

EXPLANATION

These diagrams show the appearance of the sky in various latitudes at different times of the day. They are useful in selecting the most suitable stars and planets for navigation on a given flight and for identifying prominent objects at the time of observations.

The *Sky Diagrams* have four advantages over ordinary star charts and star finders:

- (a) They are ready for immediate use without settings or tables of any kind.
- (b) Planets and the Moon are shown as well as the stars.
- (c) True altitudes and bearings are shown on the diagrams without distortion.
- (d) The appearance of the sky for different latitudes and times is shown at one opening so that the appearance for intermediate latitudes and times is easily visualized.

For each month there is a series of diagrams showing the sky for different latitudes at 2^h intervals during the day. The diagrams on pages A26–A97 are designed for use in latitudes S.50° to N.75°. Those for the morning hours appear on two facing pages, followed by those of the midday hours, and then by those for the evening hours. The diagrams for a given latitude are arranged in a row and show the changes in the sky during the day. The diagrams on pages A98–A121 are for use in the north polar regions; here all diagrams for a given month are on two facing pages. On each page is shown in the middle row of diagrams the appearance of the sky at the north pole, and in the other two rows the appearance at latitude N.75° on opposite sides of the pole (that is, at longitudes differing by 180°) for the same instant of UT and hence for local times that differ by 12 hours. On the upper row of diagrams, these local times are printed with inverted figures. The navigator should select the diagram corresponding to his local time, and place the page with this time right side up at the bottom; north will then be at the top. In a flight, which crosses the vicinity of the pole, the other row of diagrams shows the appearance of the sky to be expected after the other side of the pole has been reached. At the pole itself, the local time is indeterminate.

In each diagram the circular outline represents the horizon and the central cross, the zenith. Altitudes are measured radially with a linear scale; i.e., an object one-third of the way from the edge to the center has an altitude of 30°; the small circles on the diagrams are at altitudes 30° and 60°. Azimuths are measured as on the navigation chart, with north at the top and east at the right. On various parts of the diagrams are small curved arrows indicating the diurnal motion in that area; the length of the arrows shows the motion in one hour.

The objects shown on the diagrams are the 57 selected navigational stars, the Sun, the Moon, the four planets Venus, Mars, Jupiter and Saturn, and the north and south celestial poles. The position of a star or a planet is indicated by its star number or planet initial symbol respectively. Star magnitudes are listed on the even-numbered pages and planet magnitudes are shown on each of the odd-numbered pages. The numbers of the 41 stars used in the *Sight Reduction Tables for Air Navigation* (Pub. No. 249, A.P. 3270) are shown in heavier type. The north and south poles are identified by the initials NP and SP. The position of the Sun is shown by a circle with a dot in the middle. The position of the Moon is shown by a circle with the day of the month on which it occupies that position.

The positions of the stars, Sun and planets in each diagram are indicated for the 15th of the month and will usually serve for the entire month. If it is desired to allow for the motion of the stars during the month, it is necessary only to remember that a given configuration will occur at the beginning of each month one hour later than the time indicated, and at the end of the month one hour earlier. The lengths of the arrows, in the diagrams for 1^h, 9^h and 17^h, indicate the motion of the stars in 15 days. When the Sun is above the horizon, only the Moon and Venus can be seen with the naked eye, but the positions of the stars are given for use with astro-trackers.

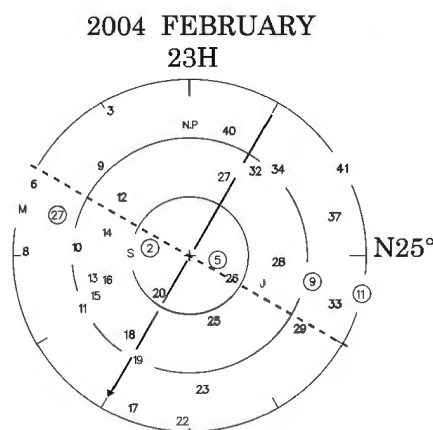
Some of the navigational stars may be omitted from the plot if they are close to a solar system object at mid-month. Some of the navigational planets may be omitted if they are close to the Sun at mid-month; in such cases the planet(s) omitted would generally be unobservable for the whole month. The exception might be Venus passing inferior conjunction, which is noted on the right side of the page.

The Moon moves so rapidly with respect to the stars that its position at a given time of the night varies appreciably from night to night, and it is necessary to show on each diagram a succession of positions for various days of the month. Three or more such positions are indicated and those for the intermediate dates may be estimated from those given. Since the Moon moves completely round the sky in slightly less than a month, or a little over 13° in a day, it will appear on a given diagram for about half of each month. The position on the diagram for each successive night is always to the eastward; when it disappears off the eastern edge of the diagram it will reappear on the western edge about two weeks later, except occasionally on the polar diagrams.

Example. Select the best available objects to give a fix at 23^h LMT on 2004 February 10, during a flight on a true course/track of 210° in latitude N. 25° .

The required diagram is reproduced here from *The Air Almanac* 2004, with the course/track of 210° marked on it.

Examination of the diagram shows immediately that the best objects, giving position lines perpendicular to the track and parallel to it, are **18** and **12**, *Sirius* and *Capella*. *Sirius* is approximately at altitude 40° , and true bearing 210° ; *Capella* is approximately at altitude 45° and true bearing 300° . If desired the altitudes and bearings may be found more accurately with dividers and the scale diagrams.



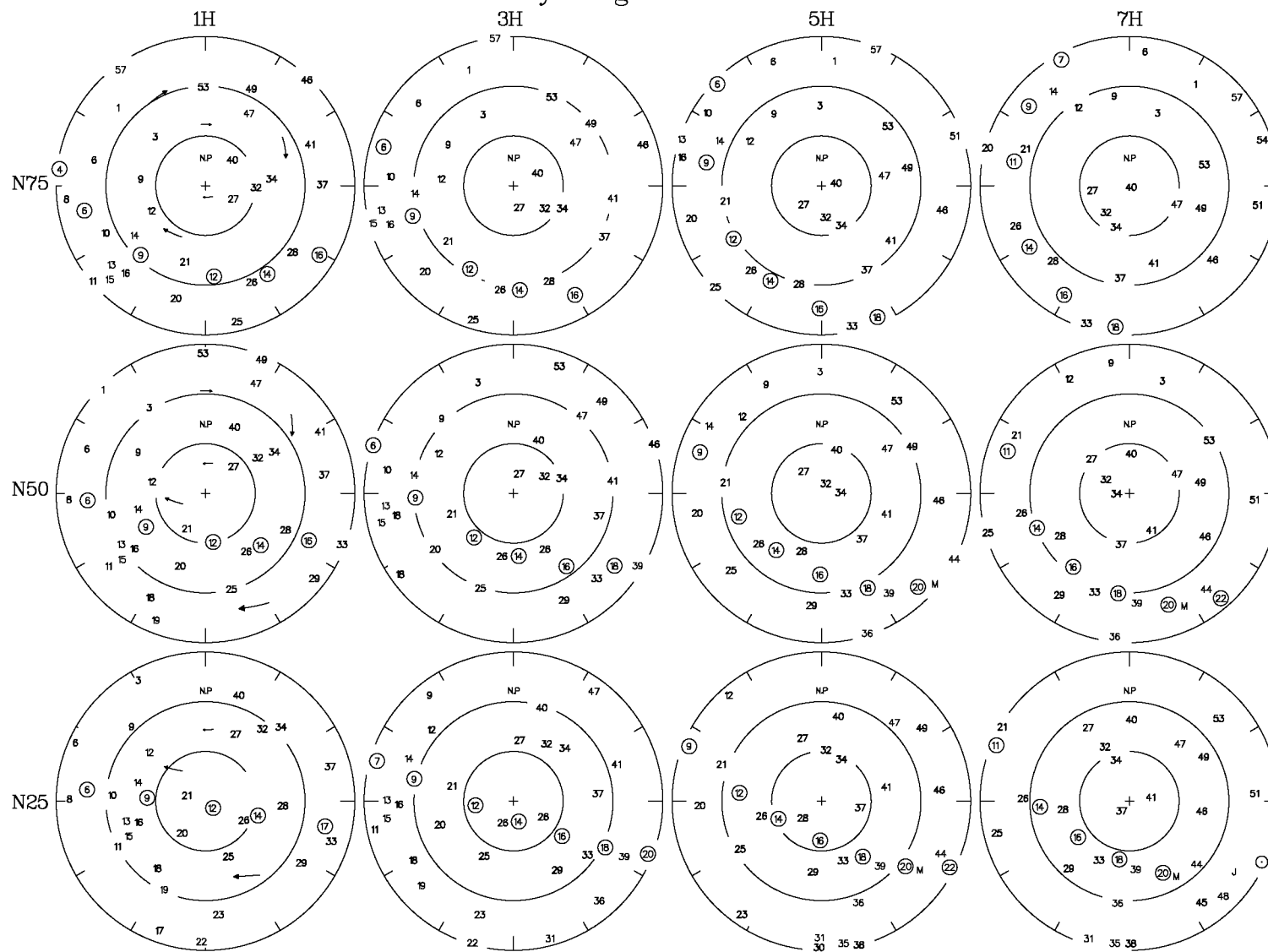
The *Sky Diagrams* used in conjunction with the star chart and the planet location diagrams (pages A122–A124) are extremely effective in star identification, the star chart and the planet location diagram being used for detailed verification of the identification made with the *Sky Diagrams*.

Example. On 2004 March 1^d 22^h LMT in latitude N. 25° , it is desired to know what objects are visible. The diagrams are for the fifteenth of the month, but the same configurations of stars occur on the first of the month, *one hour later*, or on the first of the following month, *one hour earlier*; therefore the above diagram for February 15^d 23^h can be used for March 1^d 22^h (for stars only). The azimuths and altitudes of the various objects visible at that time can now be read from the diagram.

It must be remembered that the *Sky Diagrams* are to be used flat on the chart table and that they show bearings as they appear on the navigator's chart, east to the right. The star chart and the planet location diagram, on the other hand, are designed to be held overhead for comparison with the sky, and on them east is to the left.

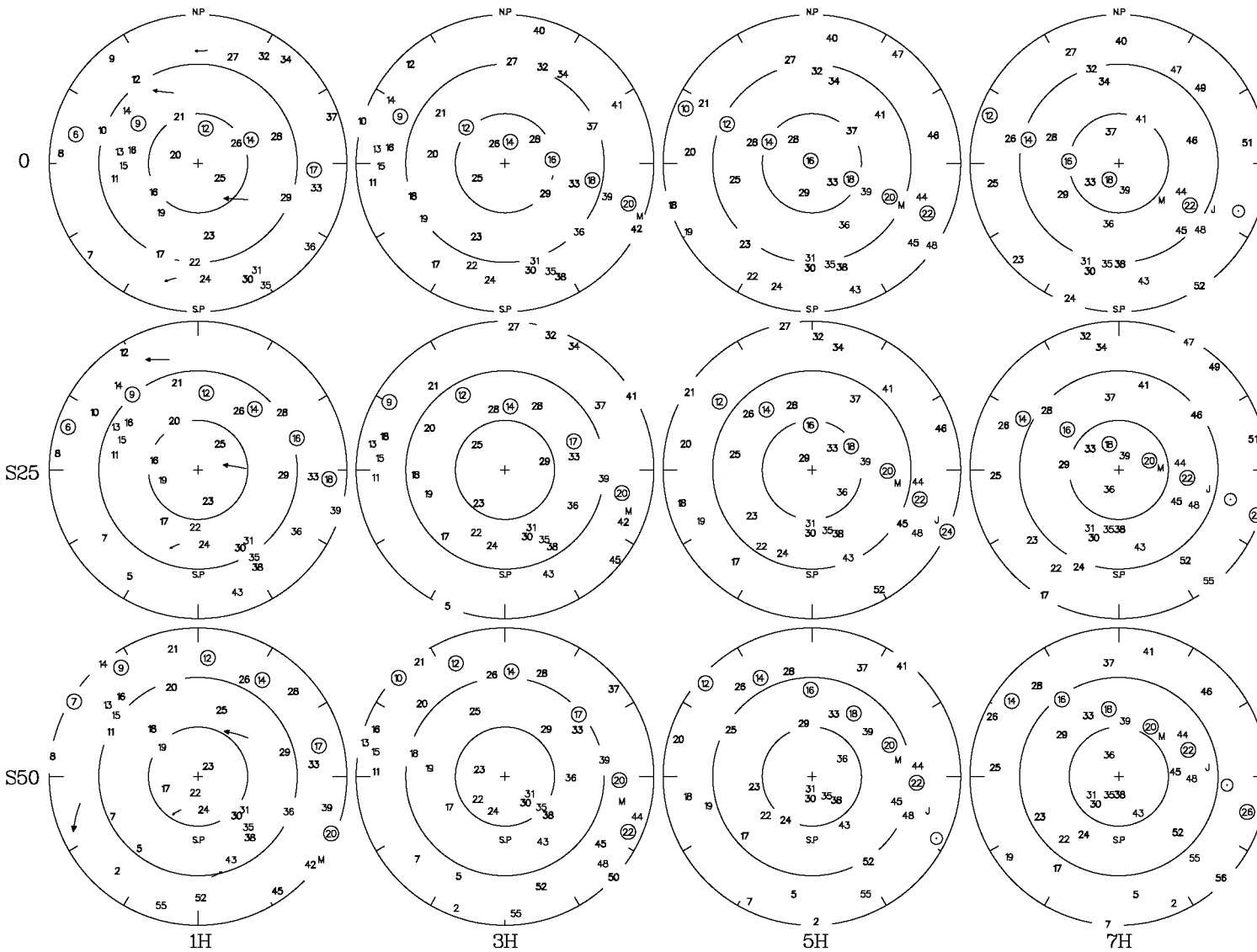
For some intermediate latitude, such as 40° , or for an intermediate time, such as 22^h, altitudes and bearings may be taken from two diagrams and a more accurate result obtained by interpolation; but such refinements are not usually necessary.

MORNING Sky Diagrams 2020 JANUARY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

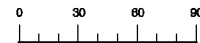
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.5
- J Jupiter -1.8
- S Saturn 0.5

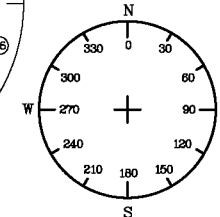
POLES

N•P North S•P South

ALTITUDE SCALE

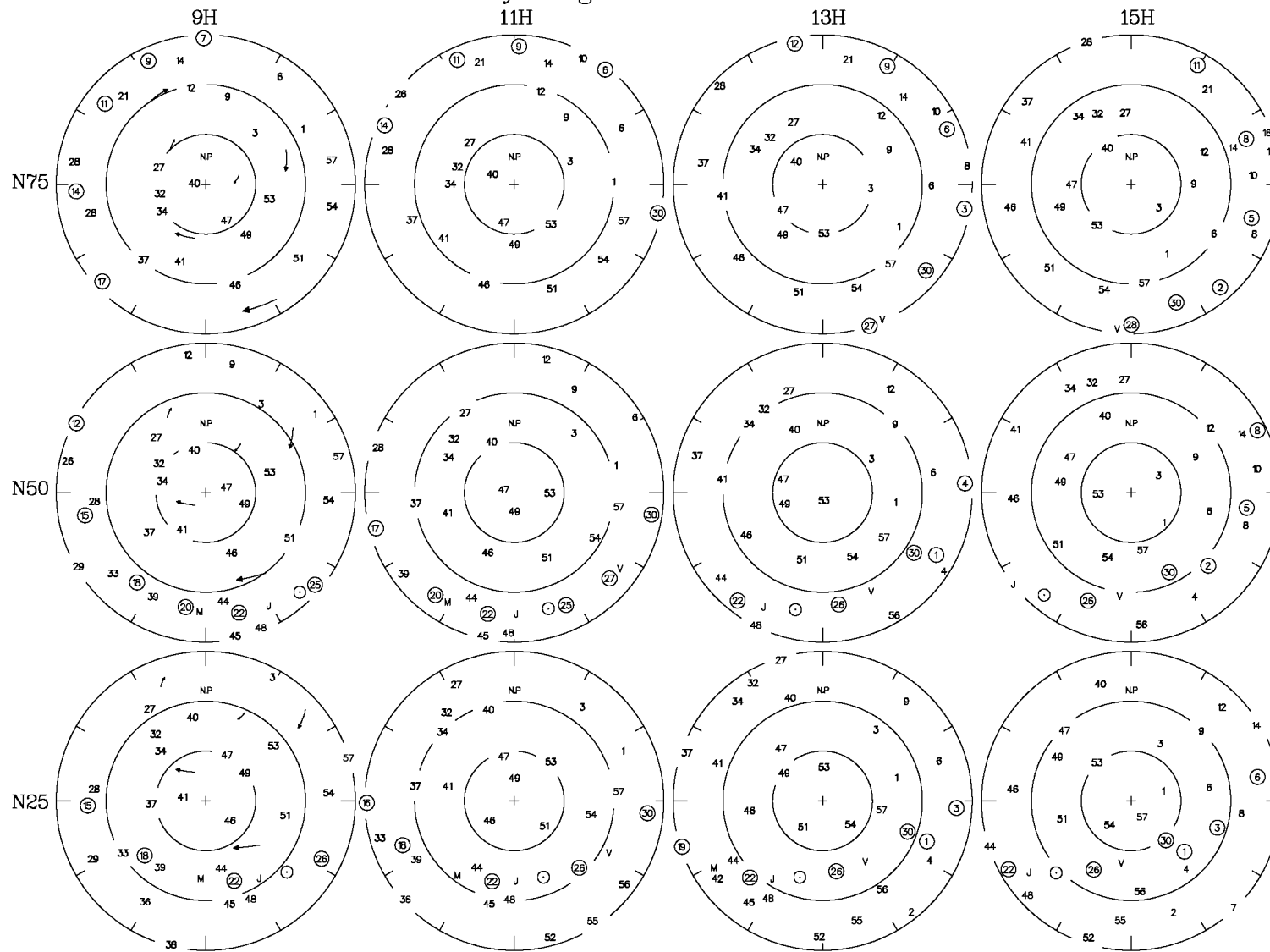


AZIMUTH



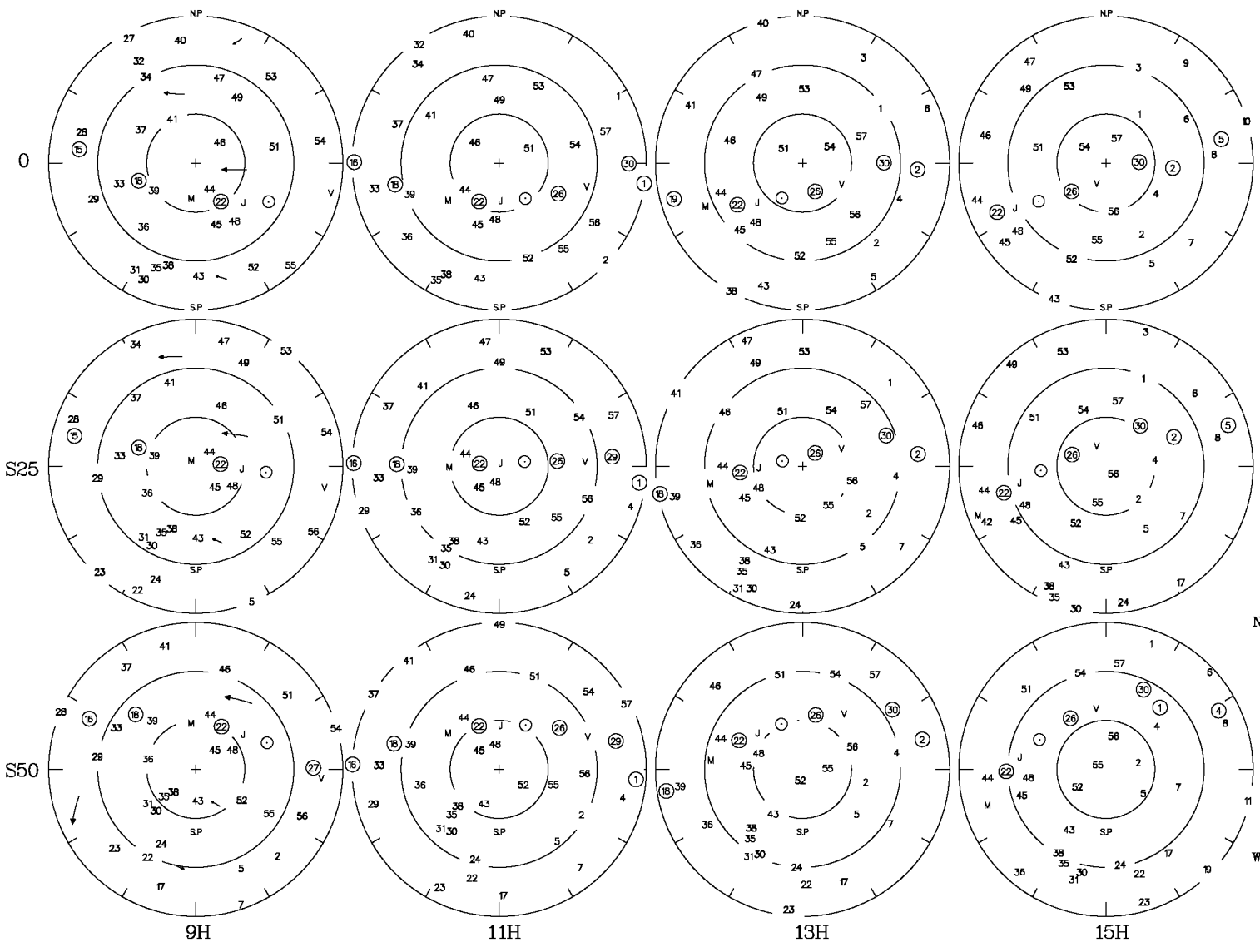
MORNING Sky Diagrams 2020 JANUARY

DAY Sky Diagrams 2020 JANUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
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32	1.8	1.5
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37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
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42	1.0	3.7
43	1.9	4.1
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47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

