0	0	0	0	0	0	0
6	6	3	9	28	18	17	26	44	32	26	18	17	0	0	0	0	0	0	0	0	0	0	0	0
10	10	0	18	30	36	7	6	18	53	19	3	0	0	0	0	0	9	0	6	9	6	13	10	10
0	0	0	0	0	0	18	15	5	11	20	38	20	5	0	0	0	0	0	0	0	14	8	7	11
0	0	0	0	14	3	39	14	9	15	18	12	14	13	9	0	0	0	0	0	0	13	9	10	8
10	3	14	12	19	14	14	12	20	14	8	17	11	14	7	10	10	3	12	7	12	7	8	11	7
8	3	18	11	17	19	14	10	15	8	8	11	7	9	8	8	4	4	7	8	1	9	2	6	9
10	8	6	15	7	14	26	32	25	16	17	9	2	3	4	4	5	6	5	5	7	8	6	x	x
7	6	12	16	23	22	13	23	14	15	19	4	0	0	0	0	0	0	0	10	10	12	5	11	7
20	9	13	21	24	21	15	6	20	22	23	15	4	5	6	0	0	0	0	0	4	13	6	10	11
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
0	0	0	0	0	33	18	10	54	6	18	18	9	x	6	13	9	10	8	5	5	x	11	7	12
5	10	16	20	25	20	4	12	13	19	39	11	6	14	11	11	15	10	13	12	12	8	9	6	10
0	2	18	31	13	2	10	10	8	22	14	13	15	17	19	20	14	6	14	18	12	17	18	10	x
0	0	0	0	0	0	10	10	14	22	9	11	13	14	19	15	10	12	13	5	9	8	7	3	0
0	0	x	x	x	x	x	x	x	x	x	x	x	x	0	0	16	5	10	10	16	19	14	18	17
0	20	10	23	23	37	24	21	21	24	30	35	28	13	17	0	0	0	0	0	0	16	21	11	7
0	0	8	12	20	14	4	5	15	22	22	11	12	7	0	0	0	0	0	0	0	17	13	10	10

1970

6a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	30 10 ^b 21 ^m	9	9	5	10	8	6	7	9	11	7	8	11	0	0	0	0	10	4	20	18	17
Feb.	2 10 18 12 11 41	11	5	10	9	4	12	5	5	13	9	6	10	0	0	0	0	0	20	1	10	133
		12	8	4	11	10	0	0	0	0	6	9	0	0	0	0	0	0	3	24	9	32
Apr.	16 10 57	0	0	0	0	0	0	0	0	5	15	18	14	21	48	30	18	17	13	21	14	5
June	9 6 20 19 6 16 20 6 32 21 7 35 22 6 12	10	14	10	9	7	0	0	0	0	0	8	12	29	7	29	11	10	19	26	15	
		9	9	11	9	10	9	7	5	5	6	11	11	13	17	39	71	10	11	10	14	9
		8	7	10	16	11	15	9	6	5	10	6	2	11	9	25	24	36	14	10	9	14
		8	9	9	6	16	18	17	6	0	0	0	0	0	12	23	25	6	24	4	3	8
		4	9	8	11	11	9	8	6	2	6	9	7	10	14	7	8	6	17	8	8	17
July	7 6 12 14 7 15 21 9 33 29 6 17	7	6	9	4	8	6	8	11	7	6	6	6	18	27	13	18	25	10	11	15	6
		0	0	0	0	0	0	0	0	0	4	8	20	21	24	4	11	12	4	16	11	
		17	9	15	14	9	7	9	7	5	3	5	9	9	22	16	15	2	11	11	7	4
		10	2	13	6	9	14	7	9	8	8	6	12	14	12	10	16	11	9	3	3	5
Aug.	14 7 31 21 7 00	12	6	5	10	6	5	3	7	12	9	10	16	19	9	5	19	14	8	12	10	10
		8	3	7	0	6	6	4	8	6	0	0	0	0	4	8	13	32	12	8	12	17
Sep.	1 8 45 10 7 46 14 7 46 18 6 56 21 14 19 28 8 05 29 14 16	13	11	12	9	13	7	13	7	0	0	6	35	29	97	49	63	49	22	81	39	44
		9	7	7	8	11	12	6	5	3	6	5	7	10	4	6	4	15	16	6	16	17
		10	10	5	10	9	7	9	11	5	5	6	3	14	19	15	7	1	12	4	20	11
		6	7	5	8	12	7	7	6	7	6	7	6	16	20	26	41	88	40	10	3	5
		7	17	8	9	9	15	8	10	11	9	8	21	17	15	28	30	12	11	10	23	18
		0	0	0	0	4	6	7	9	0	0	0	17	18	21	30	34	11	15	13	46	18
		0	0	0	0	0	0	0	0	0	0	0	0	18	15	31	22	53	39	21	60	38

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Oct.	6 12 55	12	8	10	6	0	0	0	0	11	11	10	12	8	31	22	10	25	10	8	49	39
	7 8 40	0	0	0	0	0	0	0	0	0	0	10	6	12	13	6	8	10	10	0	5	30
	8 14 12	4	10	15	9	4	3	0	0	5	7	0	7	53	51	10	18	56	42	8	13	21
	9 14 58	0	0	0	0	0	0	0	0	5	5	5	9	28	17	24	17	49	22	7	5	24
	10 11 50	0	0	0	0	0	0	0	0	0	0	0	8	10	15	46	17	35	21	31	15	31
	11 11 25	0	0	0	0	0	0	0	14	28	16	19	13	30	41	34	23	16	10	14	14	29
	12 11 15	0	0	0	0	0	0	0	0	0	0	6	3	8	31	21	11	13	17	13	6	15
	13 10 20	0	0	0	0	10	15	18	12	8	11	15	5	12	19	22	35	39	81	8	12	17
	15 13 18	0	0	0	0	0	0	0	0	0	0	9	10	10	29	19	23	49	36	11	12	16
	16 8 24	7	4	6	0	0	12	7	6	9	9	0	0	11	16	17	22	38	10	11	12	29
	17 8 40	7	11	9	6	4	9	10	11	14	17	10	9	8	32	22	44	10	9	4	0	8
Nov.	13 9 48	11	10	9	12	15	12	9	16	14	17	15	17	33	10	13	18	12	25	3	4	3
	25 13 00	6	7	9	6	26	7	0	0	0	5	14	16	2	40	25	27	22	14	63	33	41