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MOON

- ① Position, 1st of month
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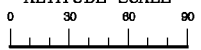
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.5
- J Jupiter -1.8
- S Saturn 0.5

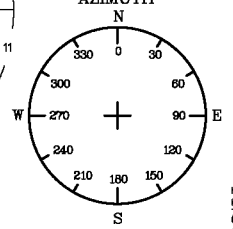
POLES

N•P North S•P South

ALTITUDE SCALE

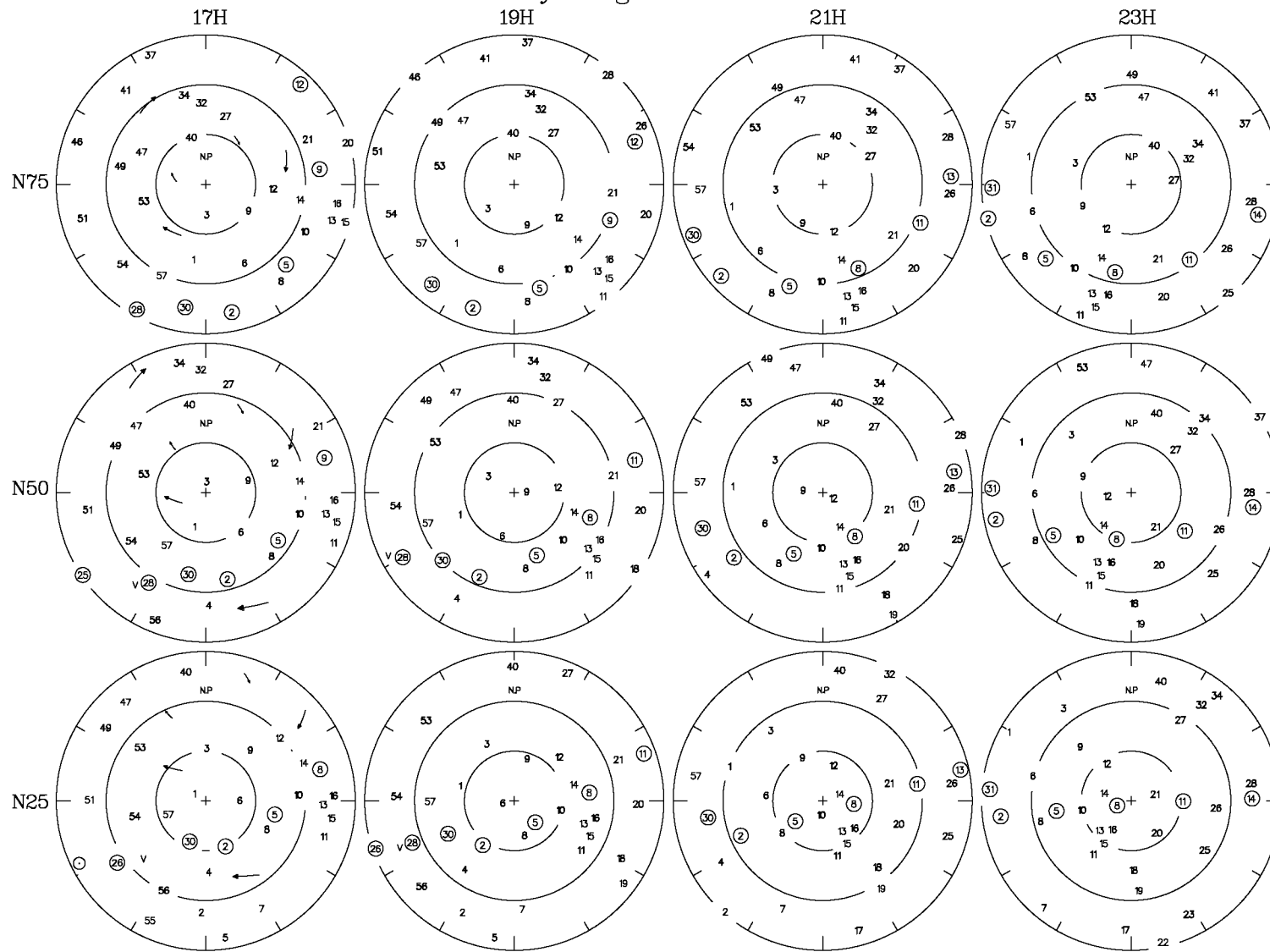


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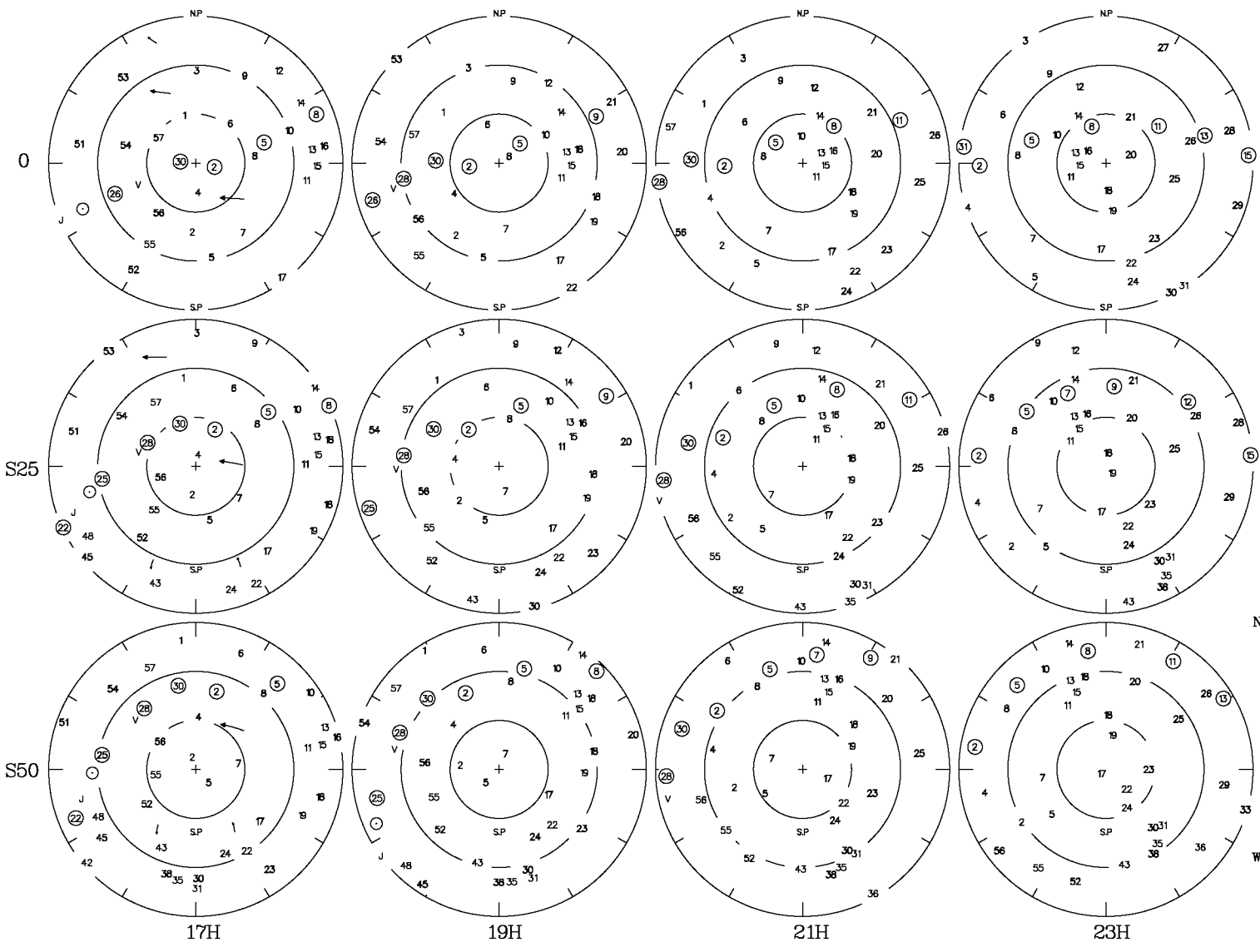
DAY Sky Diagrams 2020 JANUARY

EVENING Sky Diagrams 2020 JANUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
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22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
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33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
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40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

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☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

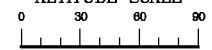
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.5
- J Jupiter -1.8
- S Saturn 0.5

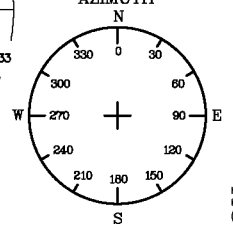
POLES

N•P North S•P South

ALTITUDE SCALE

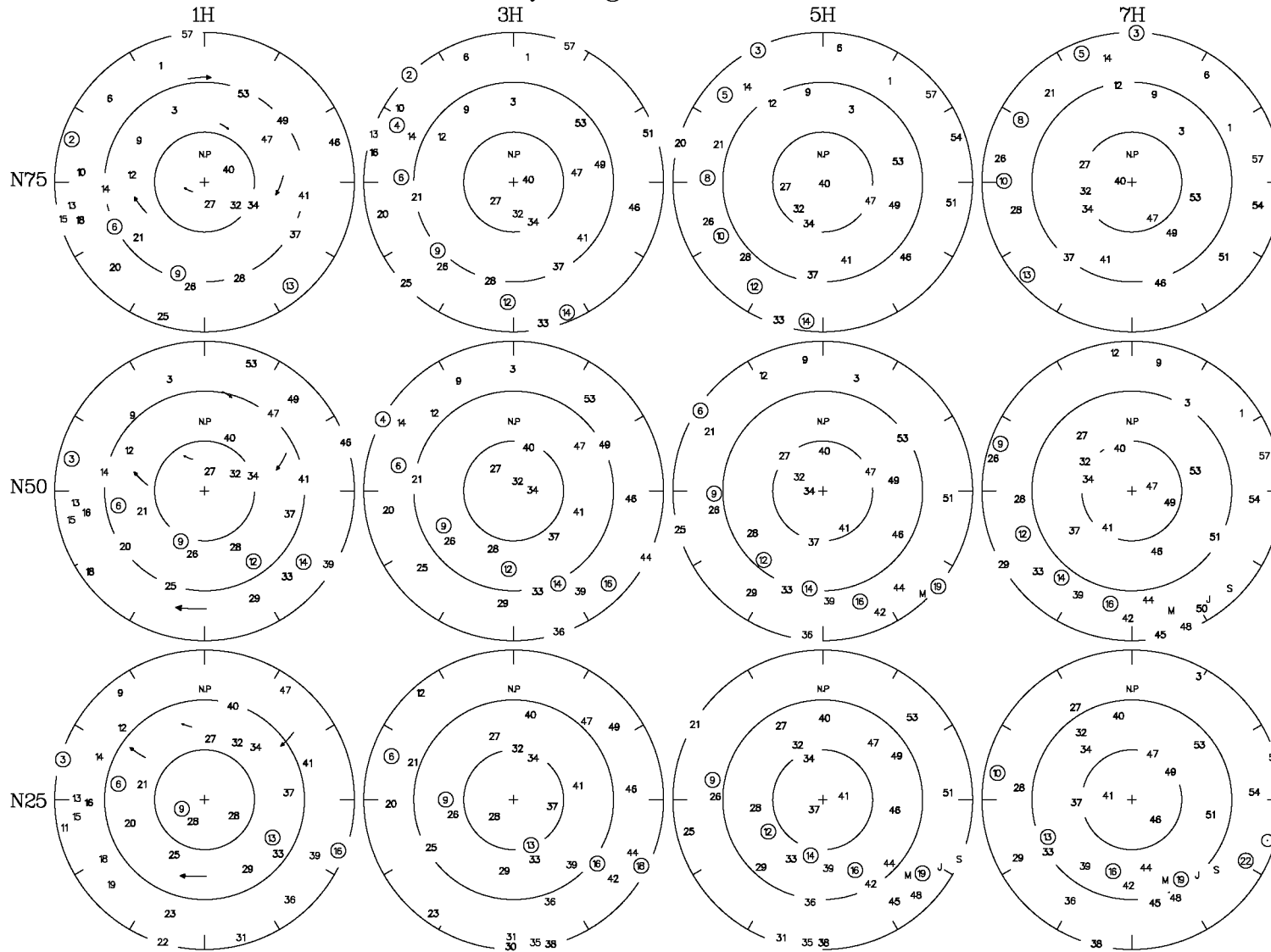


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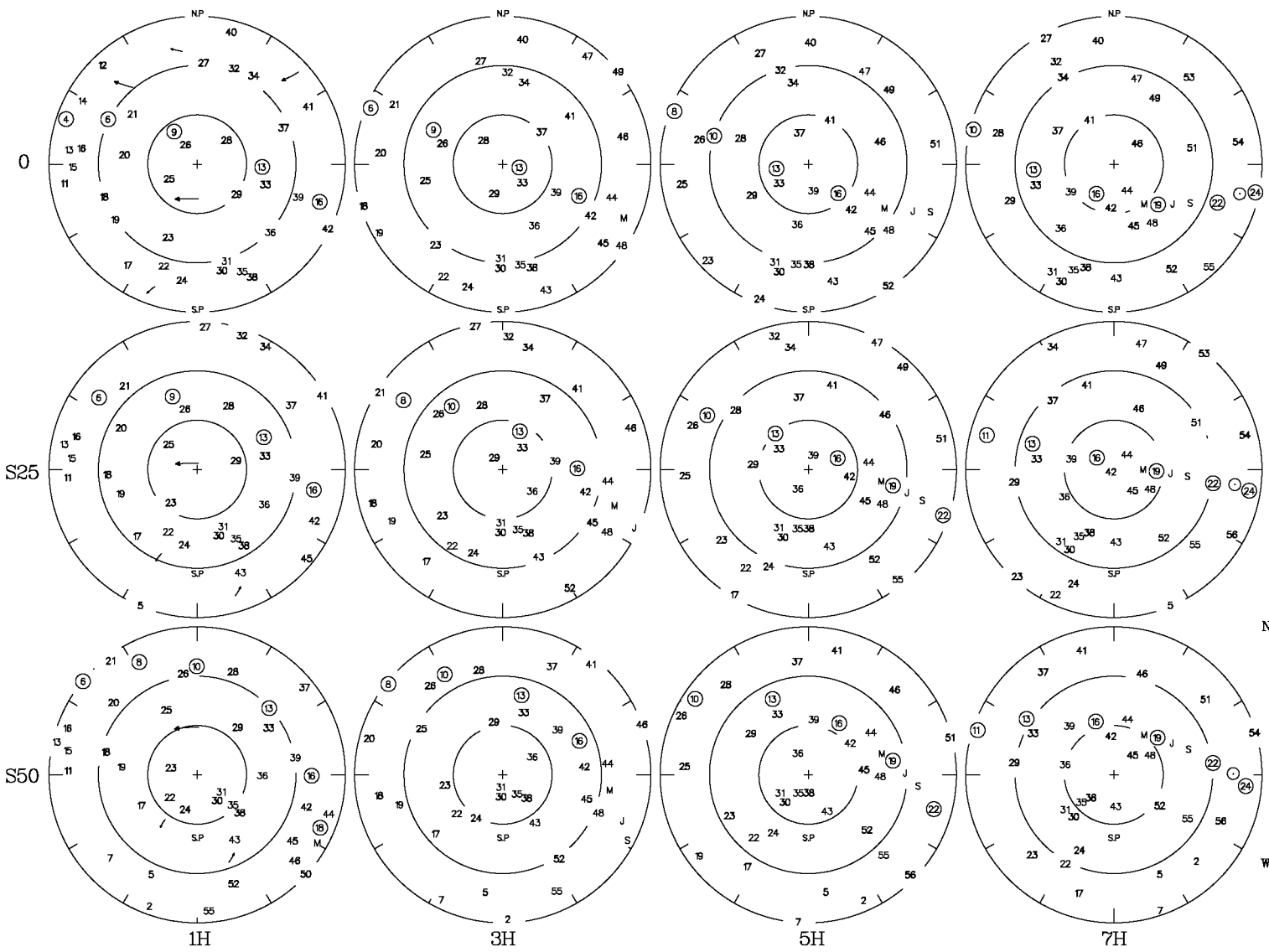
EVENING Sky Diagrams 2020 JANUARY

MORNING Sky Diagrams 2020 FEBRUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
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23	2.2	4.6
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25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
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30	1.3	0.5
31	1.6	4.1
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37	0.0	1.9
38	-0.3	0.9
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54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

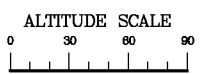
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

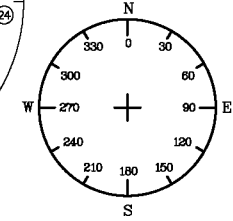
- V Venus -4.2
- M Mars 1.3
- J Jupiter -1.9
- S Saturn 0.6

POLES

N•P North S•P South

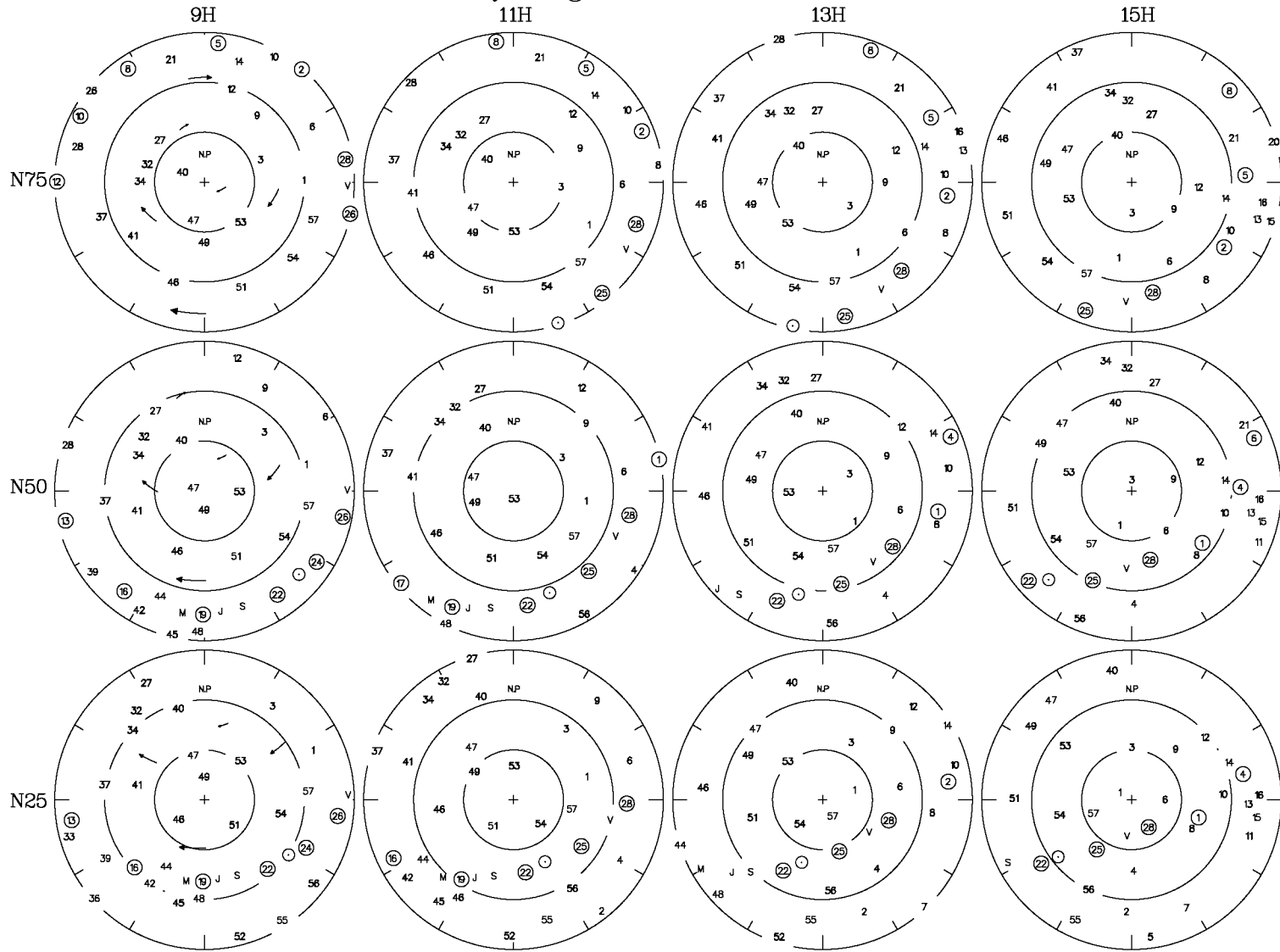


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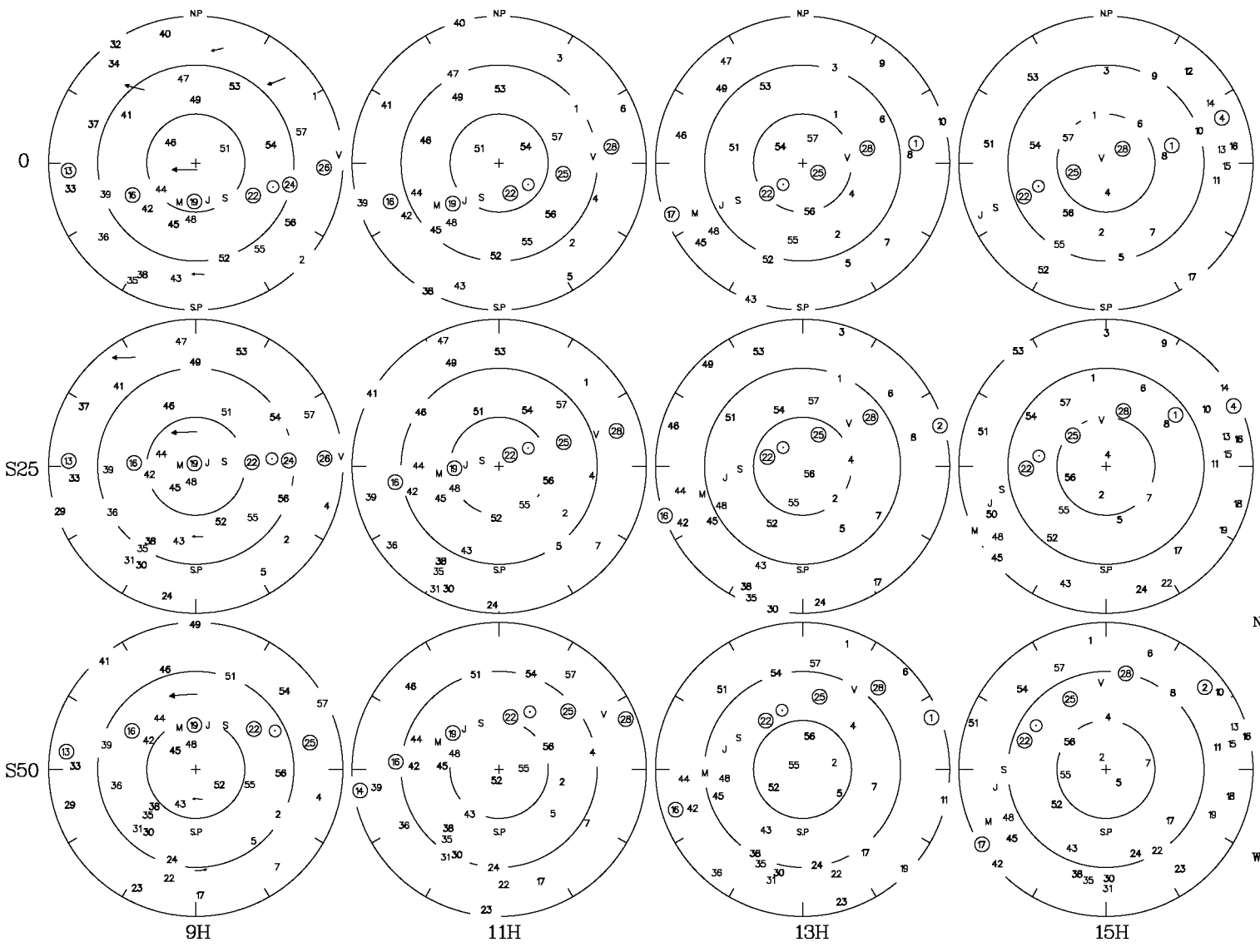
MORNING Sky Diagrams 2020 FEBRUARY

DAY Sky Diagrams 2020 FEBRUARY



STARS		
No.	Magnitude	
	Vis.	S-4
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13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
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The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

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MOON

- ① Position, 1st of month
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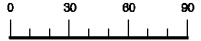
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars 1.3
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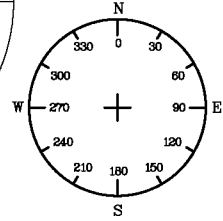
POLES

N•P North S•P South

ALTITUDE SCALE

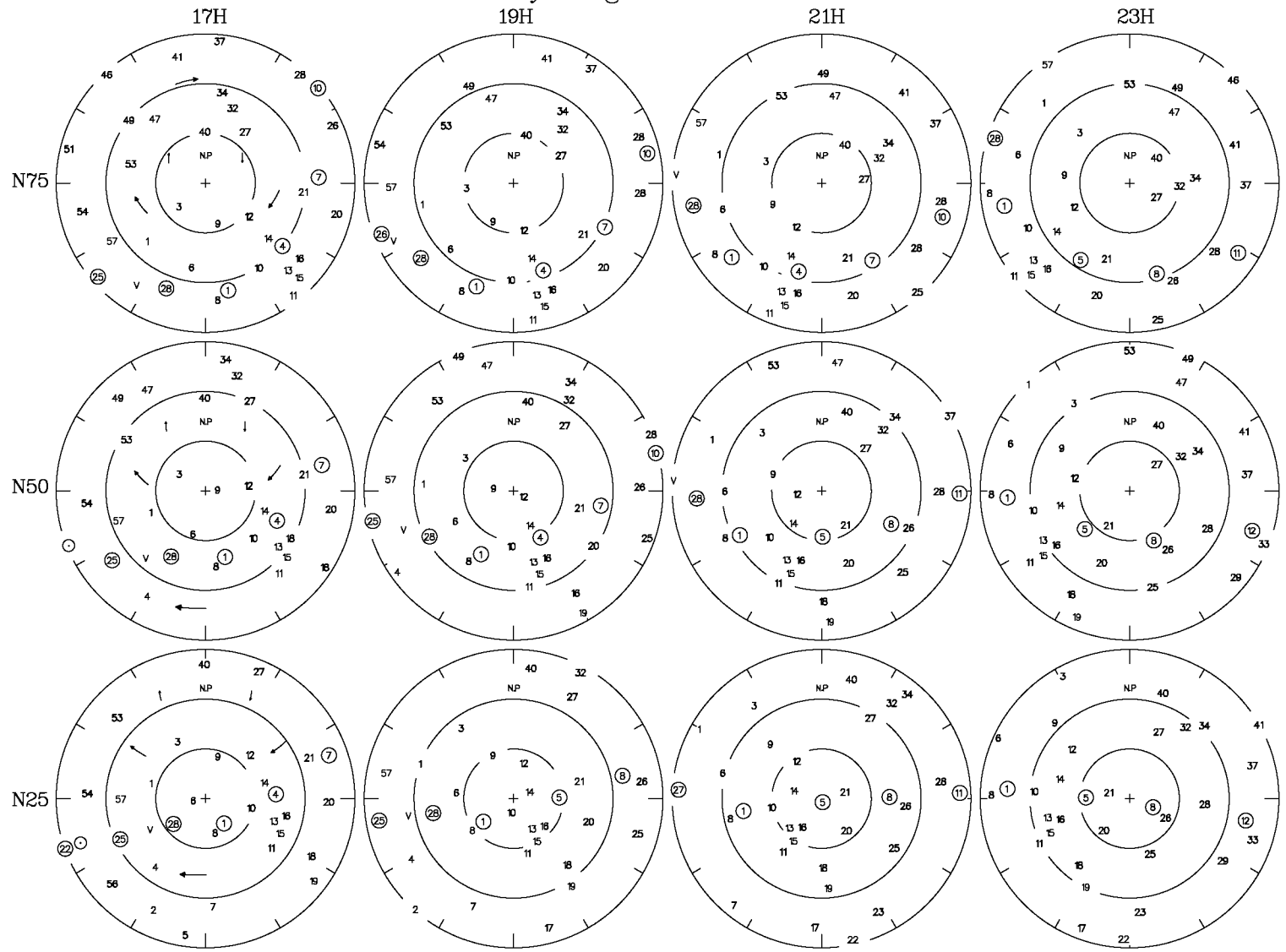


AZIMUTH



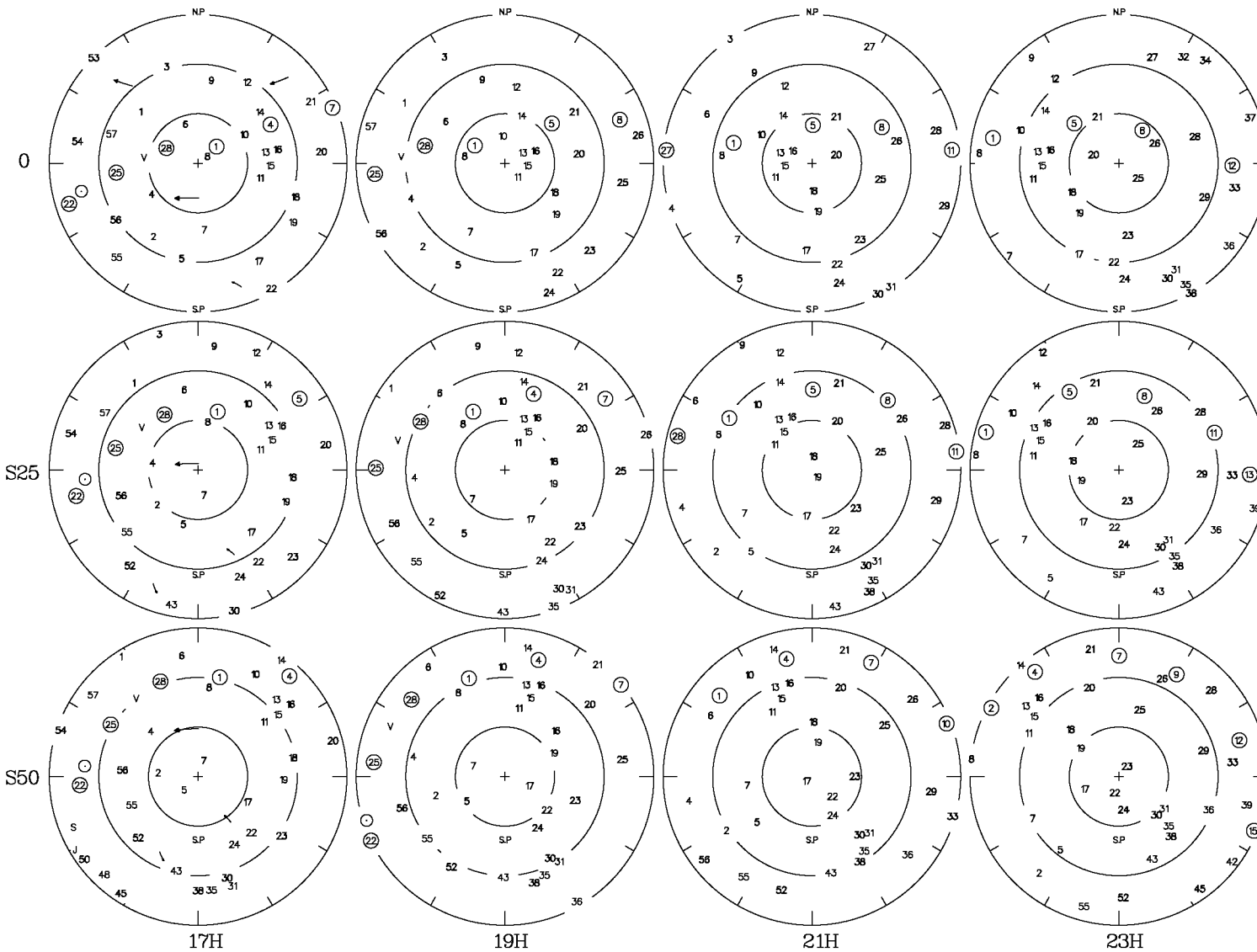
DAY Sky Diagrams 2020 FEBRUARY

EVENING Sky Diagrams 2020 FEBRUARY



STARS		
No.	Magnitude	S-4
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33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

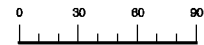
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars 1.3
- J Jupiter -1.9
- S Saturn 0.6

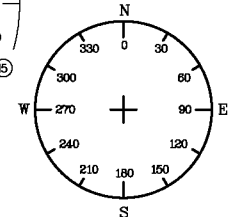
POLES

N•P North S•P South

ALTITUDE SCALE

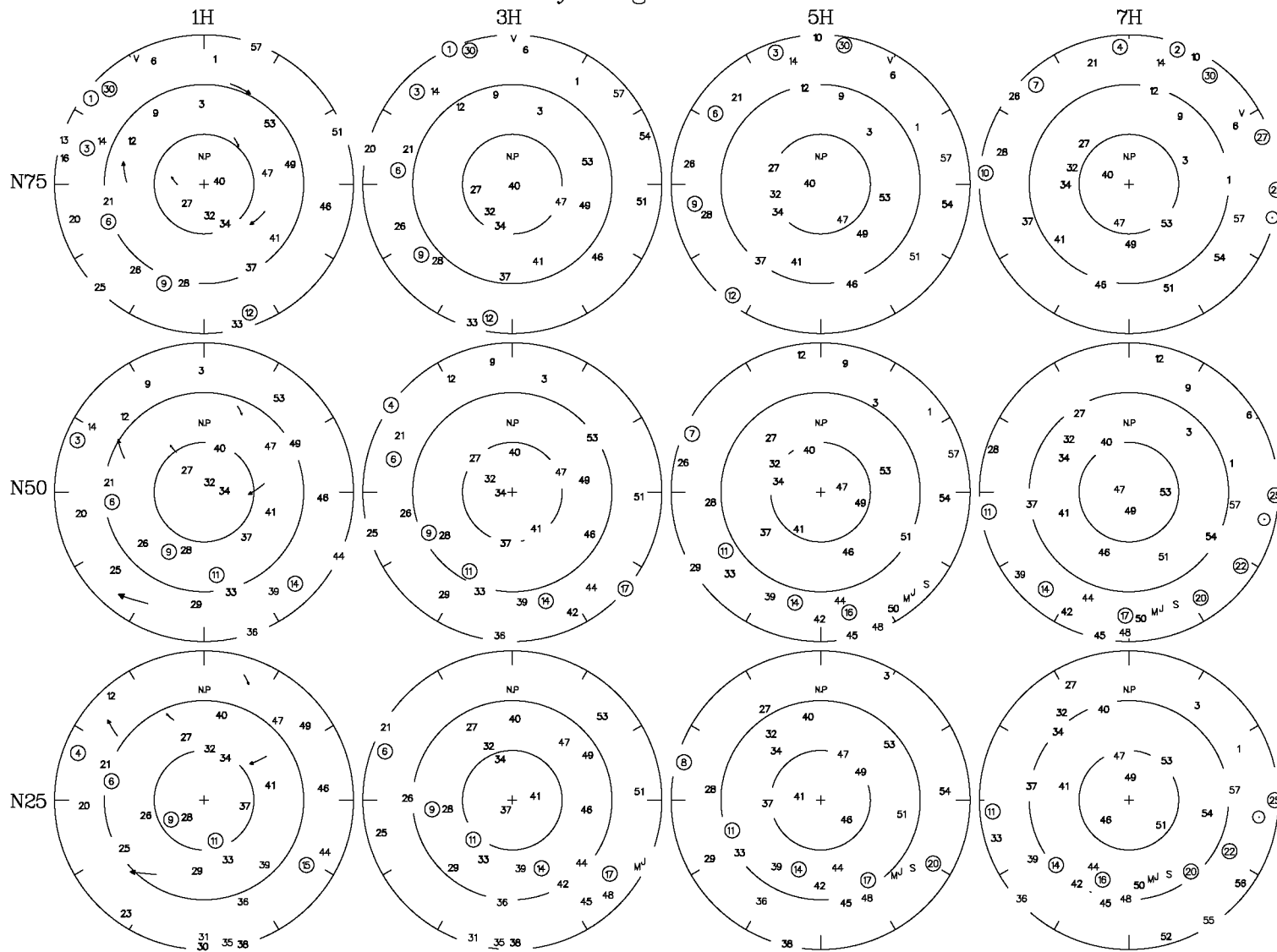


AZIMUTH



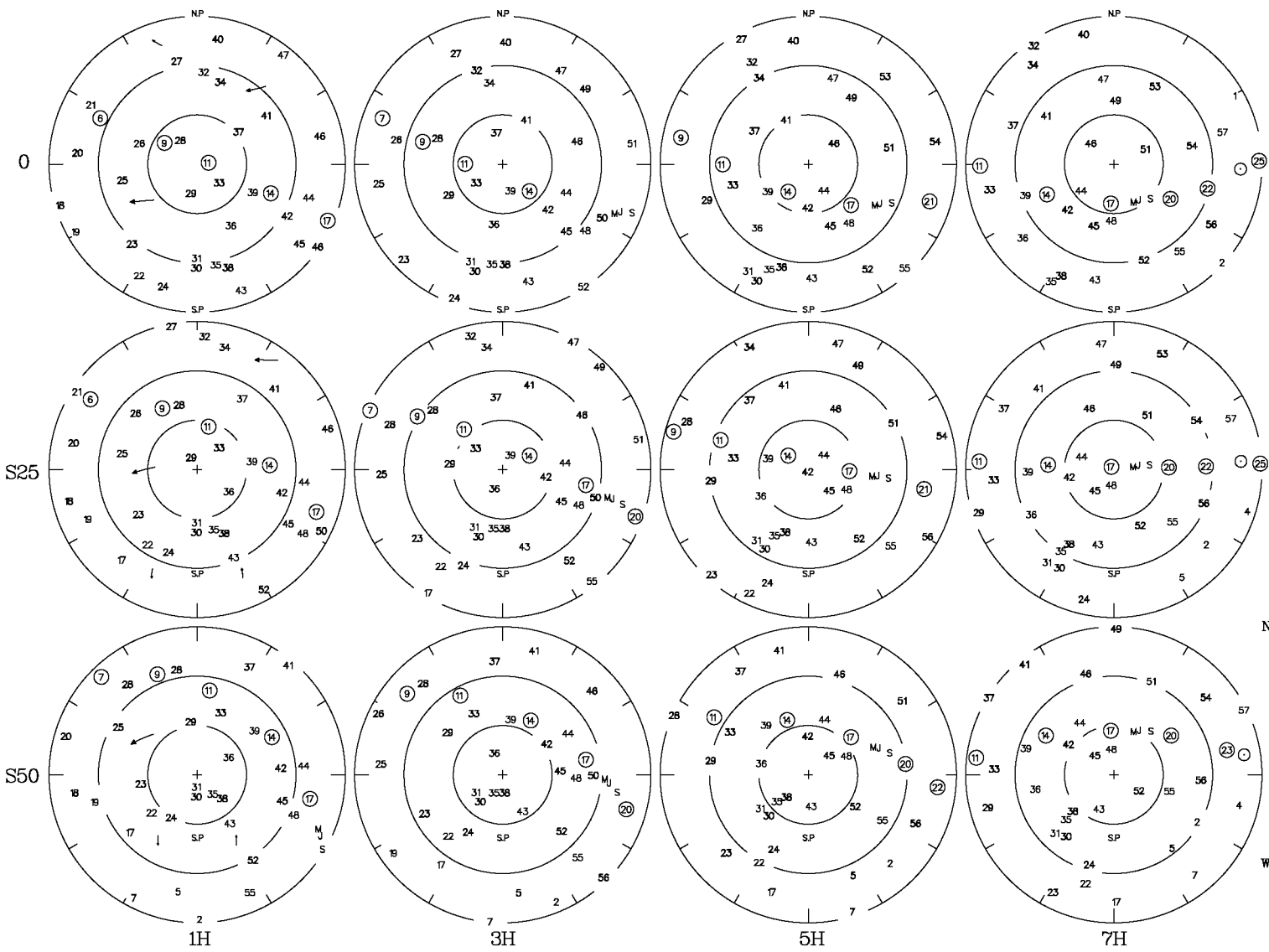
EVENING Sky Diagrams 2020 FEBRUARY

MORNING Sky Diagrams 2020 MARCH



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

① Position, 1st of month
 ② Position, 2nd of month etc.