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
15	15	15	15	16	11	14	17	11	10	13	9	8	14	11	12	9	6	7	9	10	10	8	10	10	6
41	21	17	6	9	11	8	3	4	7	9	7	9	11	14	1	9	1	6	13	8	7	7	6	6	3
21	15	19	17	22	12	0	0	0	11	0	0	0	0	0	14	5	12	0	0	0	0	6	0	0	0
10	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2	7
9	11	16	4	10	7	18	7	9	9	11	8	9	11	12	14	15	13	11	12	8	12	14	7	6	13
17	9	4	3	5	5	6	9	11	7	10	11	7	8	9	9	7	9	9	8	8	13	6	6	5	3
15	4	3	3	0	0	0	0	0	12	10	10	7	7	3	9	18	8	11	7	15	8	4	0	0	0
6	10	8	9	10	0	0	11	6	15	15	6	11	12	7	9	12	8	14	11	8	5	5	6	6	6
8	7	8	7	8	6	5	6	8	9	11	10	9	8	11	12	9	14	5	8	12	7	2	3	4	4
10	8	4	7	6	7	8	5	6	6	6	8	9	9	6	7	8	2	8	9	8	9	6	7	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	40	7	0	0	0	2	8	6	8	5	5	9	7	12	15	9	9	6	3	0	0	0	0	0	0
11	4	10	12	6	13	11	13	12	14	8	16	11	7	15	12	16	16	15	17	13	11	22	3	7	10
12	6	10	4	5	7	9	10	7	10	9	13	14	10	12	14	9	6	8	9	9	7	10	10	14	5
10	7	7	8	7	8	9	12	19	18	15	15	8	13	14	18	4	10	12	13	9	9	12	0	0	0
17	10	6	5	9	10	13	13	11	13	7	12	13	14	16	12	15	17	13	15	15	14	13	13	9	10
3	15	15	0	0	0	0	14	0	18	6	15	8	0	11	14	5	5	10	13	4	7	13	0	0	0
23	15	2	6	0	4	5	4	12	17	14	14	5	7	9	11	16	10	16	0	3	9	8	12	7	12
0	6	3	7	13	12	9	8	7	12	11	17	11	12	15	7	12	13	15	11	10	11	7	9	10	3
7	13	11	15	7	0	10	10	11	23	19	18	10	10	15	16	11	10	10	10	14	4	11	4	11	6
0	0	0	0	0	0	11	10	10	10	9	5	0	0	0	0	17	12	12	9	9	5	0	0	6	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	13	10	14	16	16	14	17	18	16	15	15	16	13	12	15	11	13	8	11	14	16	13	17	11	0
19	13	10	0	0	0	12	16	14	19	12	14	14	9	10	10	12	8	4	5	6	10	12	16	5	0
23	13	10	12	8	3	8	7	5	8	7	16	2	16	9	15	12	14	9	6	8	10	12	15	10	0
14	10	6	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	14	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	11	0	0	0	12	15	17	10	0	12	12	15	13	0	0	0	0	0	0	0	15	6	13	8	0
15	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6b (Continued)

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
10	14	17	0	0	0	13	16	16	15	11	10	9	10	16	9	0	0	0	0	0	0	12	13	12	15
16	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	14	6	9	9	18	x
7	0	10	9	35	49	18	28	11	8	12	10	12	13	14	18	16	6	8	10	10	9	15	14	9	8
14	11	11	5	10	12	5	12	6	4	4	7	11	9	12	14	7	10	9	6	14	12	10	8	10	8
7	0	0	0	16	9	14	11	14	12	9	13	7	8	8	7	4	7	4	4	6	5	10	9	3	4
18	12	10	26	21	16	16	14	16	12	14	0	0	0	0	7	12	10	10	12	7	7	12	9	0	11

6c

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
8	10	18	18	24	13	27	20	13	7	11	9	10	6	7	6	0	0	0	0	0	0	0	0	0
8	1	2	8	22	41	14	14	11	6	6	8	17	5	0	0	0	0	0	0	12	6	11	13	15
9	23	32	25	22	21	9	15	19	0	0	0	0	0	0	0	0	0	0	0	0	0	15	18	0
12	9	11	14	17	51	22	14	11	18	14	13	12	5	0	0	0	0	0	0	0	0	0	0	0
7	12	10	11	24	38	4	9	17	9	10	20	13	12	10	8	6	9	10	5	13	11	13	10	9
5	2	10	11	8	15	10	12	28	28	31	20	15	4	4	6	6	0	0	0	0	5	8	8	12
0	5	8	16	3	24	5	10	18	38	61	25	6	9	4	15	5	9	5	9	0	0	0	0	0
6	12	17	11	11	35	18	9	17	22	28	22	8	15	11	6	5	4	4	3	2	10	11	9	9
6	9	9	5	8	16	16	16	27	53	30	35	30	12	5	7	4	10	7	2	6	8	3	8	8
0	0	6	5	17	59	11	8	8	18	26	9	12	9	6	5	9	9	6	5	8	8	5	8	10
0	0	4	5	14	20	22	14	5	4	20	14	13	12	0	0	0	0	0	0	0	0	0	0	0
8	6	7	6	10	9	9	9	6	22	41	20	18	15	0	0	0	0	0	0	0	6	8	10	2
14	13	6	16	26	5	21	14	26	16	12	15	14	7	6	0	0	0	0	0	0	5	7	9	6
6	4	4	3	7	13	7	15	11	9	11	10	16	5	3	5	2	5	3	4	6	5	5	6	5
0	0	15	17	30	22	20	10	17	17	12	16	15	10	14	0	0	0	0	x	0	0	0	0	0
0	30	43	29	18	35	7	22	41	37	27	23	28	17	23	9	5	12	8	6	6	12	10	3	7
0	0	18	28	0	0	11	22	14	18	5	31	33	26	8	0	0	0	0	0	0	0	2	0	15
9	12	5	3	10	16	30	8	9	13	88	67	15	14	10	4	1	6	5	6	0	3	3	5	6
4	9	16	47	33	43	21	40	16	16	21	16	10	25	7	13	4	3	15	9	5	4	9	4	4
5	6	19	16	17	20	32	12	29	40	20	14	15	7	10	10	10	7	10	9	9	11	8	9	8
4	0	0	12	22	13	12	13	19	12	32	42	14	0	0	0	0	0	0	0	9	8	9	8	5
0	0	0	0	0	0	0	20	18	43	21	57	19	17	0	0	0	0	0	0	0	0	0	0	0
0	0	0	8	22	19	17	9	11	20	55	31	19	12	5	7	8	7	1	0	0	0	0	0	0
0	0	0	4	9	17	16	0	16	13	15	30	14	0	0	0	0	0	0	0	0	14	13	8	9
0	0	0	0	14	23	14	5	17	11	20	17	18	9	5	0	0	0	0	0	0	5	4	5	6
0	0	0	0	5	15	8	3	4	5	32	10	17	6	0	0	0	0	0	0	0	0	0	0	0
5	7	7	6	9	15	9	6	6	4	30	17	33	14	0	0	0	0	0	0	0	0	0	0	0
0	0	0	8	18	44	14	6	6	17	19	11	19	22	6	0	0	0	0	0	0	0	0	0	0
0	5	9	7	18	42	13	7	4	10	21	6	9	9	5	0	0	0	0	0	0	0	0	0	0
11	12	0	9	56	40	17	12	9	9	30	28	12	21	16	0	0	0	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	0
16	12	13	16	11	19	19	14	17	11	18	12	6	7	10	4	0	0	0	0	0	0	0	0	9
7	6	9	20	20	15	17	15	8	16	46	20	8	9	6	11	0	0	0	0	3	4	2	5	9
7	7	12	28	22	35	24	5	5	25	21	15	17	8	9	0	0	0	0	2	6	5	10	12	10
15	11	11	21	12	26	18	57	40	20	15	7	12	21	5	10	8	8	10	10	5	6	5	7	5