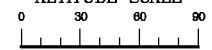
PLANETS Vis. Mag.

V Venus -4.4
 M Mars 1.0
 J Jupiter -2.0
 S Saturn 0.7

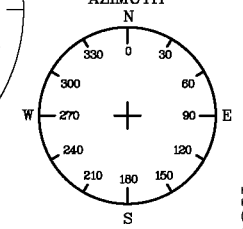
POLES

N•P North S•P South

ALTITUDE SCALE

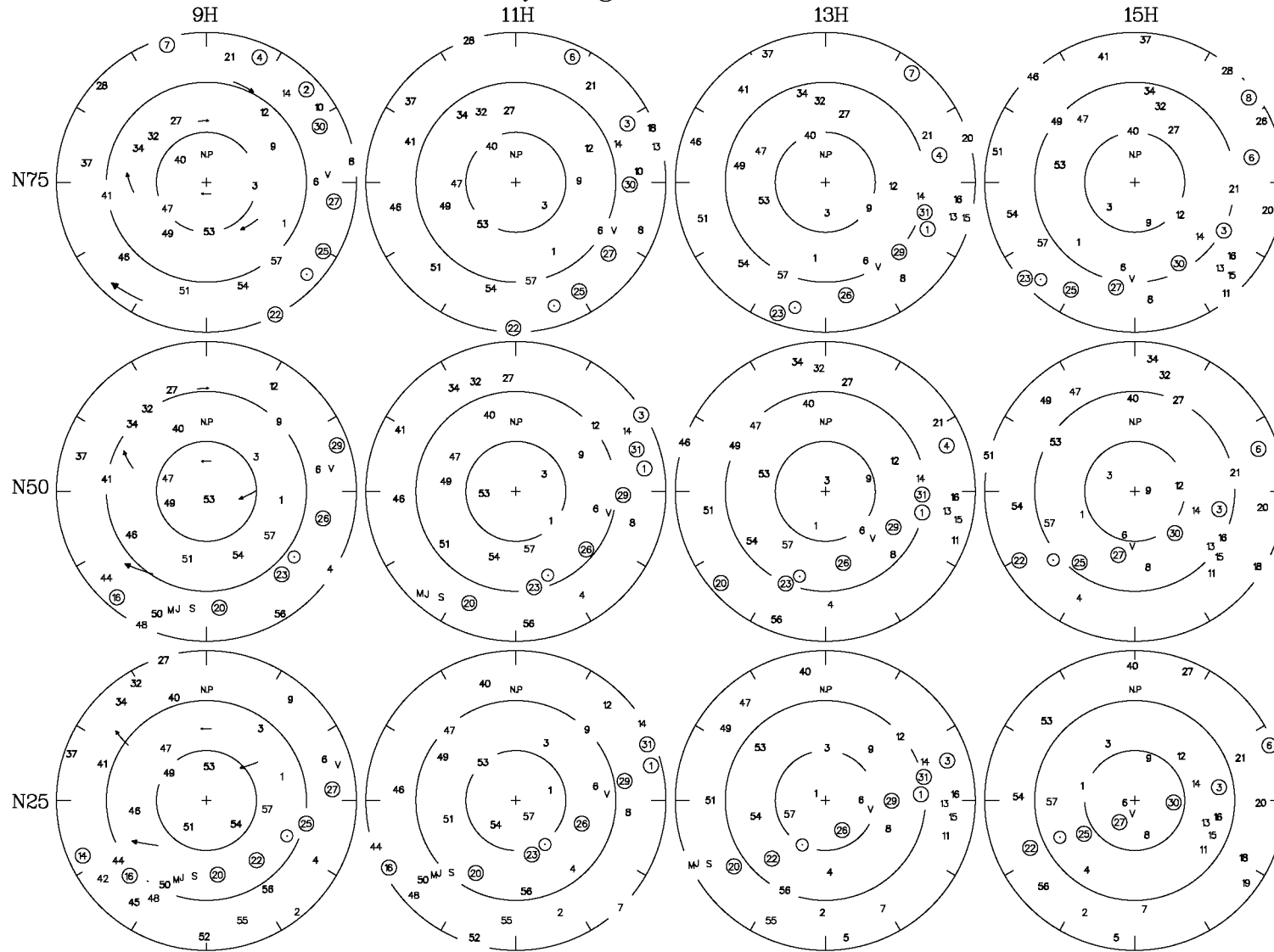


AZIMUTH



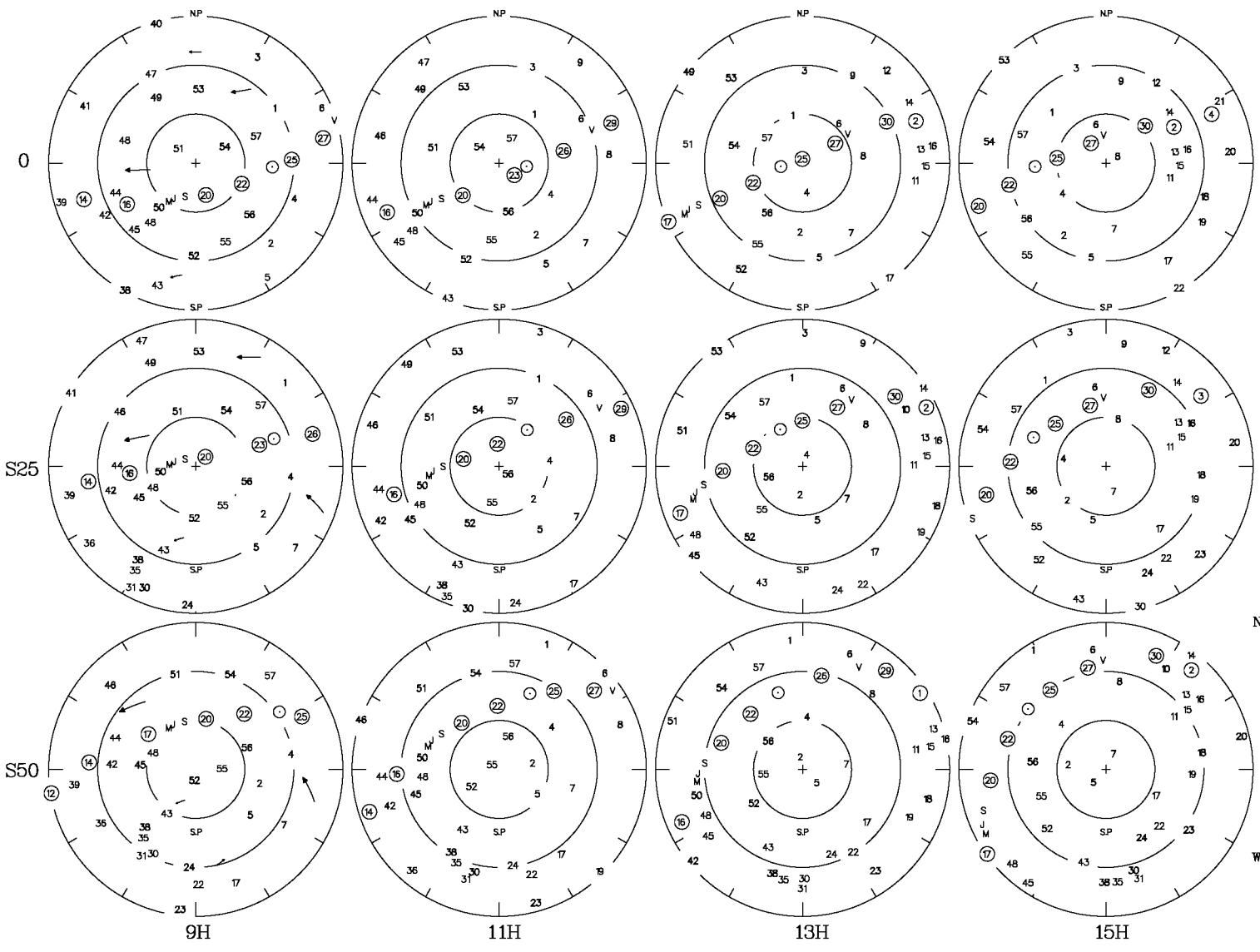
MORNING Sky Diagrams 2020 MARCH

DAY Sky Diagrams 2020 MARCH



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

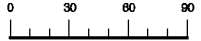
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.7

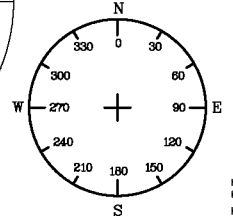
POLES

N•P North S•P South

ALTITUDE SCALE

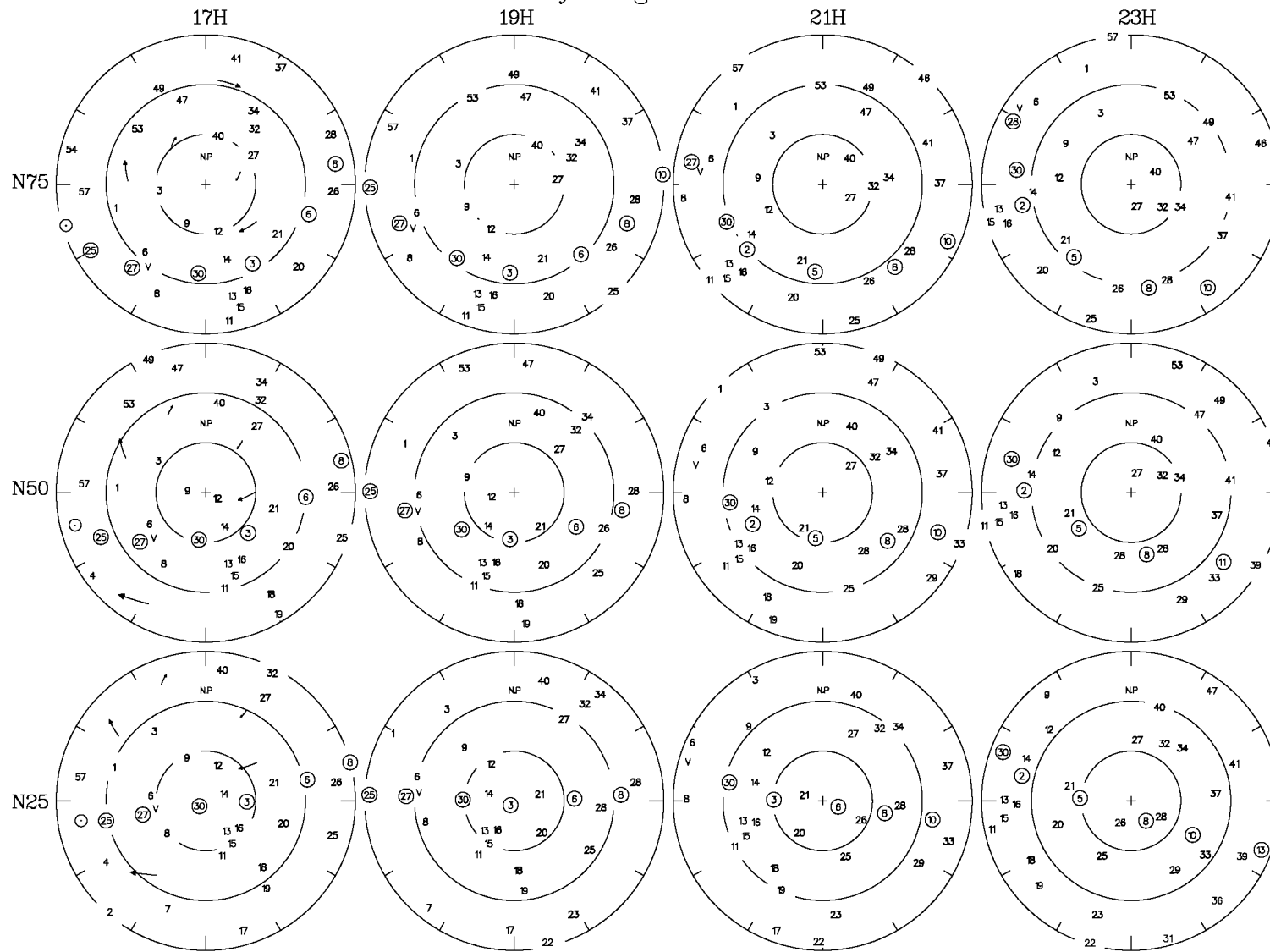


AZIMUTH



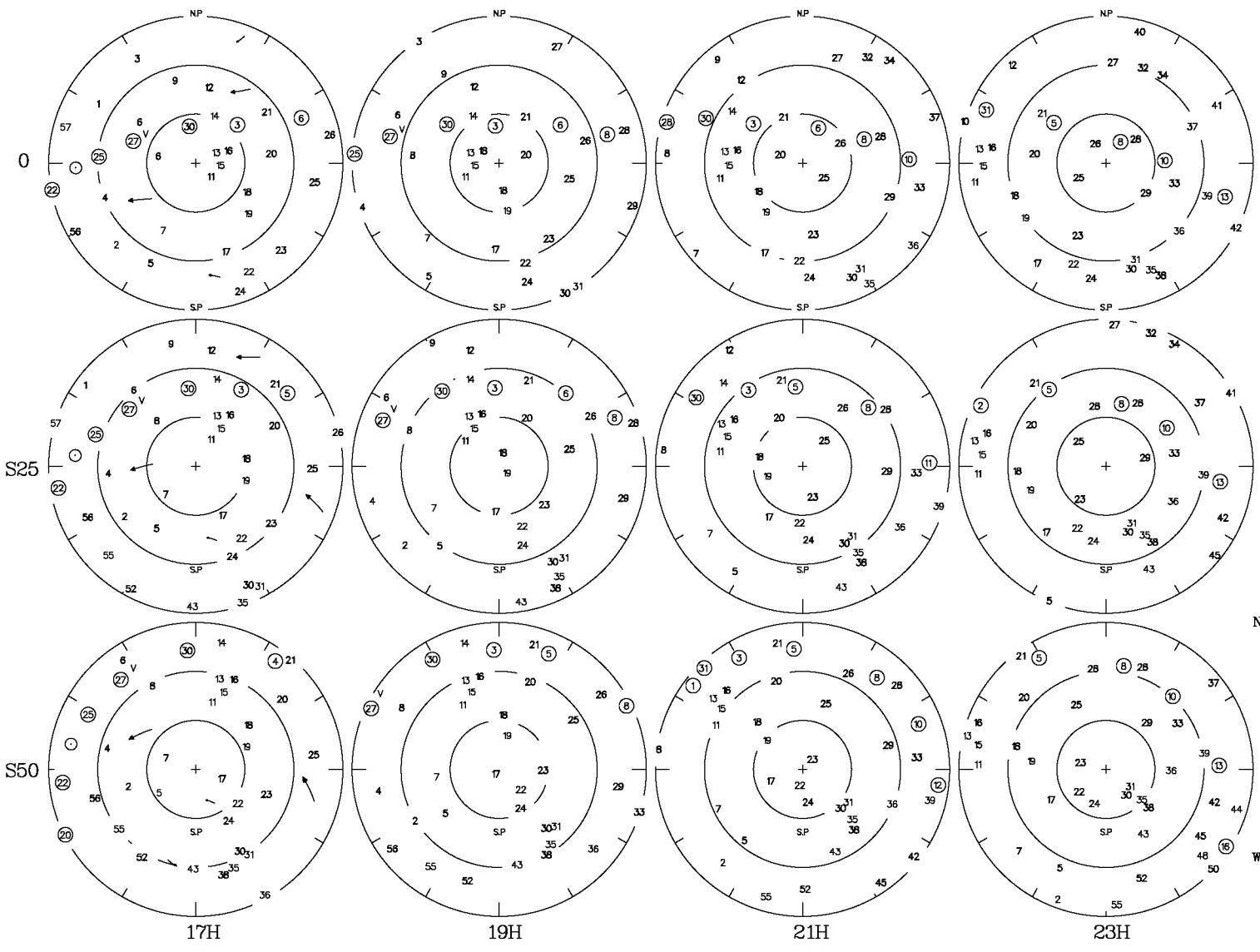
DAY Sky Diagrams 2020 MARCH

EVENING Sky Diagrams 2020 MARCH



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

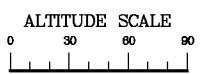
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

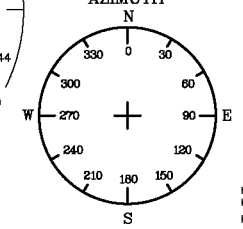
- V Venus -4.4
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.7

POLES

N•P North S•P South

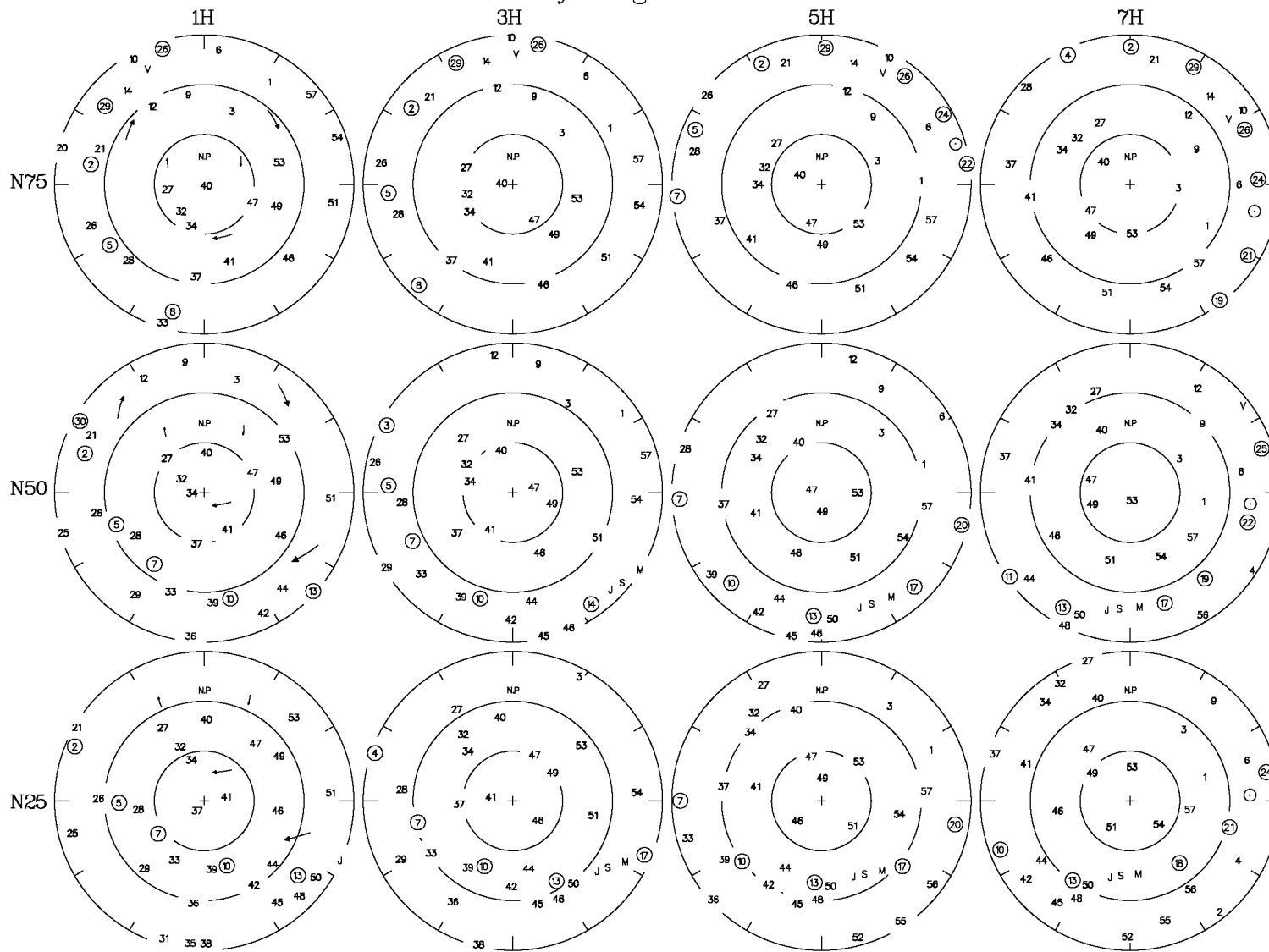


AZIMUTH



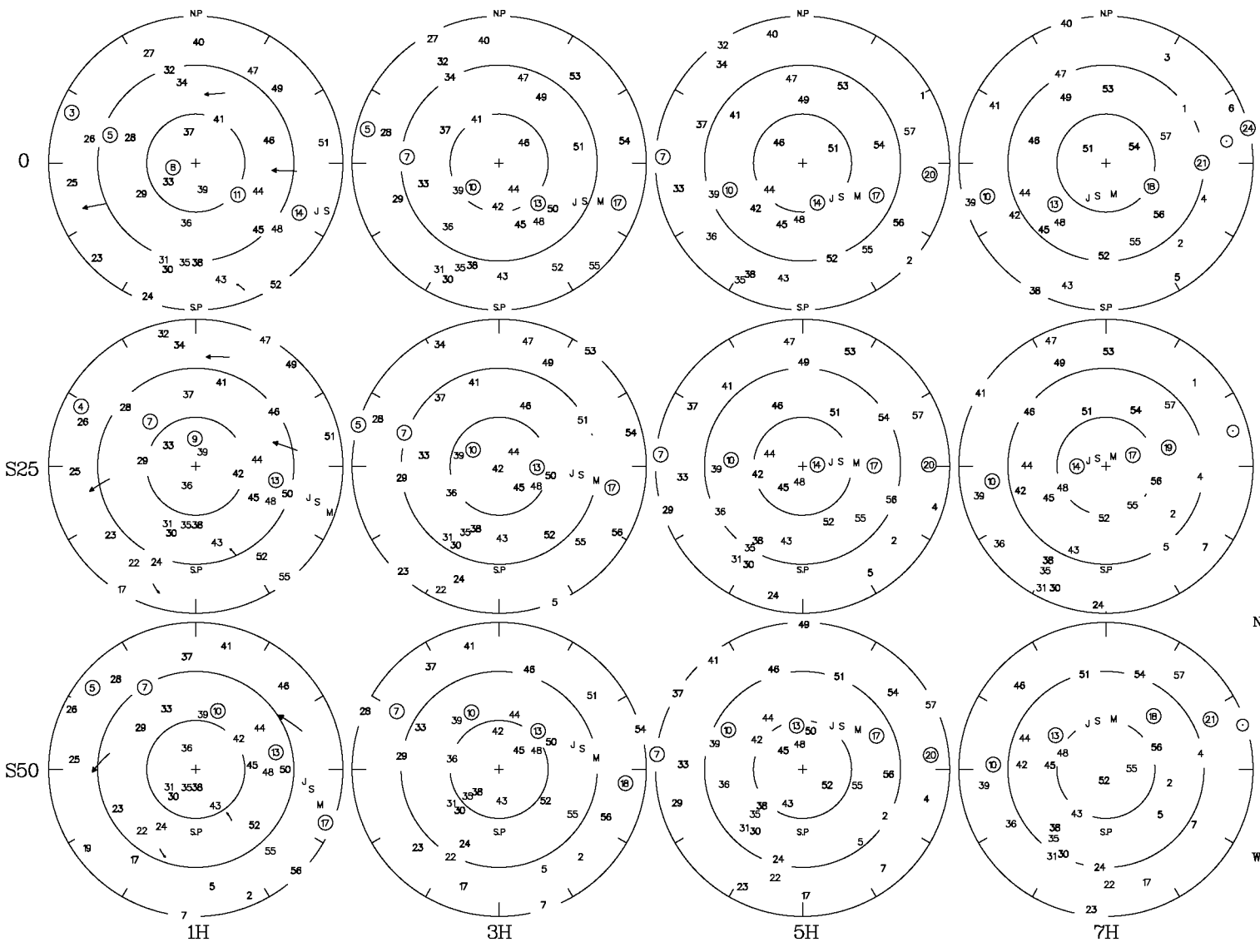
EVENING Sky Diagrams 2020 MARCH

MORNING Sky Diagrams 2020 APRIL



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

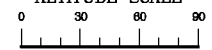
PLANETS Vis. Mag.

- V Venus -4.7
- M Mars 0.6
- J Jupiter -2.2
- S Saturn 0.6

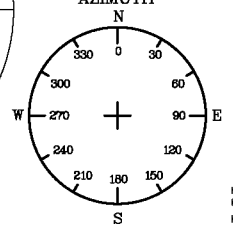
POLES

N•P North S•P South

ALTITUDE SCALE

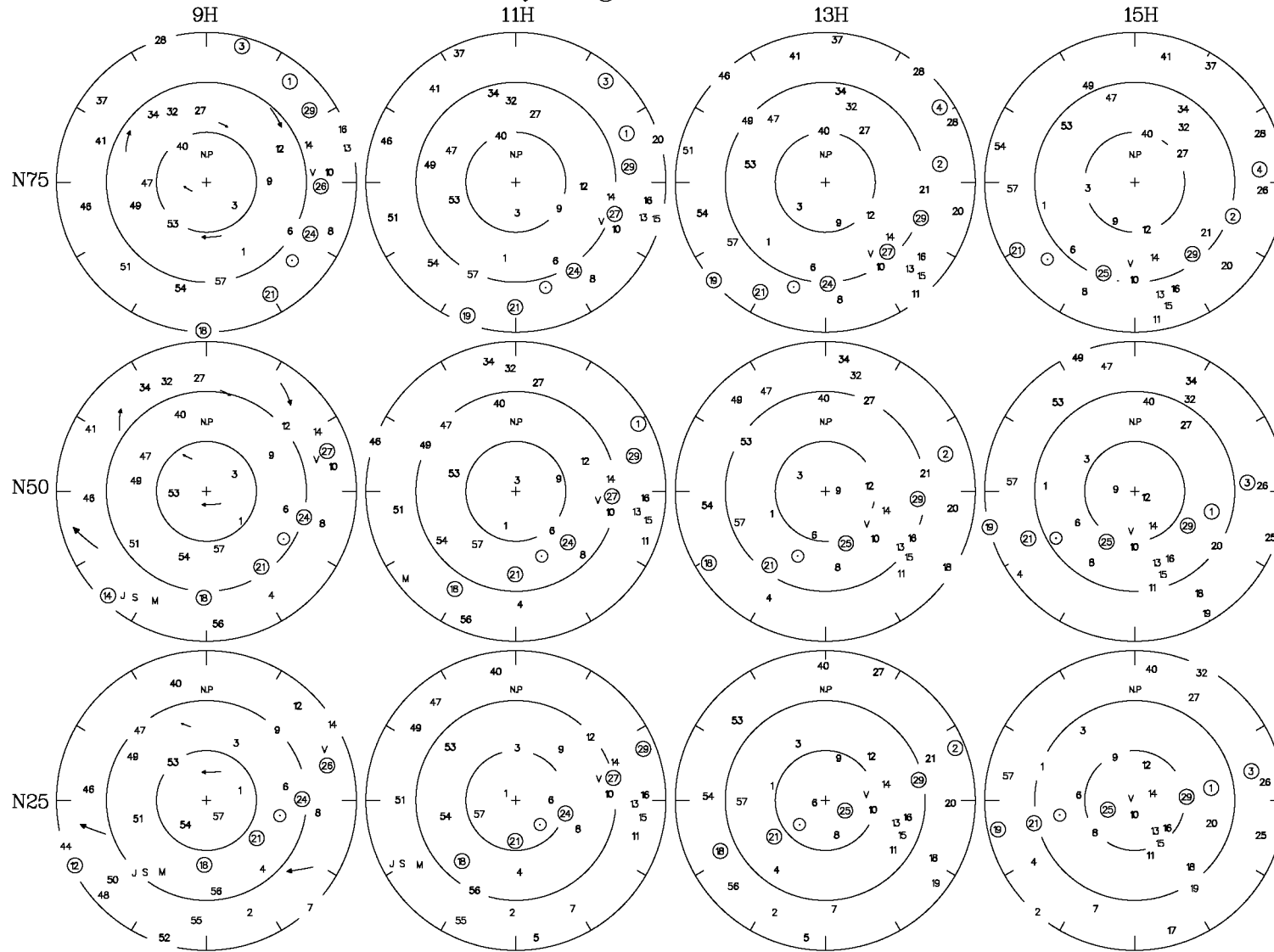


AZIMUTH



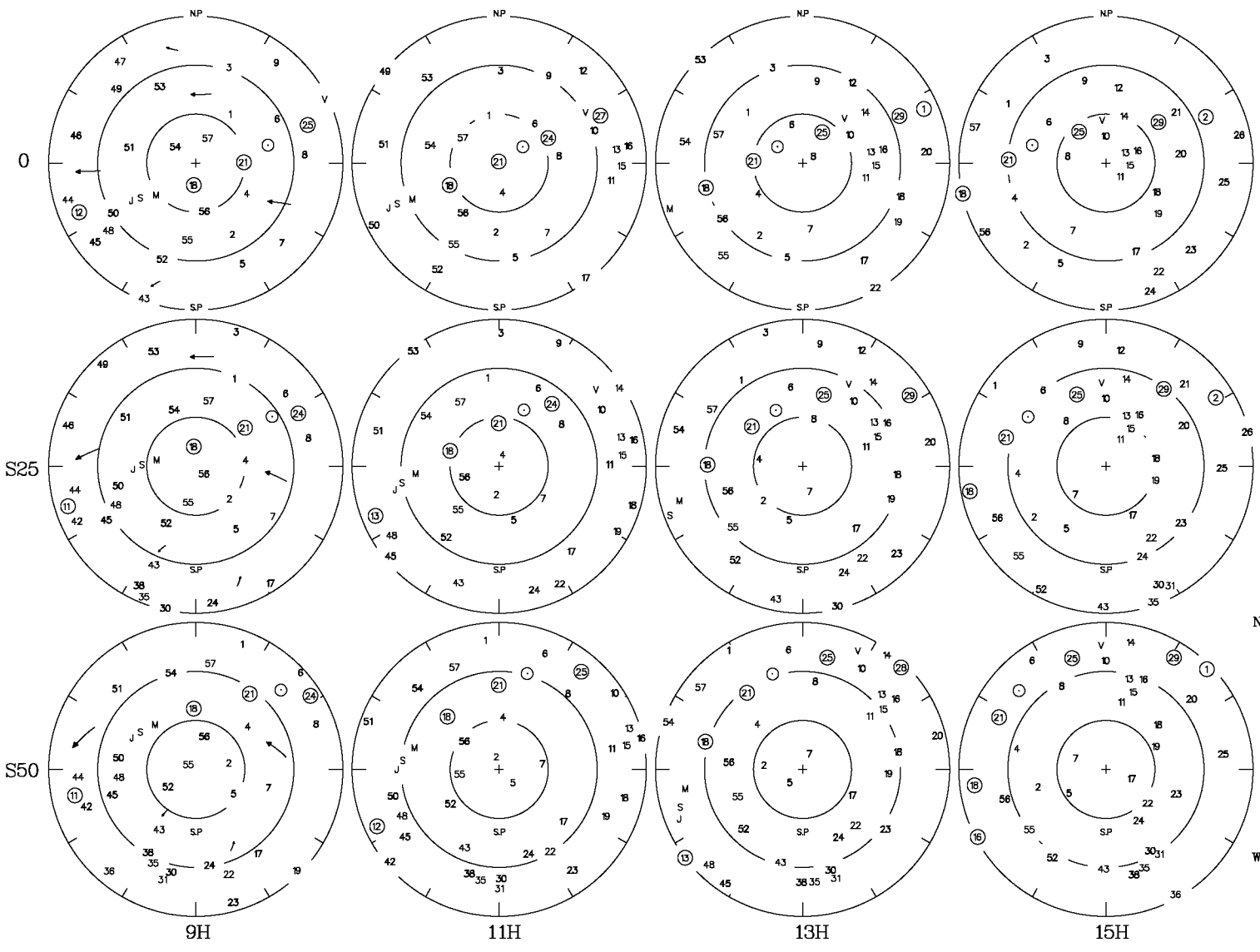
MORNING Sky Diagrams 2020 APRIL

DAY Sky Diagrams 2020 APRIL



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

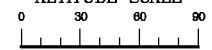
PLANETS Vis. Mag.

- V Venus -4.7
- M Mars 0.6
- J Jupiter -2.2
- S Saturn 0.6

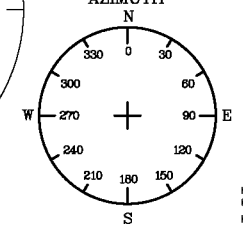
POLES

N•P North S•P South

ALTITUDE SCALE

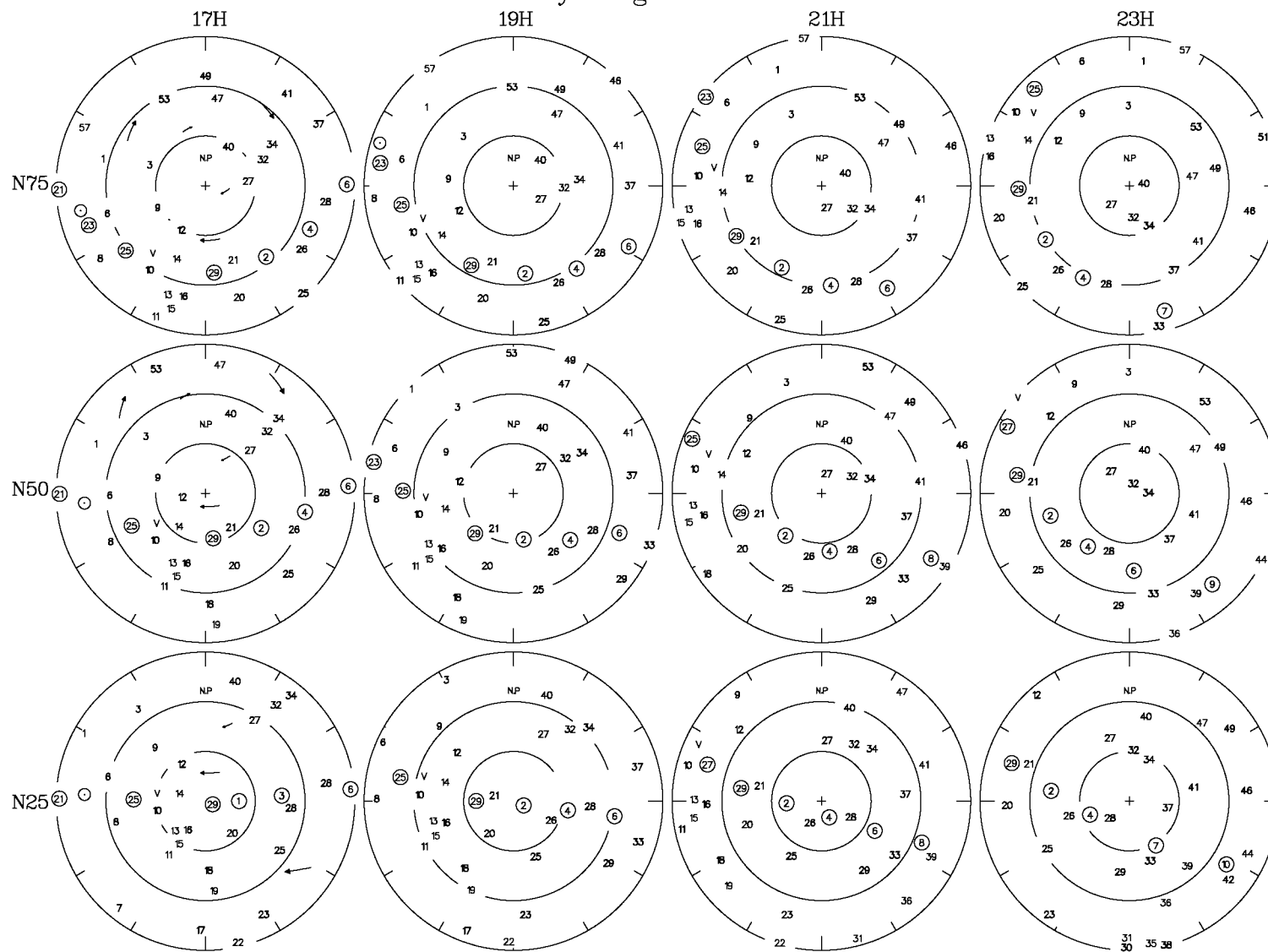


AZIMUTH



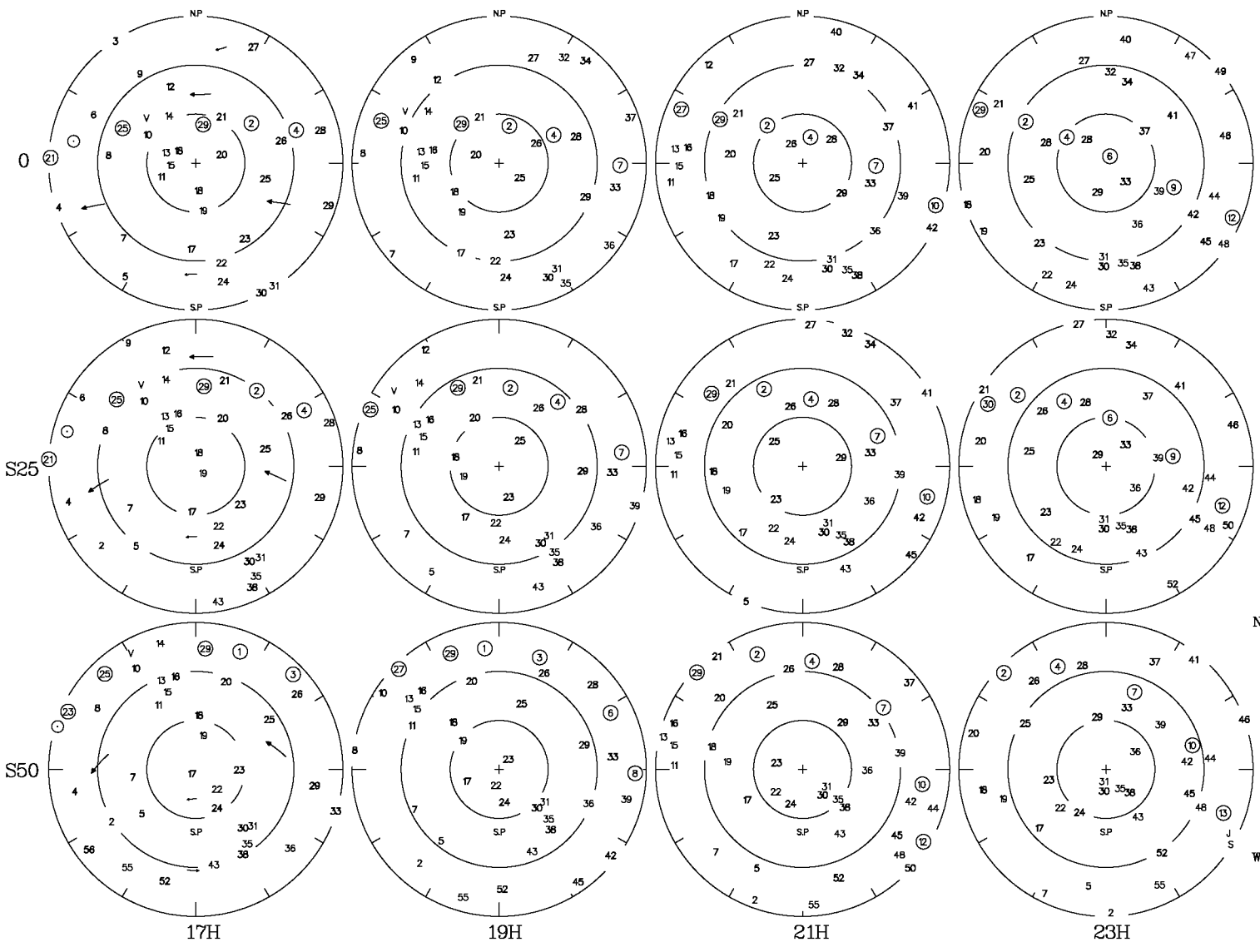
DAY Sky Diagrams 2020 APRIL

EVENING Sky Diagrams 2020 APRIL



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

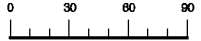
PLANETS Vis. Mag.