1971

7a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	6 12 ^h 00 ^m	0	12	12	9	9	12	10	9	8	15	6	9	14	3	12	10	5	9	9	10	10
	8 11 04	0	0	8	7	9	0	0	0	0	0	0	0	0	3	7	9	10	7	0	0	8
	9 11 45	5	5	6	5	5	0	0	0	6	0	0	0	0	0	7	17	15	7	3	8	9
	14 10 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x
Feb.	11 10 06	5	3	3	5	5	2	5	3	7	2	6	3	9	7	19	8	19	10	3	5	5
Apr.	11 08 40	0	0	0	0	0	0	0	0	2	6	6	6	5	20	20	9	20	8	8	5	6
	15 10 39	0	0	9	3	5	9	2	8	7	6	5	8	7	5	3	2	6	10	7	9	7
	22 07 54	7	7	8	7	0	0	0	0	0	0	0	0	0	0	0	7	5	3	8	2	1
May	21 07 20	13	12	5	9	5	0	0	0	0	0	0	0	5	3	2	17	0	0	0	0	
June	24 07 14	5	6	6	7	6	6	7	12	5	0	0	0	0	0	12	5	6	6	7	12	9
July	8 11 09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	10	5	5
	9 14 32	4	9	5	0	0	0	0	0	0	0	6	4	0	0	4	5	0	0	0	0	5
	16 07 17	12	10	6	3	6	12	6	1	7	3	6	2	6	8	10	7	9	9	6	17	7
	27 10 32	0	0	0	0	0	12	0	0	0	0	0	0	9	2	7	10	20	9	7	3	6
Aug.	7 07 09	0	0	0	0	0	0	0	0	0	0	0	6	2	5	13	4	8	4	6	10	0
	10 08 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	11 08 03	0	0	0	0	0	0	0	0	0	0	0	0	2	6	2	9	12	13	11	9	7
	15 07 10	9	6	8	5	5	6	8	6	7	6	12	2	3	7	9	23	32	6	7	10	6
	19 10 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	28 10 22	2	4	1	0	0	0	0	0	2	2	1	1	1	5	4	5	x	4	4	10	1
Sep.	4 08 45	0	0	0	0	0	0	0	0	0	4	7	1	5	1	8	7	6	5	6	7	9
	22 11 23	17	2	0	0	0	0	0	0	0	0	9	6	0	0	0	0	0	16	12	21	
	23 10 10	7	7	6	0	0	0	0	0	1	7	2	3	3	11	0	0	0	17	25	25	
	24 07 27	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	7	5	2	10	37	17
Oct.	1 09 01	0	0	0	0	0	0	0	0	6	6	7	8	3	4	5	31	12	8	4	2	10
	2 08 20	0	0	0	0	0	0	0	2	2	1	3	6	5	1	3	6	2	4	6	8	5
	3 10 52	0	0	0	0	0	0	0	0	0	3	8	5	7	5	6	7	5	7	7	1	5
	10 10 44	2	0	0	2	1	0	0	0	0	0	0	0	0	0	2	2	5	0	0	0	0
Nov.	1 11 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	15	9	12	20	58	
	6 10 41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	13	16	17	14	
	14 09 46	0	0	0	0	0	0	0	7	8	11	13	15	5	10	21	21	17	17	12	6	13
	21 10 42	0	0	0	0	0	6	9	6	17	6	8	0	0	0	10	13	14	2	9	20	15
	27 11 20	0	0	0	0	0	0	6	5	7	8	6	5	1	6	5	5	8	4	2	5	8
Dec.	18 10 51	12	9	0	0	0	0	7	7	5	10	0	0	0	16	12	4	15	12	23	47	
	27 10 26	0	0	0	0	0	0	0	0	0	0	0	0	1	15	17	10	15	17	21	25	32
	31 12 35	0	0	0	0	0	0	10	6	8	5	0	0	0	0	7	13	1	6	7	0	

7b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
8	9	12	8	12	12	12	10	9	7	10	7	13	10	9	9	10	18	8	9	12	8	10	8	7	10
12	12	3	9	9	10	9	10	14	10	0	0	x	6	7	8	7	9	6	6	7	7	6	6	6	8
14	x	x	x	x	x	x	x	5	7	x	x	x	x	8	9	10	11	12	10	11	10	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	7	14	16	8	10	13	16	9	6	2	6
6	14	19	6	5	8	8	8	6	7	7	6	7	7	x	x	x	x	x	x	x	x	x	x	x	x
2	2	3	4	5	6	11	9	7	10	6	5	5	6	2	2	5	5	8	5	5	5	0	0	0	0
5	12	10	8	4	3	7	7	14	7	5	5	7	10	6	2	0	0	0	0	9	5	12	14	8	7
12	7	0	0	0	0	0	0	3	6	5	7	7	6	3	7	12	6	5	5	12	2	9	10	5	5

7b (Continued)

	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0	0	0	0	0	0	0	0	7	7	10	12	5	0	1	3	2	3	1	8	5	7	7	8	0	0	0
7	9	4	6	0	0	0	0	0	0	0	0	0	0	4	6	7	6	7	6	6	4	10	7	7	4	5
13	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	6	6	8
5	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	4	0	0	0	0	0	x	x	x	x
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	6	7	10	10	8	13	21	29	17	26	15
5	6	8	9	10	10	6	9	10	8	10	6	8	9	13	4	0	0	0	0	5	11	12	11	9	8	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	6	9	17	9	2	0	0	0	0	0	0	0	0	0	0	0	6	4	9	10
10	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	13	10	14	6	7	14	6	7	10	13	6	15	6	2	6	5	5	3	7	7	1	14	5	9	8	
12	15	15	21	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	8	6	5	5	5	12	5	2	8	8	7	7	5	6	6	
10	0	0	0	0	2	6	6	4	8	4	6	2	4	6	6	1	5	7	7	5	7	6	5	9	6	
0	0	0	0	0	0	0	0	20	22	10	8	0	0	0	0	0	0	0	10	13	10	8	3	3	10	
9	0	0	0	0	0	0	20	6	16	21	2	0	0	0	2	0	0	0	0	0	0	9	10	5	8	
7	8	0	0	0	0	0	0	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	5	0	0	0	8	5	13	12	18	9	10	7	10	0	0	0	0	6	6	8	13	2	6	0	0	
11	1	3	1	3	2	6	3	6	6	5	4	3	3	0	0	0	0	0	0	3	7	5	1	0	0	
10	12	2	3	5	7	8	4	7	7	7	5	5	5	6	5	5	3	2	8	5	6	8	6	3	3	
5	7	5	12	0	0	0	0	7	x	2	7	0	0	0	0	0	0	0	0	12	6	21	6	12	7	
8	6	0	0	0	0	3	8	14	10	0	0	0	0	0	0	0	0	0	0	0	8	2	6	0	0	
10	13	3	6	9	12	14	15	23	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	7	21	20	13	13	
15	14	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	1	1	0	0	0	2	9	4	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
39	36	30	6	5	5	7	10	14	8	5	8	8	1	0	0	0	0	0	0	0	4	10	12	0	0	
32	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
0	6	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

7c

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
7	0	0	0	0	0	0	0	15	14	24	8	5	10	15	8	8	8	9	9	8	8	8	8	9	10
0	0	0	9	10	14	11	9	7	12	14	21	16	7	12	9	5	7	10	8	5	7	9	5	10	
0	9	6	16	11	7	5	6	13	15	17	19	20	0	0	0	x	x	0	8	8	14	14	9	8	
11	9	11	8	4	9	6	10	9	10	13	21	13	5	5	4	3	5	4	7	13	6	8	10	9	
x	x	x	8	6	10	10	6	9	16	9	11	16	13	6	8	9	6	3	6	6	9	6	5	3	
0	0	0	0	0	5	2	5	14	9	6	5	0	0	0	0	0	0	3	1	7	2	9	2	5	
6	6	6	5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	1	6	10	2	6	8	5	15	8	5	0	0	0	3	13	12	9	7	9	10	7	7	0	0	
0	0	0	0	14	18	23	22	17	20	15	0	0	0	0	0	0	0	0	3	12	5	7	8	8	
5	6	2	4	5	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	7
6	10	8	11	15	11	8	7	10	11	14	25	11	7	7	10	8	7	5	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	6	13	6	14	18	6	9	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x
0	0	0	7	5	5	5	4	20	25	29	2	13	22	6	8	10	0	0	0	0	0	0	0	0	0
0	5	6	0	0	0	7	6	6	5	6	4	4	6	0	0	0	0	0	0	0	0	0	0	0	0