V	Venus	-4.7
M	Mars	0.6
J	Jupiter	-2.2
S	Saturn	0.6

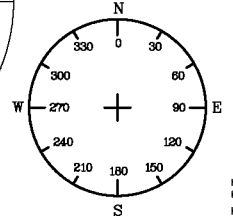
POLES

N•P North S•P South

ALTITUDE SCALE

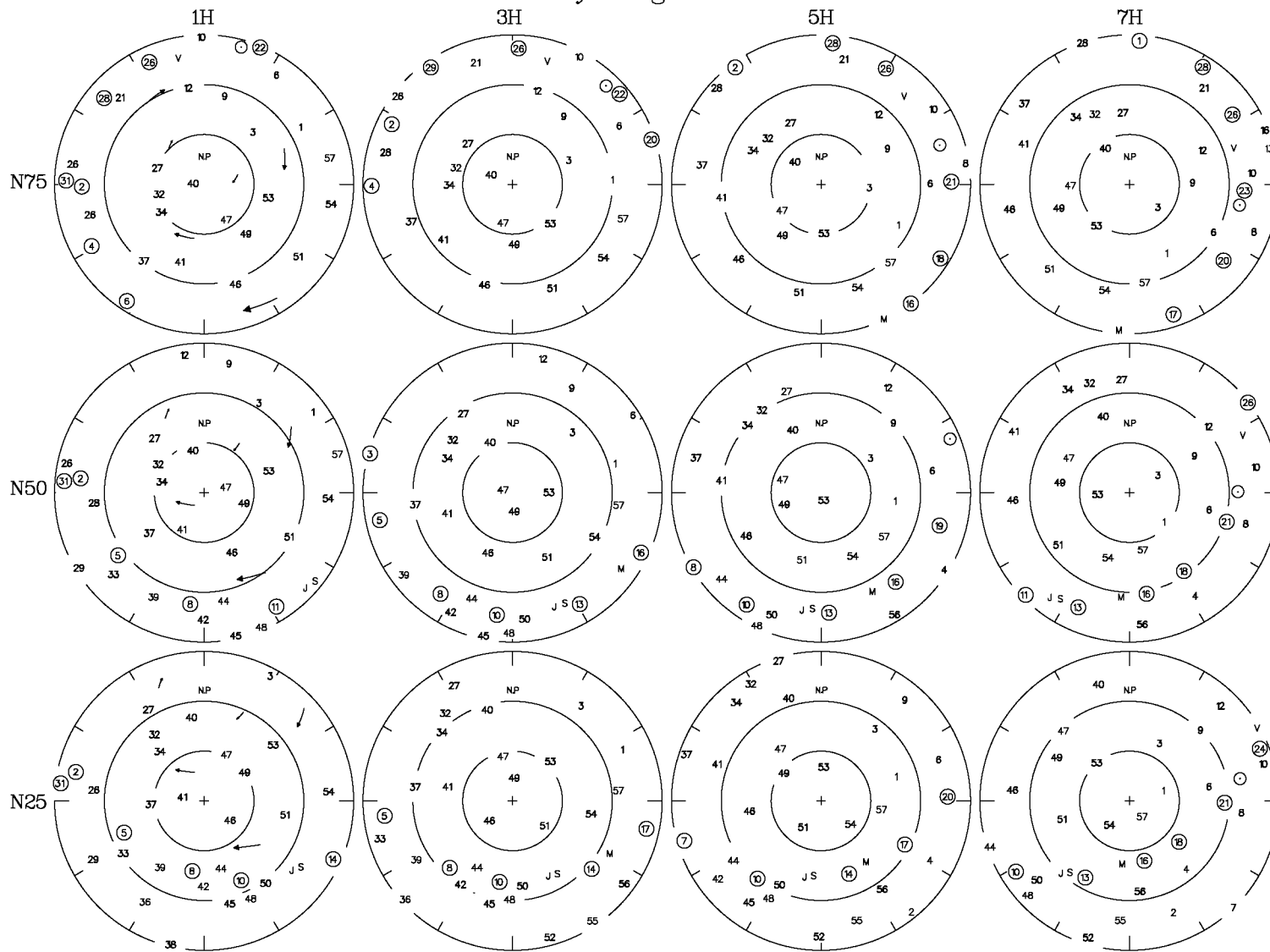


AZIMUTH



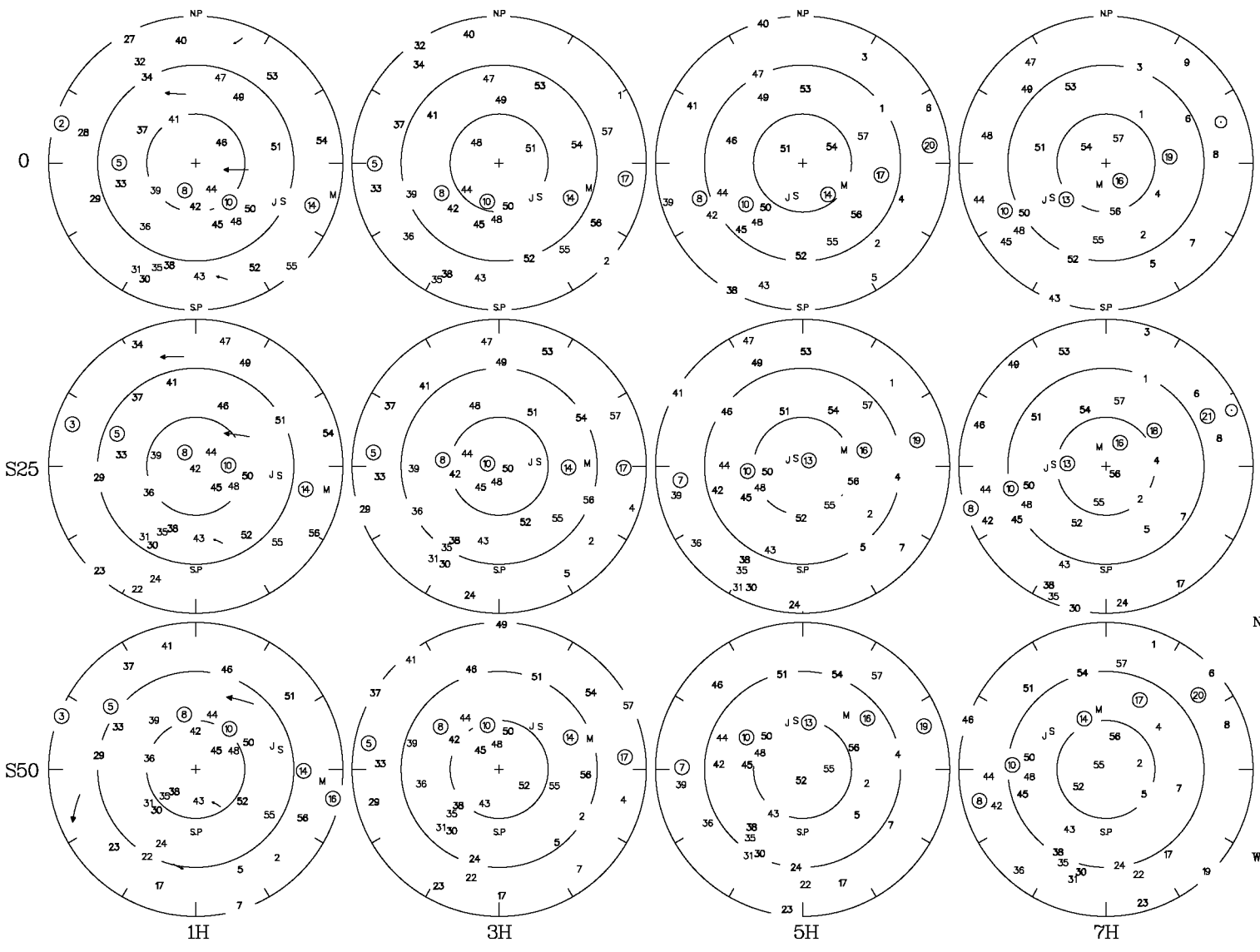
EVENING Sky Diagrams 2020 APRIL

MORNING Sky Diagrams 2020 MAY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

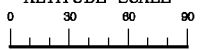
PLANETS Vis. Mag.

- V Venus -4.6
- M Mars 0.2
- J Jupiter -2.4
- S Saturn 0.5

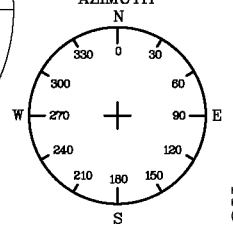
POLES

N•P North S•P South

ALTITUDE SCALE

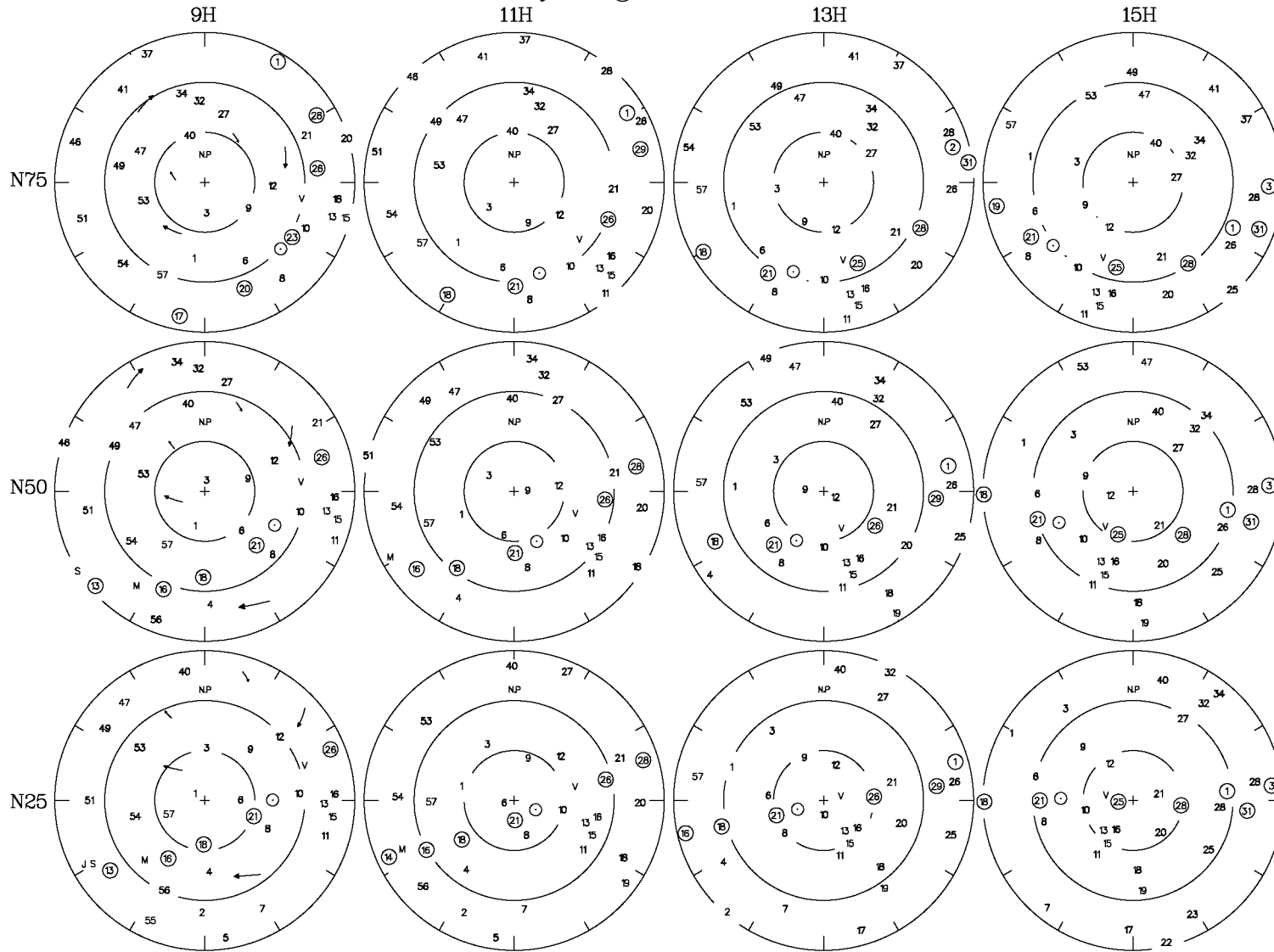


AZIMUTH



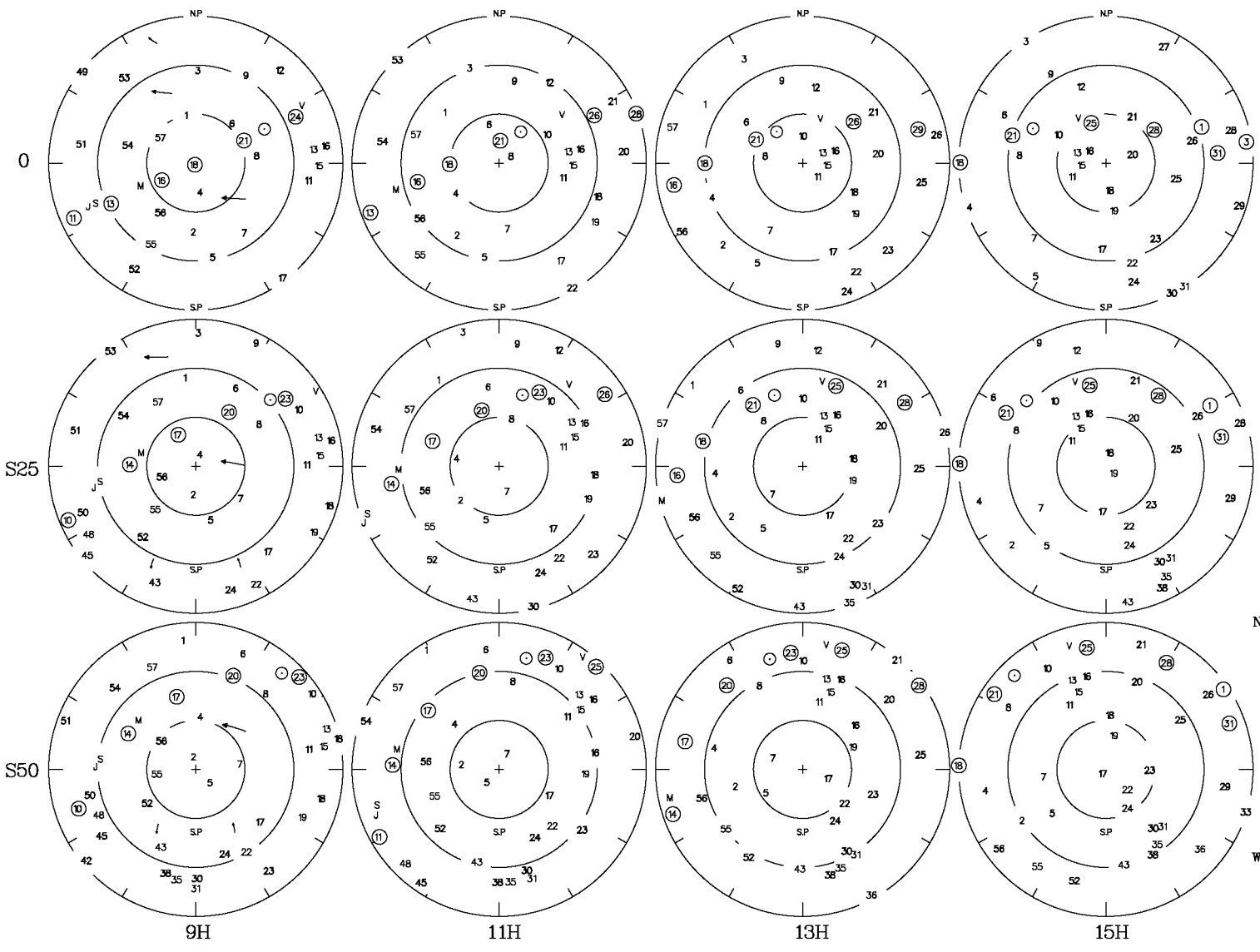
MORNING Sky Diagrams 2020 MAY

DAY Sky Diagrams 2020 MAY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

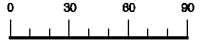
PLANETS Vis. Mag.