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
13	8	4	11	9	6	7	9	10	18	21	5	8	6	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	23	5	12	12	6	6	0	0	0	0	0	0	0	0	0	0	0
5	7	5	12	7	15	9	5	2	13	9	0	0	0	5	6	6	7	5	2	5	3	7	5	9	
0	0	0	0	0	0	0	0	13	12	19	26	26	7	6	5	7	0	0	0	0	0	0	0	0	
6	5	3	2	8	12	7	6	5	17	7	13	4	0	0	0	0	0	0	0	0	0	0	0	0	
6	2	10	2	6	8	4	4	20	0	0	4	5	5	6	2	2	2	1	0	0	0	0	0	0	
14	7	1	12	9	5	0	0	0	0	5	0	0	3	10	5	10	0	0	0	0	0	0	0	0	
6	7	6	14	10	16	7	3	7	18	29	20	0	0	0	0	0	0	0	0	0	9	0	0	5	
0	5	5	3	5	12	14	16	18	23	23	10	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	6	5	6	12	10	8	6	9	21	22	16	9	13	6	10	5	3	0	0	0	0	0	0	0	
0	0	5	11	6	8	2	5	6	5	6	3	2	3	1	1	3	9	3	3	0	0	0	0	0	
2	3	4	5	5	14	3	12	1	5	7	7	5	7	5	1	3	0	0	0	0	0	7	5	8	
0	0	0	7	8	5	2	8	5	10	8	10	3	5	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	5	9	13	5	12	7	3	6	0	0	0	0	0	0	0	0	0	0	
0	0	6	7	8	17	16	17	8	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	14	10	10	16	14	3	36	28	45	32	0	0	0	0	7	17	10	0	0	0	0	0	0	0	
0	0	10	23	0	0	0	0	16	20	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	1	1	9	8	7	5	6	10	9	0	0	2	6	4	2	2	0	0	0	0	1	
0	8	4	9	5	9	7	6	15	24	16	40	18	4	6	8	10	7	8	0	0	0	0	0	1	
6	8	7	14	1	10	5	15	8	14	20	12	12	16	5	4	12	2	10	9	0	0	0	0	0	
0	2	8	13	13	17	6	0	0	0	18	7	0	0	0	0	0	0	0	0	0	0	0	0	0	

1972

8a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
Jan.	1	12 ^h 03 ^m	0	0	0	0	0	0	0	0	0	0	0	0	0	24	10	37	39	18	22	26	18
	2	10 33	0	0	0	0	0	10	15	5	0	0	0	14	15	15	25	36	35	0	0	0	
	3	10 30	10	6	4	8	7	6	2	3	0	3	5	7	9	1	3	12	31	21	20	18	16
	6	11 28	0	0	0	0	0	0	0	0	0	0	0	0	1	2	8	5	21	17	14	36	15
	16	10 44	0	0	0	0	0	0	0	0	0	0	0	0	5	8	12	12	9	12	22	33	
	24	11 19	0	0	0	0	0	0	0	0	0	0	0	9	9	13	32	30	13	28	44	13	
	26	12 45	0	0	0	0	0	7	17	12	10	10	13	7	13	16	14	26	20	15	18	29	8
Feb.	3	11 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	9	6	6	15	
	4	10 44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	
	5	12 02	0	0	0	0	0	0	0	0	0	0	0	0	14	5	4	5	0	0	0	0	
March	13	09 45	0	0	0	0	0	0	0	0	0	0	0	0	0	7	48	38	15	12	0	0	
	14	09 45	0	0	0	0	0	0	0	0	0	0	0	0	17	16	3	2	0	0	0	3	
	15	08 26	0	0	0	0	0	0	0	0	0	0	0	0	0	8	10	25	0	0	0	0	
	16	10 35	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	7	5	5	7		
Apr.	30	07 57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
May	30	06 07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	29	
June	7	05 59	4	1	5	4	4	2	2	x	2	5	7	5	6	5	7	16	25	6	22	10	10
Aug.	12	13 26	0	0	0	0	0	0	0	0	0	18	6	7	7	0	0	0	0	0	0	12	
	15	07 31	0	0	0	0	0	0	0	0	0	9	9	9	7	6	18	28	6	36	14	8	6
	16	08 05	0	0	0	0	0	0	0	0	0	17	17	23	17	19	21	23	29	29	0	0	0
Oct.	5	11 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	09 32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	10 56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	16 14 05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	24	22
	17 07 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	30	0
	25 10 50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	5	9	18	16	21	12
	31 09 05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	30	0	0	0	0	0
Nov.	10 09 03	0	0	0	0	0	0	0	0	0	10	17	6	12	2	3	4	5	6	10	17	26
Dec.	6 11 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	8	10	0	0	0	0
	7 09 32	0	0	0	0	0	0	6	8	9	8	8	5	6	7	12	9	7	4	2	4	6
	10 10 36	0	0	0	0	0	0	0	0	0	0	0	10	13	16	10	12	8	8	9	9	18
	12 11 48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	13	31
	13 13 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	12	7	17	29	18	15
	15 09 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	16 09 42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	23	15	25
	21 12 13	0	0	0	0	0	0	0	0	9	2	10	9	8	7	10	10	0	0	0	2	7
	22 12 52	0	0	0	0	0	0	0	0	0	6	5	4	4	5	14	0	0	13	6	5	5
	26 12 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8
	27 11 57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	22
	29 11 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	24	31	5	0	0
	30 10 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	24	35	12	0	0	0
	31 12 38	0	0	0	0	0	0	0	0	0	0	0	6	12	12	21	72	47	5	5	7	8

8b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
7	28	26	0	0	0	0	0	14	7	5	0	0	0	0	0	0	0	12	13	17	14	13	12	0	0
0	51	13	0	0	0	0	0	6	12	8	9	0	0	0	12	8	0	0	13	6	16	17	17	10	
15	7	14	14	0	0	0	7	10	5	0	0	0	0	0	0	0	0	0	13	9	7	17	2	10	
12	9	15	9	4	10	17	17	14	14	2	2	0	0	0	0	0	1	5	8	10	16	13	5	14	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	3	13	2	2	8	8	10	5	1	3	2	2	2	8	0	0	0	0	8	6	3	3	14	7	
12	13	16	15	12	13	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	7	6	3	7	
4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	8	4	4	6	7	8	10	14	5	2	4	0	0	0	0	0	0	0	0	0	7	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	18	14	8	7	3	5	8	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	4	8	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x	x
5	7	2	0	0	0	0	0	0	0	0	0	0	0	0	6	9	8	6	8	8	9	7	1	8	9
7	12	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	4	17	20	18	21	25	8	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	5	12	9	6	5	6	13	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	13	5	15	0	0	0
12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

8b (Continued)

	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
	6	8	0	0	0	7	5	7	12	13	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	6	9	4	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	1	10	7	1	8	6	8	5	8	2	6	2	1	0	0	0	0	0	0	0	7	2	12	7	7	5	7
20	0	0	0	0	0	0	0	0	10	8	0	0	0	0	0	0	0	0	0	0	0	5	9	23	0	0	0
3	0	0	0	0	0	0	0	0	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	0	0	0	0	0	0	0	8	7	12	3	9	0	0	0	0	0	0	0	0	0	10	16	2	5	13
21	8	19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	13	12	5	0	0
7	5	14	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	6	4	0	0	0	0	6	8	4	3	4	2	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0
14	12	10	9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

8c

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	
	0	0	0	24	26	60	20	14	6	8	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	16	48	37	17	10	16	7	16	6	0	0	0	0	0	0	0	0	0	0	0	0	0
10	8	9	8	24	9	24	9	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	7	6	21	7	21	21	12	15	1	17	17	9	5	15	12	2	10	13	0	0	0	0	0	0	0	0
	0	8	6	15	18	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	7	21	6	6	18	8	6	5	13	13	19	18	10	11	7	0	0	0	0	0	0	0	0	0	0	0
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	10	13	13	23	23	22	7	3	12	23	12	9	14	3	7	0	0	0	0	0	0	0	0	0	0	0
	0	4	15	14	47	21	1	x	4	13	12	17	1	4	7	1	8	4	5	7	0	0	0	0	0	0
2	18	22	31	31	5	15	10	25	26	18	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	20	8	18	12	8	23	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	5	14	16	15	37	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x
	0	0	0	0	0	0	2	7	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	4	10	8	1	1	13	9	15	14	32	31	4	1	7	5	2	10	9	2	1	0	0	0	0	0	0
	0	0	0	0	0	5	7	12	16	5	8	0	0	0	15	19	6	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	6	5	5	4	4	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	4	16	16	15	36	34	24	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	10	21	9	12	24	19	14	10	7	16	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	31	30	10	14	31	36	24	4	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	8	14	14	17	7	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	3	26	18	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	4	5	12	23	15	6	4	5	24	9	12	17	5	12	0	0	0	0	0	0	0	0	0	0

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
0	0	8	26	23	16	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	6	2	8	14	24	10	9	10	20	4	6	6	10	6	2	0	0	0	0	0	0	0	0	0
0	10	7	7	8	12	0	0	0	0	0	5	7	10	9	5	6	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	3	6	2	9	0	0	0	0	0	0	6	3	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	4	13	0	0	0	0	0	0	10	19	15	10	7	0	0	0	0	0	0	0	0	0	0
7	8	4	12	5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	10	13	7	3	6	7	7	5	6	5	0	0	0	0	0	0	0	0	0	0
0	0	0	6	15	20	18	13	13	22	31	17	10	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	40	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	13	5	21	18	0	0	0	0	24	33	9	6	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	9	7	7	14	12	23	18	26	10	x	x	x	x	x	x	x	x	x	x	x	x

1973

9a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	5 11 ^h 19 ^m	0	0	0	0	0	0	0	0	0	0	0	9	10	7	10	10	0	0	0	0	8
	6 10 12	0	0	0	0	0	0	0	9	3	3	6	8	9	6	6	8	8	2	3	2	9
	8 11 40	0	0	0	0	0	0	0	0	0	0	0	7	5	6	3	9	15	7	1	2	3
	9 10 45	0	0	0	0	0	0	0	0	5	5	9	9	5	8	21	8	10	7	5	6	
	12 11 02	0	0	0	0	0	0	0	0	0	0	0	0	6	18	18	16	0	0	0	0	0
	14 14 11	0	0	0	0	0	0	0	0	13	24	8	8	0	0	0	0	0	0	0	0	21
	15 11 08	0	0	0	0	0	0	0	0	0	0	0	5	9	x	6	6	8	3	5	3	
	17 11 01	0	4	1	2	5	1	2	2	6	4	5	2	10	9	12	2	9	6	6	15	15
	22 12 15	0	0	0	0	0	0	0	0	0	0	0	4	7	28	15	7	2	13	6	14	8
	25 09 46	0	0	0	0	0	0	0	0	0	0	0	12	5	16	9	13	30	51	43	22	0
	26 10 23	0	0	0	0	0	0	0	0	0	0	0	0	9	20	31	32	41	37	0	0	0
	31 12 08	0	0	0	0	0	0	0	0	2	7	9	6	6	4	2	4	9	0	0	0	2
Feb.	5 11 27	0	0	0	0	0	0	0	0	10	11	11	15	9	2	21	24	14	15	4	9	6
March	5 14 29	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0
	22 13 38	0	0	0	0	0	0	0	0	0	0	6	2	2	4	6	4	4	2	4	1	0
June	13 10 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	3	13	5	12	17
	29 07 19	0	0	0	0	0	0	0	0	0	0	0	0	0	8	10	7	3	5	5	13	6
Aug.	11 09 55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
	22 08 36	0	0	0	0	0	0	0	0	0	0	0	0	0	10	12	18	29	10	9	0	0
	27 07 48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	20	9	16	16	6	12
	28 07 53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	5
Sep.	6 08 04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	6	5
	7 09 36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9 09 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15 08 13	0	0	0	0	0	0	0	0	0	0	0	9	25	8	5	17	25	17	8	10	14
	16 08 13	0	0	0	0	0	0	0	0	14	8	13	3	6	17	9	12	3	6	7	5	10
	18 08 46	0	0	0	0	0	0	0	0	0	0	0	0	6	9	12	9	21	21	9	5	16
	19 08 30	0	0	0	0	0	0	0	0	0	0	0	0	3	9	28	23	20	15	10	0	0
Oct.	3 09 59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4 09 32	0	0	0	0	14	2	16	13	14	0	0	0	0	0	0	0	0	15	15	14	10
	5 09 18	3	5	3	3	4	1	6	3	3	2	5	6	5	2	6	3	9	9	8	8	12
	6 09 04	8	1	2	2	3	3	6	5	5	9	8	8	9	7	8	12	18	24	14	14	16
	7 08 16	0	0	0	0	0	0	0	2	8	2	2	2	5	2	3	3	6	5	5	6	10

9a (Continued)

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	9 08 52	6	1	2	5	1	5	4	3	3	3	3	6	6	2	2	6	3	6	6	6	13
	13 11 54	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x	x	x	x	x	5
	25 09 30	0	0	0	0	5	7	x	x	8	12	8	10	13	14	21	21	12	10	7	26	29
	27 09 03	0	0	0	0	0	2	x	2	6	1	1	5	10	9	9	9	23	17	5	6	10
	28 09 27	0	0	0	0	0	0	0	0	8	6	5	3	7	6	6	5	2	10	15	6	5
Nov.	1 10 49	0	0	0	0	0	0	0	0	0	0	0	3	5	13	14	18	10	17	24	7	2
	2 09 16	0	0	0	0	0	0	0	0	0	0	6	9	9	13	13	18	24	14	18	18	8
	3 10 39	0	0	0	0	0	0	0	0	2	7	6	2	9	8	15	8	12	8	7	10	
	4 11 02	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	10	12	7	4	4	15
Dec.	28 13 04	0	0	0	0	0	0	5	6	13	9	8	14	18	8	5	7	9	10	16	8	14
	30 13 55	0	0	0	6	5	9	6	8	7	7	8	8	10	9	9	15	18	20	15	18	22