- V Venus -4.6
- M Mars 0.2
- J Jupiter -2.4
- S Saturn 0.5

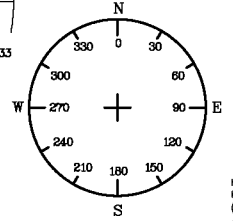
POLES

N•P North S•P South

ALTITUDE SCALE

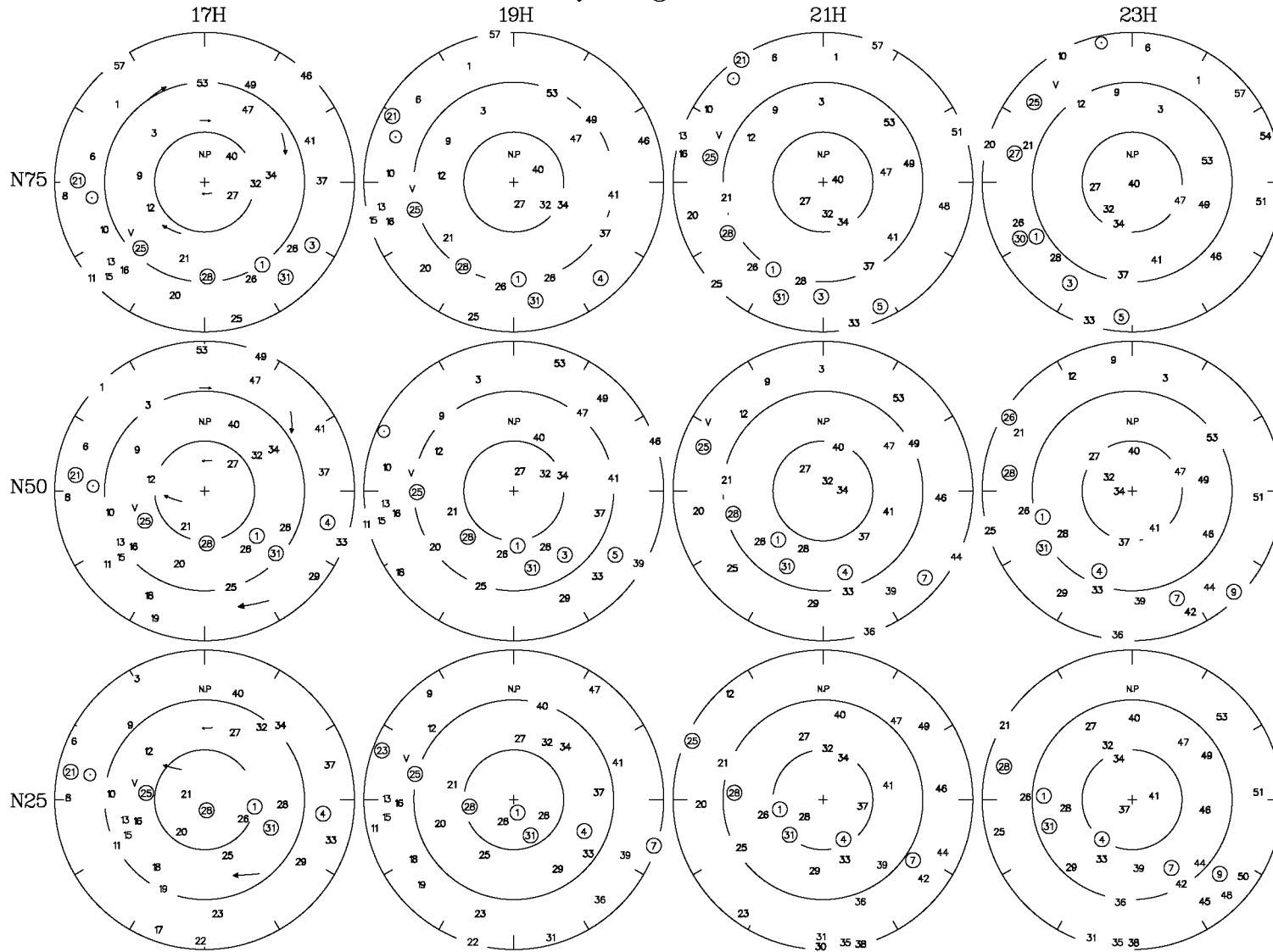


AZIMUTH



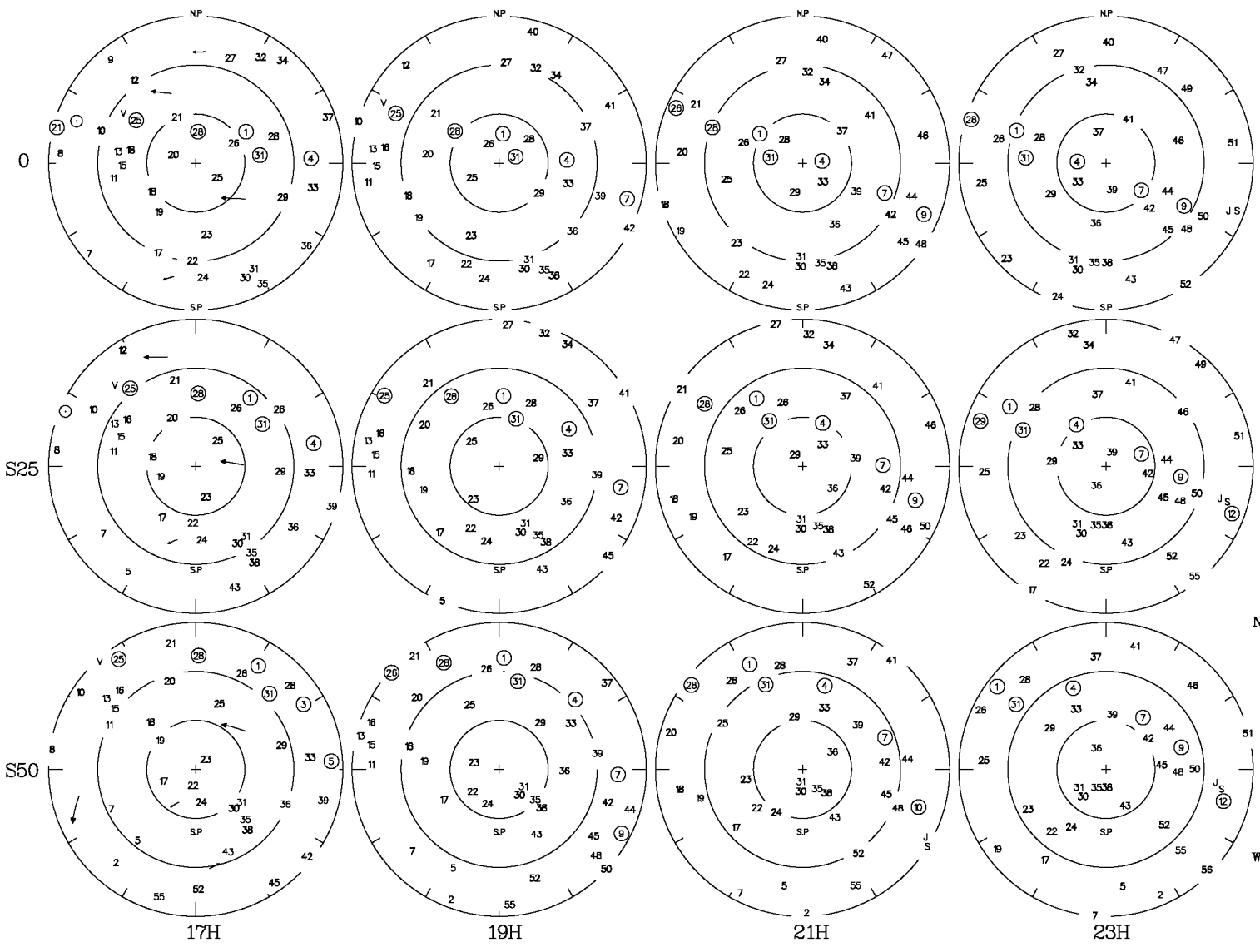
DAY Sky Diagrams 2020 MAY

EVENING Sky Diagrams 2020 MAY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

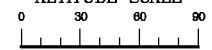
PLANETS Vis. Mag.

V	Venus	-4.6
M	Mars	0.2
J	Jupiter	-2.4
S	Saturn	0.5

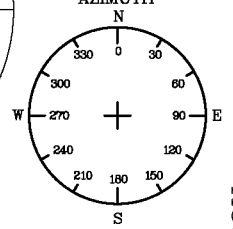
POLES

N•P North S•P South

ALTITUDE SCALE

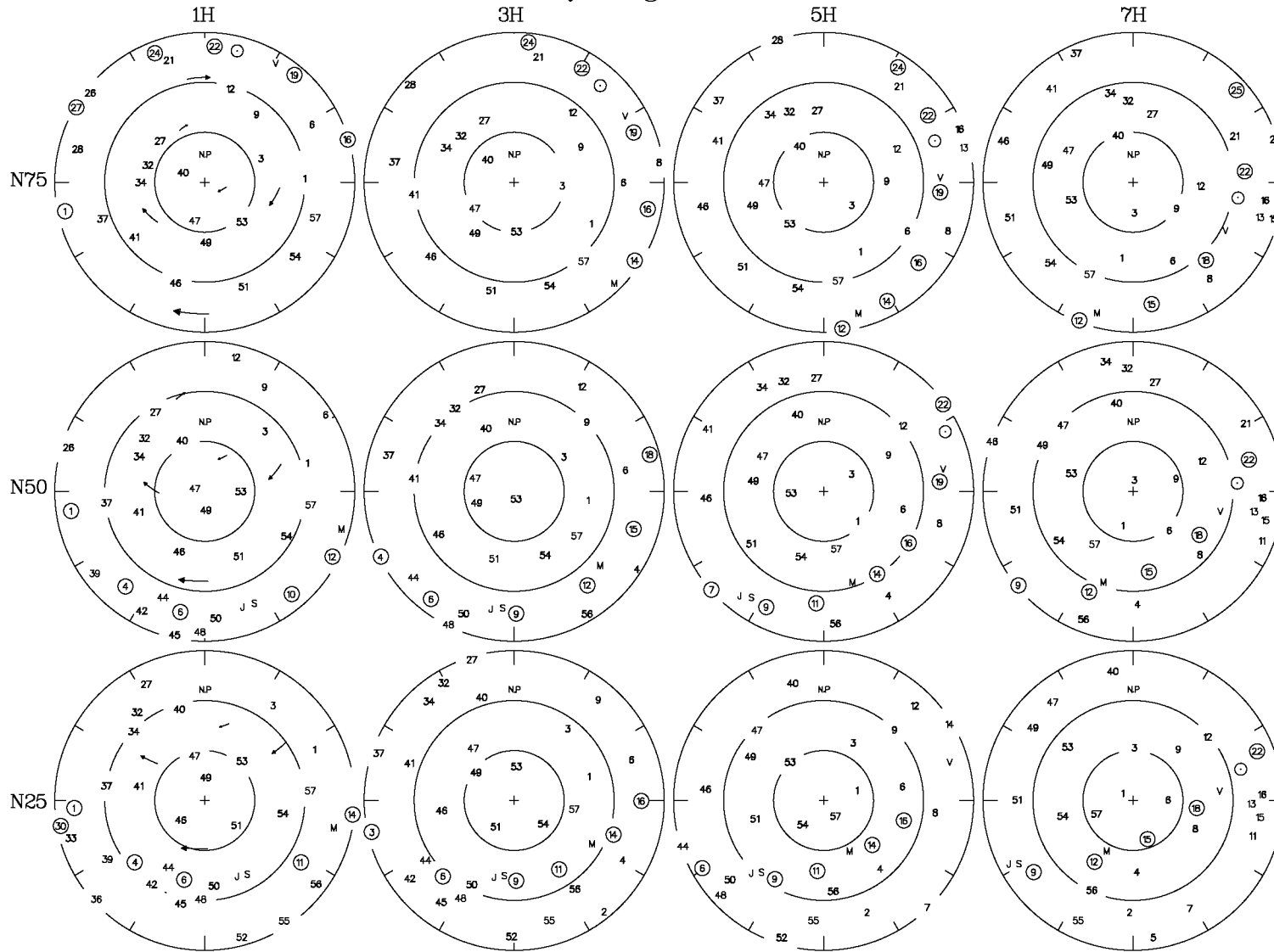


AZIMUTH



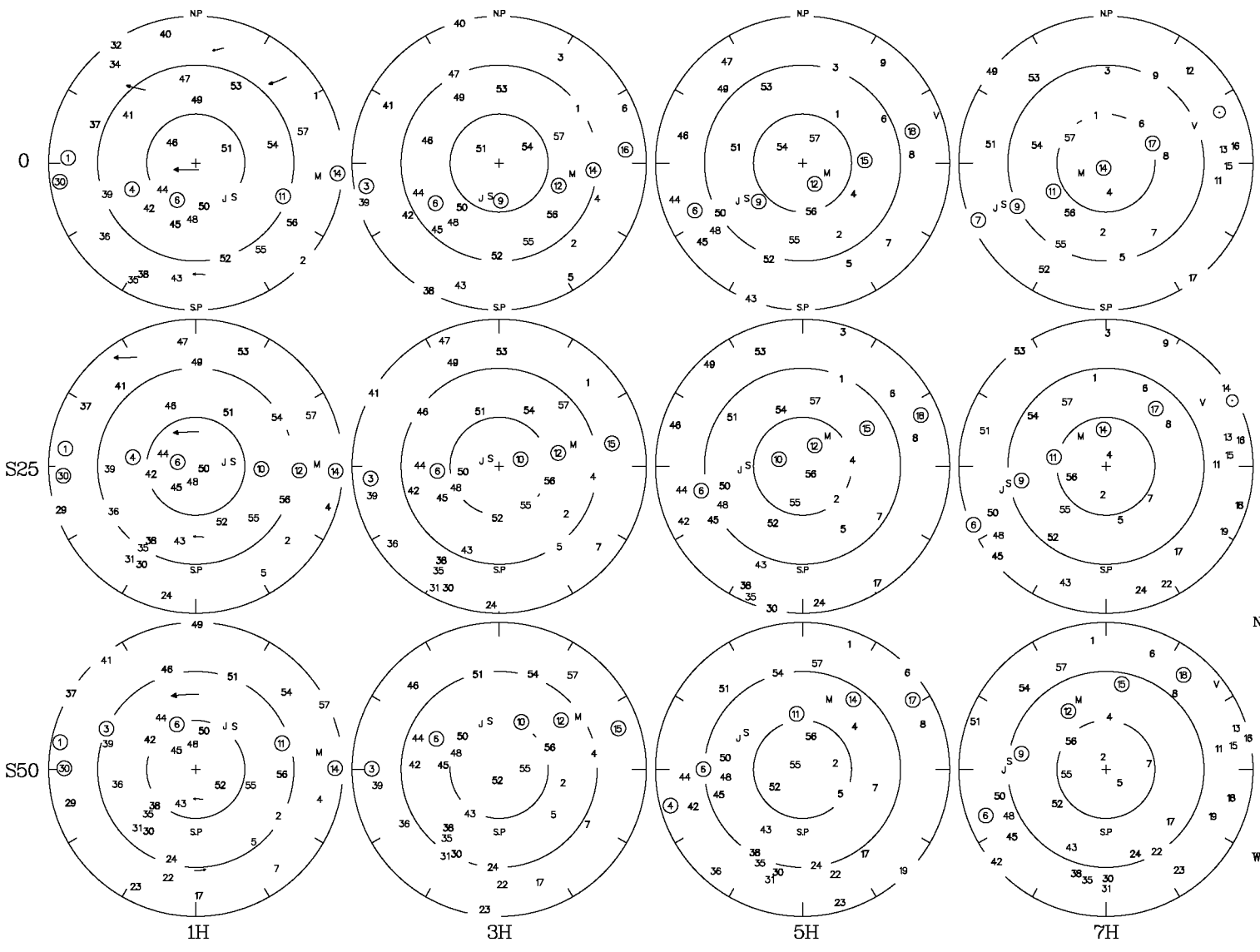
EVENING Sky Diagrams 2020 MAY

MORNING Sky Diagrams 2020 JUNE



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

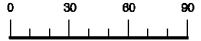
- V Venus -4.2
- M Mars -0.2
- J Jupiter -2.7
- S Saturn 0.3

VENUS
Inferior Conjunction
on Jun 03^d 18^h UT

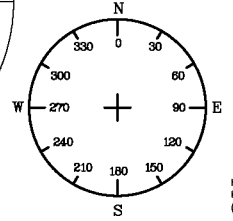
POLES

N•P North S•P South

ALTITUDE SCALE

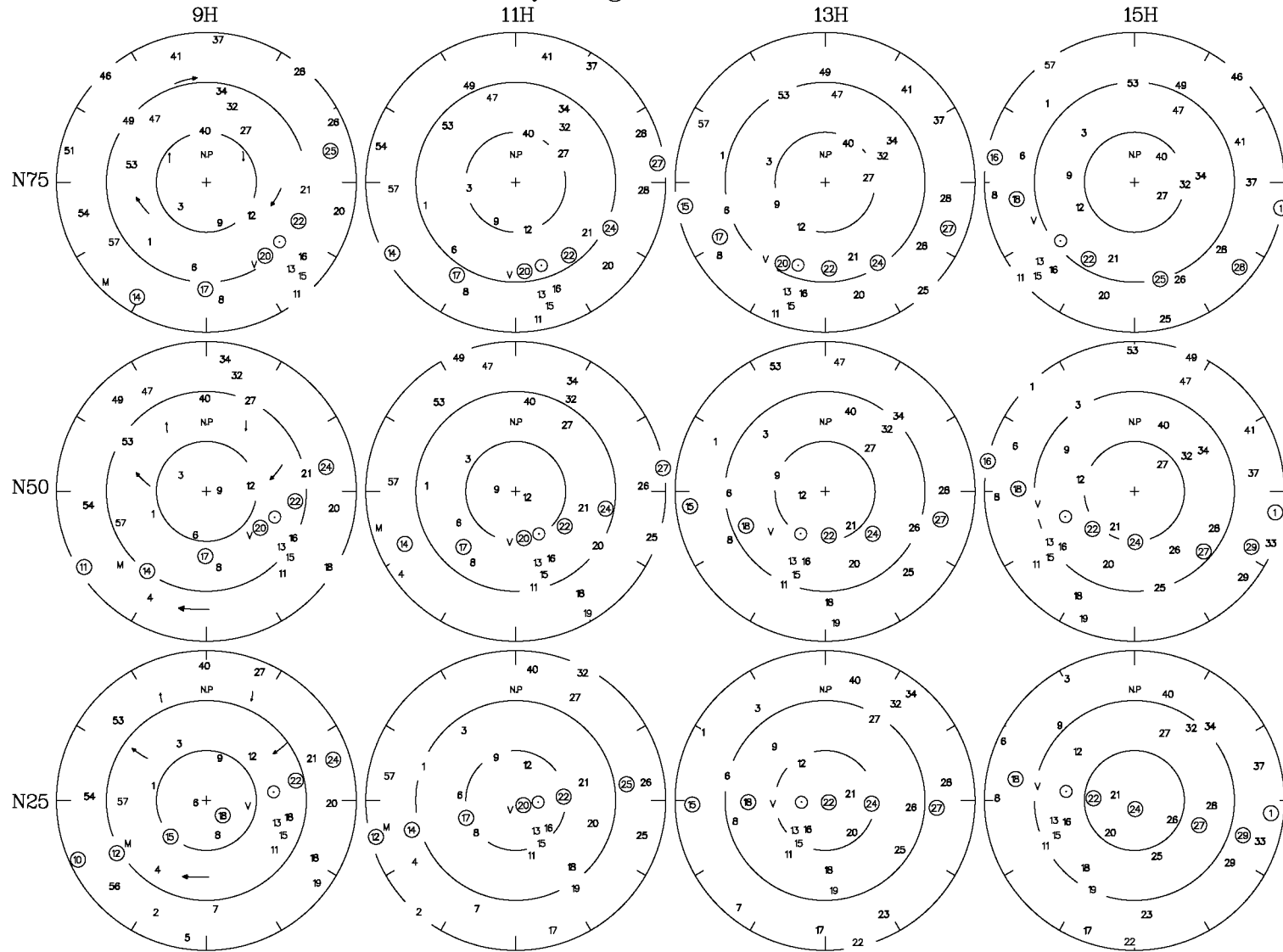


AZIMUTH



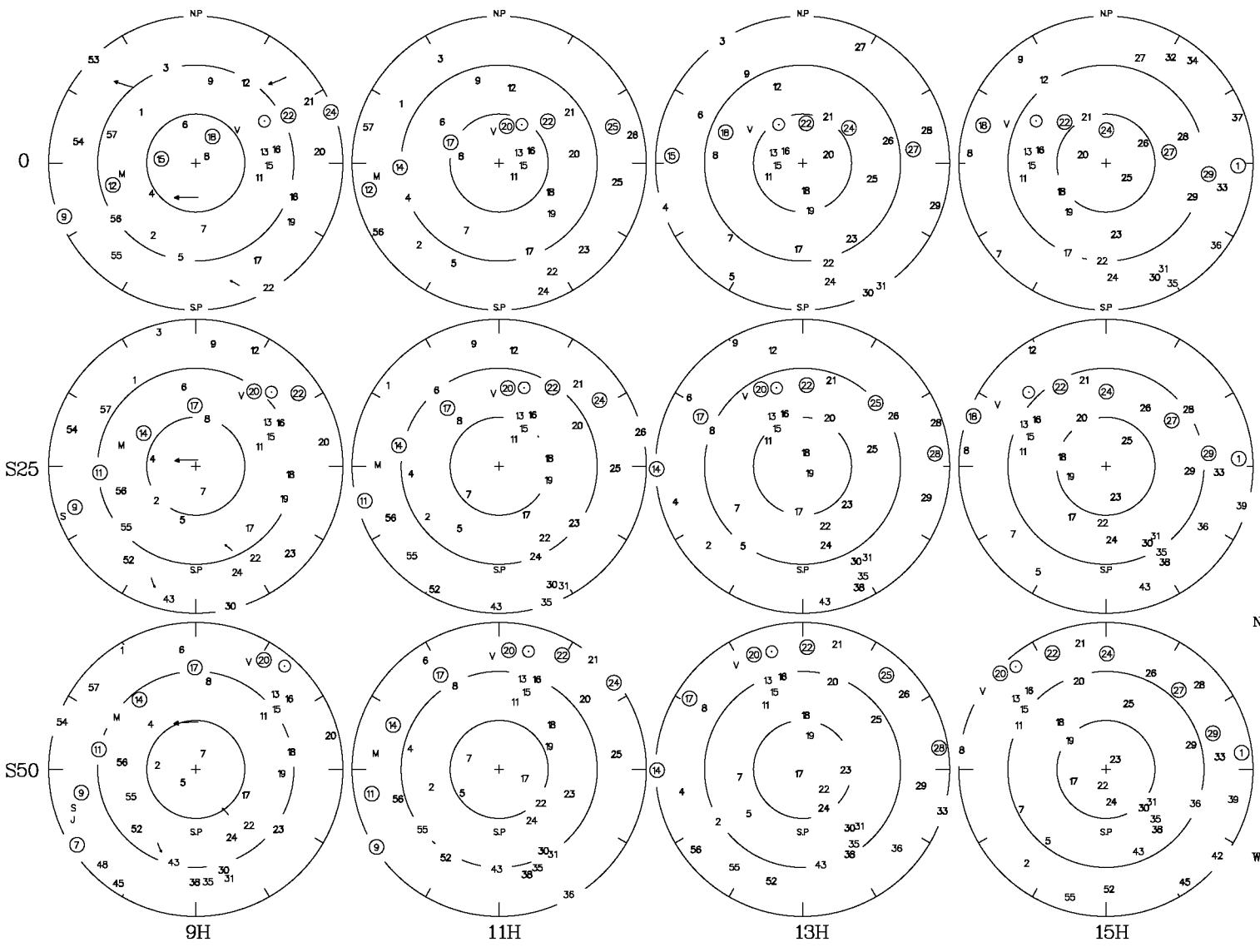
MORNING Sky Diagrams 2020 JUNE

DAY Sky Diagrams 2020 JUNE



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

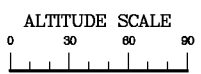
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars -0.2
- J Jupiter -2.7
- S Saturn 0.3