9b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
5	4	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	7	5	6	0	0	0	0	0	0	3	0	7	6	5	4	3	3	6	1	1	2	3	6	2	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	2	21	18	10	18	12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	3	8	13	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	2	5	4	0	0	0	0	0	0	0	0	5	6	6	1	1	2	4	2	4	2	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	4	8	11	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	18	2	10	
0	0	0	0	0	0	0	0	9	4	6	5	5	6	5	5	4	4	1	1	2	2	4	2	4		
0	0	0	0	0	0	0	0	6	2	6	0	0	0	0	0	0	0	0	0	1	5	4	0	0	0	0
20	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	14	
8	8	7	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	7	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	10	6	0	0	0	0
23	26	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	17	10	8	6	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	12	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	6	2	6	3	1	7	5	3	2	3	3	5	5	3	4	6	5	7	0	7	9	5	9	12	9	
34	10	5	8	9	10	12	13	9	5	1	5	0	8	3	6	5	3	5	6	8	3	3	6	13	14	
16	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
10	8	3	8	5	0	0	0	0	0	2	1	3	3	5	7	9	0	0	0	0	0	0	0	0	12	
13	9	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	9	

9b (Continued)

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
12	13	16	6	14	6	10	24	12	0	0	0	0	5	5	6	6	8	10	1	2	7	0	0	0	0	
14	9	7	8	7	8	3	2	7	3	2	7	2	0	0	0	0	0	0	0	0	0	0	0	0	5	6
7	8	7	6	7	9	7	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	13	15	12	4	6	6	0	0	0	0	0	0	0	8	16	0	0	0	0	0	0	0	0	0	0	0
9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	12	7	6	9	10	0	0	0	0	0	8	8	7	2	8	14	6	7	12	6	8	8	7	20	10	
12	8	13	12	20	8	7	10	1	6	8	7	8	8	1	3	10	5	3	10	9	7	0	0	0	16	
13	9	13	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

9c

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	
0	0	0	0	0	0	0	0	0	0	0	6	8	6	9	9	18	3	0	0	0	0	0	0	0	0
8	3	2	3	6	5	1	7	5	5	3	5	2	6	5	7	3	8	8	6	0	0	0	0	0	0
0	0	0	0	7	5	9	10	6	5	5	3	7	8	7	6	7	5	0	0	0	0	0	0	0	0
6	10	7	2	10	32	9	13	6	10	14	7	10	7	12	7	16	0	0	0	0	0	0	0	0	0
0	0	0	0	0	13	x	x	40	23	12	20	31	20	9	10	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	17	21	25	14	18	20	6	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	5	9	13	15	8	10	25	25	18	9	5	3	9	14	6	13	12	8	0	0	0	0	0
0	0	0	8	6	10	5	4	12	10	9	8	7	9	10	12	2	8	5	10	0	0	0	0	0	0
0	0	0	17	10	0	0	10	12	10	22	6	8	10	6	2	9	0	0	0	0	0	0	0	0	0
0	0	0	0	0	22	26	3	5	7	30	12	15	5	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	6	13	8	8	9	10	30	25	5	8	5	3	8	8	6	3	2	5	0	0	0	0	0
0	0	0	7	9	1	14	9	14	8	14	6	7	9	8	10	5	4	13	4	0	0	0	0	0	0
9	6	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1	1	8	1	6	1	2	1	1	5	1	1	1	1	4	5	7	8	9	4	2	4	0	x	x	x
0	0	4	8	13	8	7	5	8	0	0	0	0	12	7	10	12	0	0	0	0	0	0	0	0	0
10	6	9	0	0	0	7	9	8	6	14	5	7	10	14	7	0	0	0	0	0	0	0	0	0	0
0	0	0	0	8	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	12	23	17	3	9	10	21	16	9	15	15	12	3	9	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	2	4	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	12	3	5	0	0	0	6	1	10	5	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	9	13	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	22	18	12	9	15	12	22	15	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	17	24	22	15	9	15	14	13	16	7	7	8	0	0	0	0	0	0	0	0	0	0	0
0	9	12	6	13	7	9	8	8	4	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	11	14	28	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	9	13	18	14	14	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	10	10	2	7	7	9	5	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	11	8	9	10	8	0	0	0	0	0	0	0	0
0	0	0	12	17	14	10	7	9	31	31	15	15	6	7	9	10	6	2	4	0	0	0	0	0	0
0	0	0	0	20	17	10	6	7	6	5	9	15	15	0	0	15	1	8	5	0	0	0	0	0	0
7	7	9	8	12	12	9	5	8	10	9	14	8	7	7	6	6	3	5	3	4	5	6	2	0	0
12	12	14	21	14	7	7	8	13	13	7	14	3	5	7	7	7	x	10	6	7	3	3	7	5	
7	12	30	58	12	29	5	3	7	10	1	15	8	8	8	9	5	8	5	7	0	0	0	0	0	0
15	16	28	25	36	18	6	7	10	12	1	3	4	5	13	10	13	3	6	6	5	5	3	1	2	2
7	5	3	8	23	22	21	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x	x

9c (Continued)

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
0	0	0	0	0	0	13	10	5	12	13	3	13	8	0	0	0	0	0	0	0	0	0	0	0
12	9	9	9	3	2	6	7	9	10	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0
7	10	9	9	3	6	5	8	7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	9	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	12	13	8	9	8	18	18	20	13	9	5	6	3	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	9	9	10	8	5	6	2	2	4	5	9	4	5	4	5	6	0	0	0
15	5	7	28	33	33	21	15	15	1	0	0	0	0	0	0	14	14	8	2	5	0	0	0	0
18	21	28	44	44	28	24	17	23	12	6	6	8	1	5	9	7	0	0	0	0	0	0	0	0
8	17	15	24	25	12	6	0	0	0	0	0	0	0	0	0	0	6	2	9	5	2	0	0	0

1974

10a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	7 10 ^h 31 ^m	5	7	5	2	8	0	4	2	4	4	5	1	1	5	4	6	5	4	2	16	28
	10 11 45	1	2	5	8	0	0	0	0	0	9	7	10	5	4	6	6	10	6	5	14	8
	11 10 11	0	0	0	0	0	0	0	0	0	6	5	0	7	4	5	8	1	5	10	7	5
March	6 10 47	0	0	0	0	0	0	0	0	0	7	2	12	3	8	5	12	16	9	5	8	10
	21 08 52	0	0	0	0	0	0	0	0	0	0	5	8	7	2	1	15	14	16	18	5	13
Apr.	3 11 50	0	0	0	0	0	0	6	4	8	1	7	7	0	0	7	2	4	12	7	9	7
	6 08 20	0	0	0	0	0	0	0	0	0	0	0	0	6	12	8	7	7	6	1	10	5
May	18 14 23	0	0	0	0	0	0	0	0	0	0	0	0	6	6	11	11	18	24	9	5	9
	19 08 28	0	0	0	0	6	5	2	5	8	4	5	5	7	11	17	14	22	21	20	8	0
June	3 08 47	0	0	0	0	0	0	0	0	4	5	1	4	2	4	4	2	9	5	4	4	2
July	30 07 40	0	0	0	0	0	0	0	0	0	0	0	10	12	9	6	7	1	7	8	12	12
Aug.	1 06 38	0	0	0	0	0	0	0	0	0	0	0	6	6	5	5	6	8	14	6	6	18
	4 07 24	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	12	10	7	7	9	26
	8 08 01	0	0	0	0	0	0	0	0	0	0	6	7	13	8	9	22	11	2	4	5	5
Sep.	6 10 08	0	0	0	0	0	0	0	0	0	0	0	6	9	9	10	5	5	0	0	0	0
	13 08 05	0	0	0	0	0	0	0	0	0	0	7	8	6	7	3	6	3	6	6	9	7
	16 10 46	0	0	0	0	0	0	0	0	9	8	3	7	9	5	9	6	5	0	0	0	0
	17 08 40	0	0	0	0	0	0	0	2	9	5	8	8	0	0	0	0	0	0	0	0	0
	18 09 23	0	0	0	0	0	0	0	0	7	9	5	7	6	8	2	7	3	3	0	0	0
Nov.	17 10 32	0	0	0	0	0	0	0	6	4	1	4	5	4	2	6	10	7	10	8	2	2
	24 09 51	0	0	0	0	0	0	0	0	0	0	5	8	6	6	8	6	9	12	7	9	5

10b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
11	10	8	11	6	7	1	5	2	6	1	5	5	6	6	4	2	6	1	4	4	6	1	6	0	2
22	11	18	10	10	5	2	3	3	4	5	5	5	6	4	2	5	0	0	0	0	0	0	7	8	7
26	15	21	9	7	6	8	0	5	5	7	9	4	2	10	7	5	4	4	1	4	4	2	2	4	2
6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	10	0	0	0	2	7
13	8	6	7	2	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5
16	6	4	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	4	6	5	2	2	5	2	0	0	0	x	x	x	x	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	4	8	7	7	0	0	0	0	0	7	2	2	5	2	2	5	1	4	6	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	2	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	10	12	2
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	3	12	9	6	7	x	6	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
	5	x	2	7	9	2	6	9	6	7	7	5	8	2	5	1	7	4	5	5	4	2	5	4	7
	6	6	9	10	10	9	14	13	2	13	10	9	7	7	9	8	7	2	5	0	0	0	0	0	0
	2	6	9	13	10	14	8	9	15	7	5	5	9	5	6	6	2	8	5	6	2	2	4	4	0
12	9	22	14	9	5	10	15	21	18	41	9	12	8	9	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	5	2	4	7	4	6	9	8	0	0	0	0	0	0	0	0
	5	9	5	9	14	10	12	10	14	13	7	7	2	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	10	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	5	10	14	2	5	6	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	14	9	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	5	11	14	14	15	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	6	5	2	0	0	0	0	0	4	6	4	6	0	0	0	0	0	0	0	0	0	0
	0	4	4	2	4	6	5	5	9	5	8	7	6	10	9	9	6	9	5	0	0	0	0	0	0
14	10	0	0	10	13	21	12	16	15	17	10	10	8	7	6	0	0	0	0	0	0	0	0	0	0
	0	0	0	5	8	3	7	5	1	7	10	8	9	8	7	5	0	0	0	0	0	0	0	0	0
17	10	7	5	14	6	2	5	8	9	7	9	8	15	12	9	8	2	0	0	0	0	0	0	0	0
12	7	10	10	7	2	7	7	6	8	16	7	5	5	9	6	8	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	6	5	5	9	9	9	2	5	5	5	7	7	6	5	8	0	0	0	0	0	0	0

1975

11a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Jan.	15 10 ^b 22 ^m	0	0	0	0	0	0	0	0	0	0	8	9	10	3	3	3	15	8	8	6	6
	27 09 55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	10	6	15
Feb.	4 11 26	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	13	6	15	8	12	5
	5 12 12	0	0	0	0	0	0	0	0	0	0	0	4	10	4	7	16	6	13	5	5	10
	6 11 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr.	27 15 04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	0
	29 09 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 5 09 10	0	0	0	0	0	0	0	0	0	0	0	0	10	1	2	9	5	18	13	8	10	7
June	3 08 26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	8	6
	26 06 30	0	0	0	0	0	0	0	0	0	0	0	0	8	2	14	1	9	15	7	1	10
	27 09 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	5	5	6	1
July	7 08 00	0	0	0	0	0	5	1	1	1	3	2	6	9	8	8	8	3	6	6	2	8
	15 06 30	0	0	0	0	0	0	0	0	0	3	6	6	5	10	1	8	6	2	6	6	6
Aug.	9 10 15	0	0	0	0	0	0	0	0	0	0	6	8	5	7	6	0	0	0	0	0	0
	21 10 17	0	0	0	0	0	0	0	0	8	18	8	9	3	0	0	0	0	0	0	0	0
	22 09 26	0	0	0	0	0	0	0	0	0	0	1	5	8	0	0	0	6	1	7	11	
	23 08 18	0	0	0	0	0	0	0	0	6	4	4	16	9	21	13	7	1	9	9	21	
	28 09 10	0	0	0	0	0	0	0	0	7	8	9	2	5	7	12	36	32	23	5	8	9
Sep. 9 07 19	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	x	7	10	3	9	7	5
Oct.	24 10 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	6	8
	29 12 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	3	0	9	0
Nov.	9 10 14	0	0	0	0	0	0	0	0	6	6	7	2	4	4	15	14	2	13	14	5	
	10 10 16	0	0	0	0	0	0	0	0	6	3	1	4	5	4	3	1	9	2	10	10	10
	25 11 27	0	0	0	0	0	0	0	0	9	6	10	7	8	7	7	17	9	2	8	21	21
	26 12 02	0	0	0	0	0	0	0	0	0	0	0	0	0	7	9	14	6	10	13	14	8
Dec.	11 10 58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	8	0	0	5	0
	12 10 00	0	0	0	0	0	0	0	0	6	7	6	5	5	1	1	0	0	0	8	7	5
	29 11 54	0	0	0	0	0	0	12	2	9	3	7	1	14	8	0	0	0	0	0	0	0

11b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	
7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	7
6	5	8	10	5	0	0	0	0	0	0	0	0	2	2	7	2	4	6	5	2	0	0	0	0	0	0
0	0	0	4	10	4	4	7	6	9	5	6	0	0	0	0	0	0	0	0	0	0	0	6	9	7	
8	0	0	0	0	2	9	10	9	0	0	0	0	0	0	0	7	2	5	5	2	0	0	0	0	0	
0	0	0	0	0	0	8	4	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	4	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	7	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230		
8	2	9	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	7
9	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	4	5	5	6	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	17	6	17	11	3	0	0	0	0	0	0	0	0	0	0	7	7	7	15	6	0	0	0	0	0	0	
6	9	9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	8	
3	6	3	5	5	7	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	7	10
7	5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	3	9	3	7	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	6	10
5	13	9	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1	15	9	6	10	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	8	13	4	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
0	0	0	0	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	0	0	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5
0	0	0	3	9	1	0	4	0	0	0	0	0	0	0	0	0	10	9	0	0	0	0	0	0	0	0	0	0

	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
2	5	5	x	x	x	x	x	x	x	x	x	x	x	x	x	12	2	3	5	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	6	6	7	6	16	6	12	5	8	8	8	7	2	0	0	0
0	0	0	0	10	9	5	4	9	7	13	10	7	6	8	2	8	15	0	0	0	0	0	0	0	0
0	0	4	8	13	9	4	4	5	0	0	7	7	4	4	5	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	2	6	6	4	0	0	0	0	0	0	0
0	0	0	0	9	8	7	4	8	7	4	7	7	2	4	0	0	0	0	0	0	0	0	0	0	0
1	26	15	21	12	6	4	10	26	4	2	14	34	0	0	0	0	0	0	0	0	0	0	0	0	0
5	3	2	8	12	10	6	21	9	7	7	10	6	6	2	6	10	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	6	7	9	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	3	5	2	8	1	18	5	2	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3	2	8	5	5	6	9	6	8	8	7	7	7	8	7	5	1	8	0	0	0	0	0	0	0
13	5	8	7	8	1	3	6	8	9	7	3	2	6	5	0	0	0	0	0	0	0	0	0	0	0
9	2	6	6	7	8	7	10	8	7	6	6	6	6	3	6	1	2	1	0	0	0	0	0	0	0
0	0	0	0	15	52	24	20	16	12	10	9	6	7	23	61	33	53	8	38	0	0	0	0	0	0
0	0	5	6	6	8	10	0	0	0	1	6	10	8	1	8	8	10	0	0	0	0	0	0	0	0
0	3	9	1	9	21	7	8	9	14	12	9	16	34	13	7	13	0	0	0	0	0	0	0	0	0
9	8	5	12	9	7	8	13	17	6	5	2	4	9	10	0	0	0	0	0	0	0	0	0	0	0
9	5	7	7	5	14	1	6	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	13	13	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	7	6	5	3	9	14	2	3	7	6	3	7	2	3	0	0	0	0	0	0	0	0	0	0

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	8	5	4	2	5	7	7	8	7	5	0	0	0	0	0	0	0	0	0	0	0
7	7	0	10	6	13	9	12	14	12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	10	12	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
0	2	0	3	5	0	14	13	10	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

1976

12a

Date	UT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Feb.	17 09 ^b 57 ^m	0	0	0	0	0	0	0	0	12	9	2	7	2	8	5	0	2	7	7	1	8
	20 10 26	0	0	0	0	0	0	0	0	0	5	13	6	0	0	0	0	0	0	0	0	0
	21 09 05	0	0	0	0	0	0	2	0	7	5	6	9	5	5	5	0	11	0	0	0	0
	22 09 30	0	0	0	0	0	0	0	0	0	0	5	5	2	11	7	6	5	4	0	0	0
	23 10 01	0	0	0	0	0	0	0	0	4	4	5	5	2	5	1	2	0	0	1	8	6
	24 09 43	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	2	2	1
Apr.	2 12 00	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	5	7	1	6	6	4
May	10 10 11	0	0	0	0	0	17	5	13	7	9	9	10	0	0	0	0	0	10	12	12	
June	8 08 34	0	0	0	0	0	0	0	0	0	0	1	23	2	5	1	0	0	0	0	2	1
	30 08 44	0	0	0	0	0	0	0	0	0	0	3	16	6	8	7	0	3	13	1	6	7
July	.1 08 21	0	0	0	0	0	0	0	4	1	2	1	7	7	1	4	4	5	4	4	2	4
	2 09 38	0	0	0	0	0	0	0	0	0	0	0	4	4	1	1	2	7	2	4	10	1
	3 10 00	0	0	0	0	5	7	4	4	4	5	6	8	4	5	2	4	4	2	1	10	7
Oct.	10 09 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11 10 22	0	0	0	0	0	0	0	6	5	7	4	4	x	7	8	x	10	8	7	7	7
	27 14 10	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	7	9	14	14	7

12b

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	11	4	0	9	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	9
1	1	1	1	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2	5	7	15	10	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	4	10	0	0	0	0	0	0	24

12b (Continued)

105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
4	2	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4
7	4	4	4	2	0	0	0	0	0	0	0	0	0	0	2	2	2	6	4	6	5	5	1	7	10
5	2	9	0	0	0	0	0	0	0	0	7	1	1	1	0	0	0	0	4	4	1	2	5	4	2
0	0	0	0	0	10	25	13	26	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	7	5	8
8	7	6	4	6	2	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

12c

235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
0	0	0	0	0	0	0	6	7	13	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	19	13	4	6	15	8	8	4	0	16	6	1	9	6	4	4	7	1	4	0	0	0	0	0
0	0	1	6	12	2	8	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5	1	2	4	8	0	0	0	0	0
7	2	11	5	0	13	8	15	6	7	1	2	5	1	16	11	13	7	4	0	0	0	0	0	0
1	2	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0
1	2	8	5	4	5	7	8	6	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	6	2	6	4	0	0	0	0	0	0
5	7	3	8	9	10	18	4	3	5	10	6	11	14	10	5	16	12	6	0	0	0	0	0	0
2	5	6	9	2	2	6	5	6	5	2	7	7	4	8	4	8	4	0	0	0	0	0	0	0
8	7	7	4	1	6	7	1	8	7	7	2	14	2	1	6	1	6	7	4	0	0	0	0	0
4	1	5	2	7	0	0	0	0	4	2	4	2	10	1	4	6	4	2	2	0	0	0	0	0
4	6	7	4	5	6	6	6	8	6	5	6	6	5	0	0	0	0	0	0	0	0	0	0	0
4	7	11	7	16	6	6	6	8	0	x	9	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	6	0	0	6	7	7	5	7

INTENZITY EMISNEJ KORONÁLNEJ ČIARY 637,4 nm POZOROVANEJ V ROKOCH 1965—1976 NA LOMNICKOM ŠTÍTE

V. RUŠIN, M. RYBANSKÝ, L. SCHEIRICH

*Astronomický ústav Slovenskej akadémie vied,
Skalnate Pleso, Československo*

Súhrn

Tabuľka prináša intenzity emisnej čiary koróny 637,4 nm z koronálnej stanice Lomnický štít za roky 1965—1976, ktoré sa získavajú v rámci medzinárodnej koronálnej služby. Intenzity sa určujú vo výške 40" nad slnečným okrajom pozdĺž celého slnečného limbu so začiatkom na severnom póle Slnka a s krokom po 5° v smere východ, juh, západ, sever. Intenzity sú vyjadrené ekvivalentnou šírkou spektra stredu slnečného disku

v tej istej oblasti, pričom jednotkou je šírka 10^{-7} nm. Intenzity získané v starej fotometrickej škále (za roky 1965—1970) boli prevedené na hodnoty intenzít novej fotometrickej škály, ktorá sa používa na našej stanici od roku 1971. Publikované údaje predstavujú takto určitý homogénny rad za celé pozorovacie obdobie.

ИНТЕНСИВНОСТИ ЭМИССИОННОЙ КОРОНАЛЬНОЙ ЛИНИИ 637,4 нм, НАБЛЮДАЕМОЙ НА СТАНЦИИ ЛОМНИЦКИ-ШТИТ В ПЕРИОД 1965—1976 гг.

В. РУШИН, М. РЫБАНСКИЙ, Л. ШАЙРИХ

*Астрономический институт Словацкой академии наук,
Скалнате-Плесо, Чехословакия*

Резюме

Таблица содержит интенсивности эмиссионной линии короны 637,4 нм, наблюдаемой на корональной станции Ломницки-Штит в период 1965—1976 гг., которые были получены в рамках международной службы короны. Интенсивности определяются на высоте 40" над краем солнечного диска вдоль всего солнечного лимба, начиная от северного полюса Солнца и с шагом по 5° в направлении восток, юг, запад, север. Интенсивности выражены эквивалентной

шириной спектра центра солнечного диска в той же самой области, причем единицей ширины служит 10^{-7} нм. Интенсивности, полученные по старой фотометрической шкале (за период 1965—1970 гг.), были переведены в величины интенсивности по новой фотометрической шкале, которая на нашей станции применяется с 1971 г. Таким образом, публикуемые данные представляют собой определенный гомогенный ряд за весь наблюдаемый период.