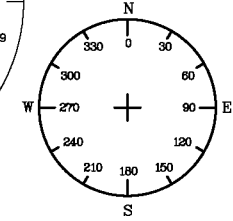
VENUS
Inferior Conjunction
on Jun 03^d 18^h UT

POLES

N•P North S•P South

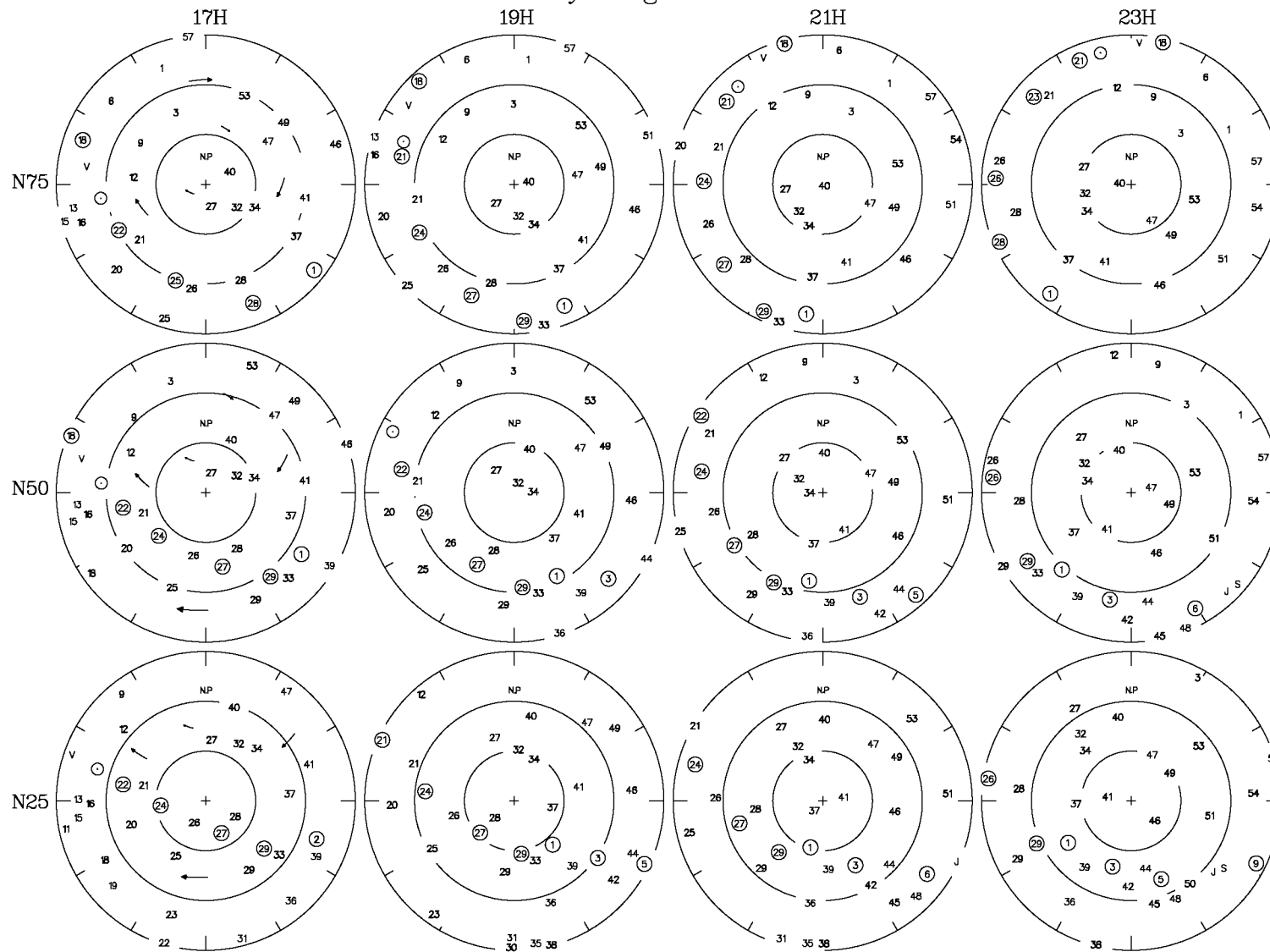


AZIMUTH



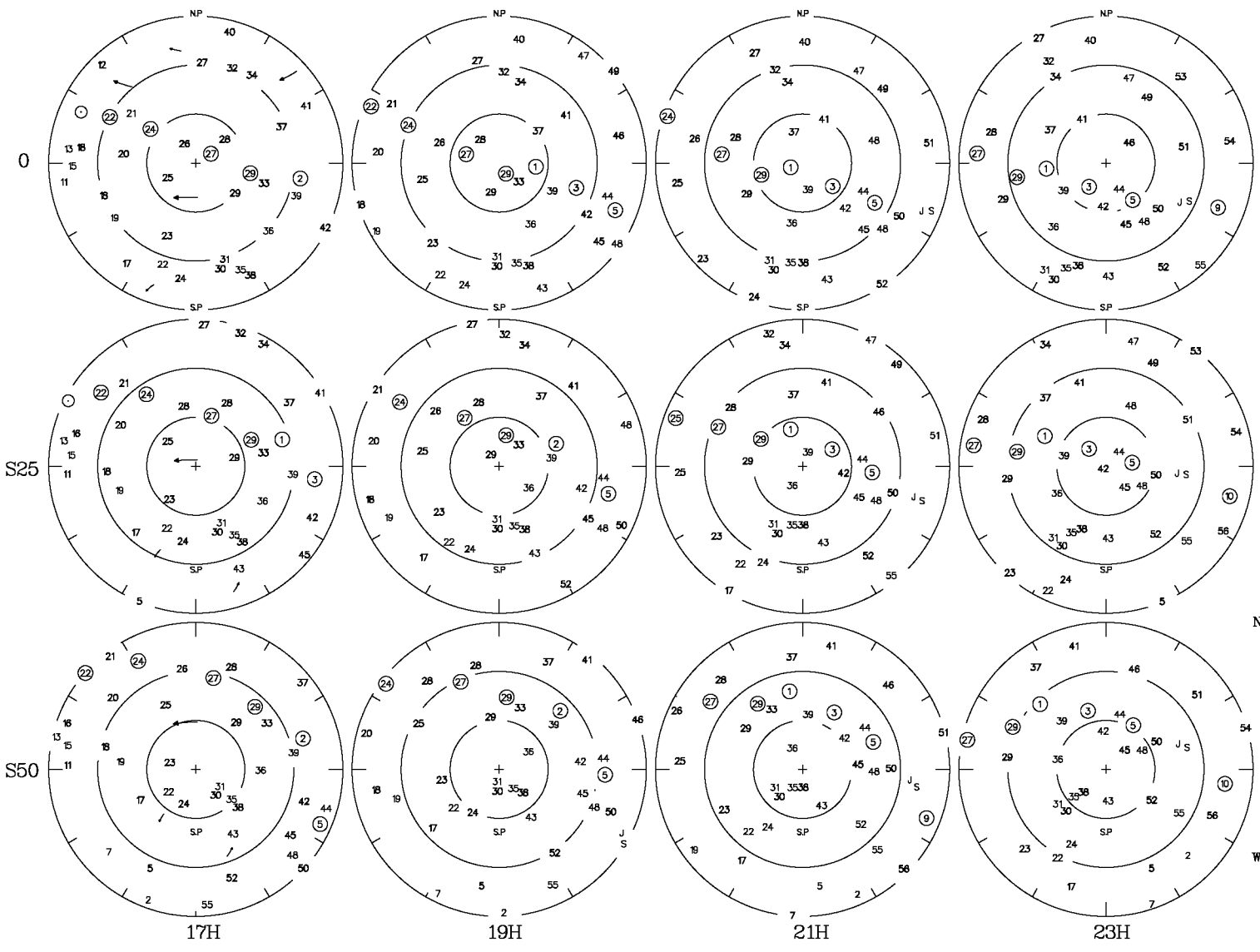
DAY Sky Diagrams 2020 JUNE

EVENING Sky Diagrams 2020 JUNE



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

① Position, 1st of month
 ② Position, 2nd of month etc.

PLANETS Vis. Mag.

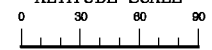
- V Venus -4.2
- M Mars -0.2
- J Jupiter -2.7
- S Saturn 0.3

VENUS
 Inferior Conjunction
 on Jun 03^d 18^h UT

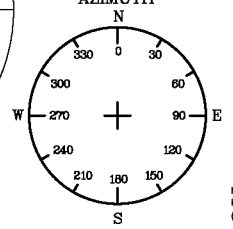
POLES

N•P North S•P South

ALTITUDE SCALE

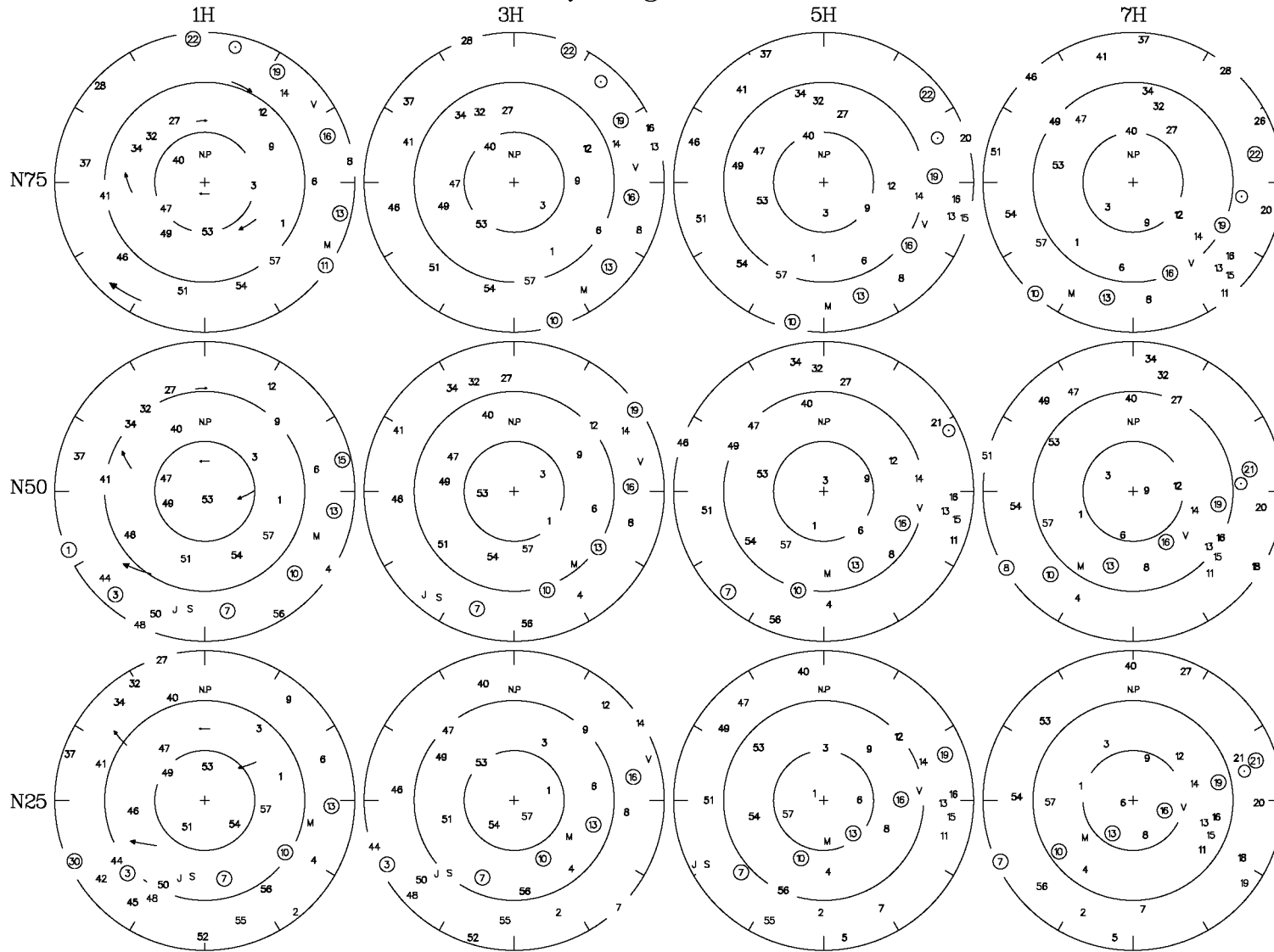


AZIMUTH



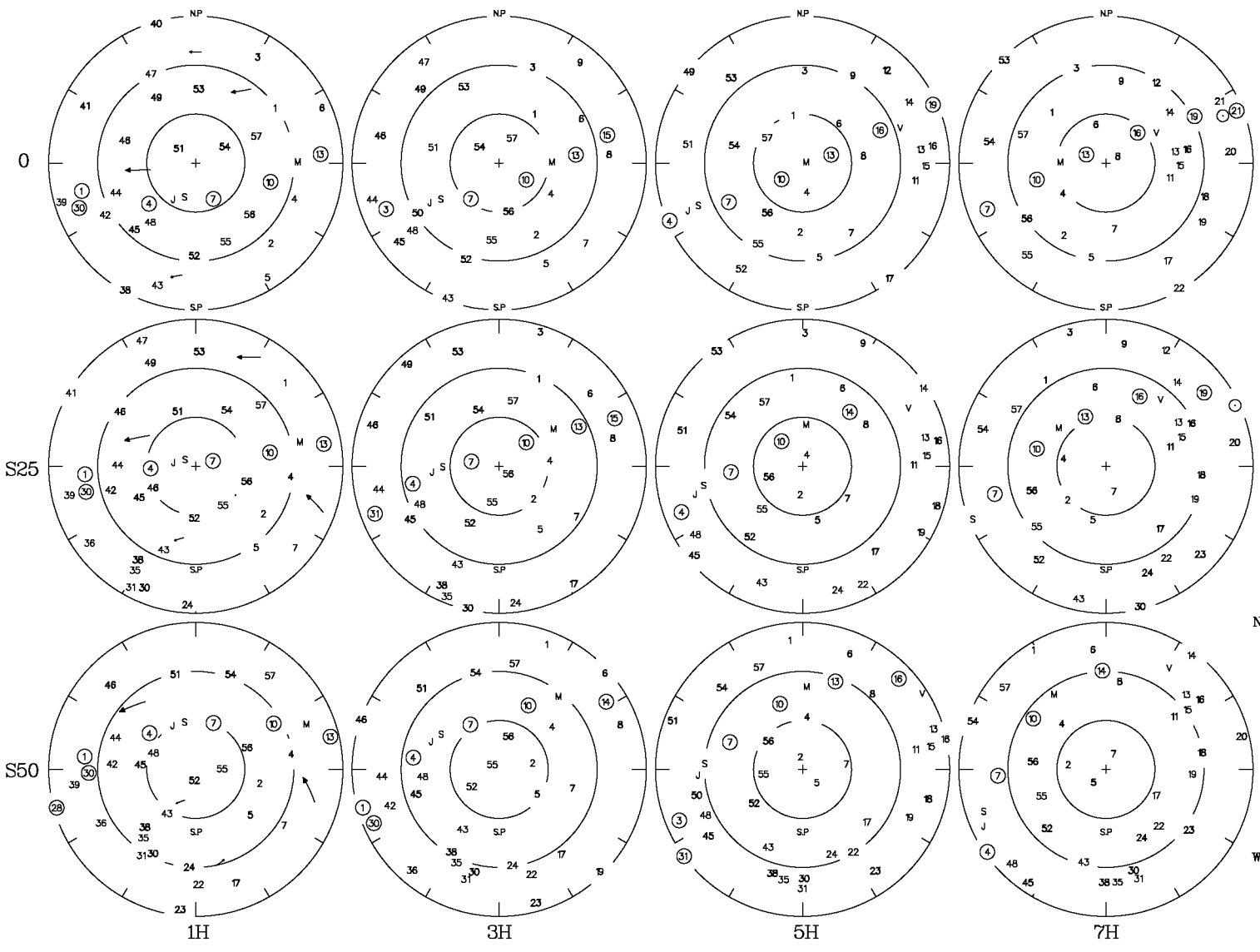
EVENING Sky Diagrams 2020 JUNE

MORNING Sky Diagrams 2020 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

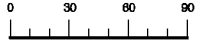
PLANETS Vis. Mag.

- V Venus -4.7
- M Mars -0.8
- J Jupiter -2.8
- S Saturn 0.1

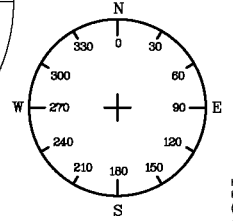
POLES

N•P North S•P South

ALTITUDE SCALE

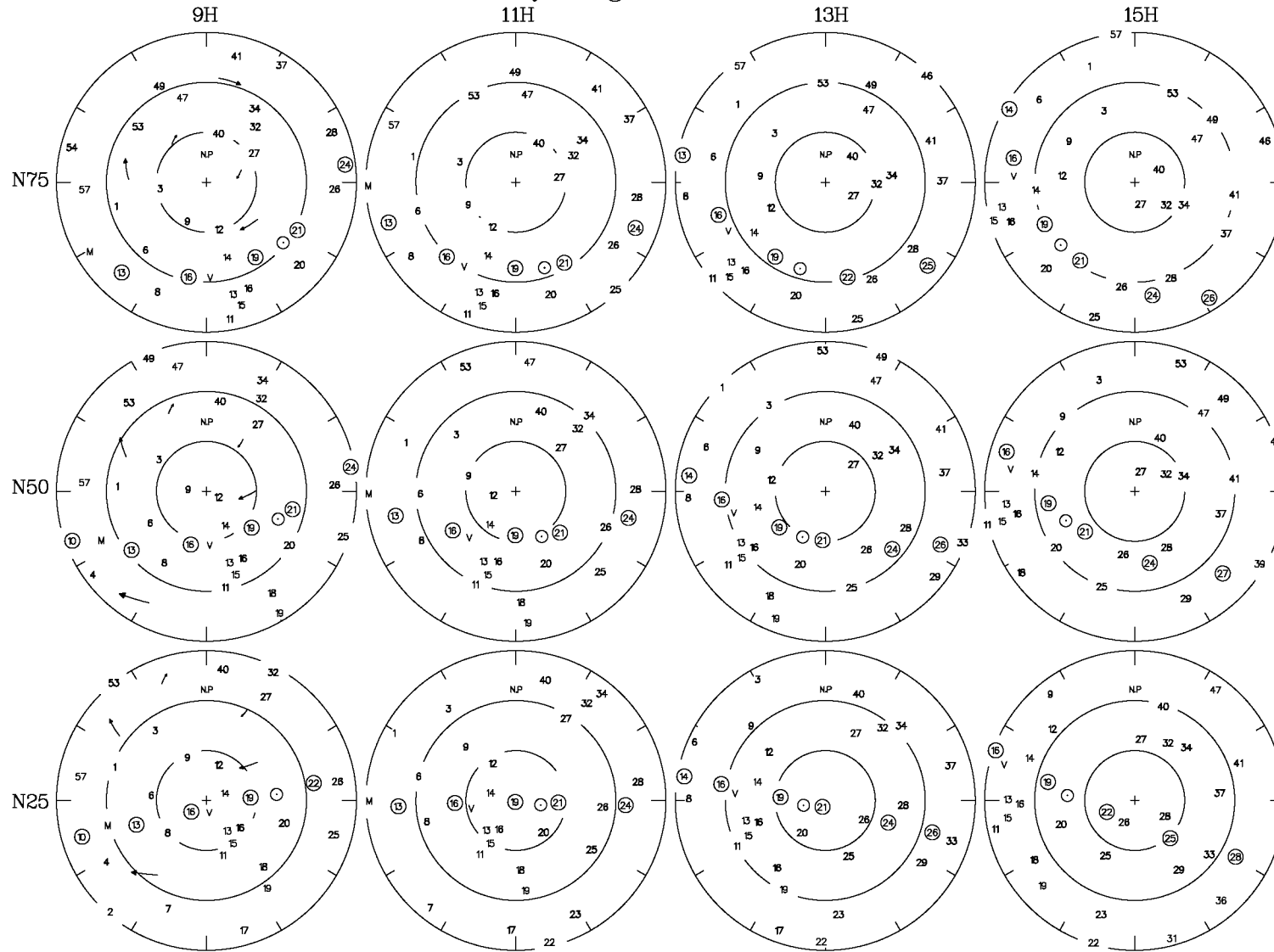


AZIMUTH



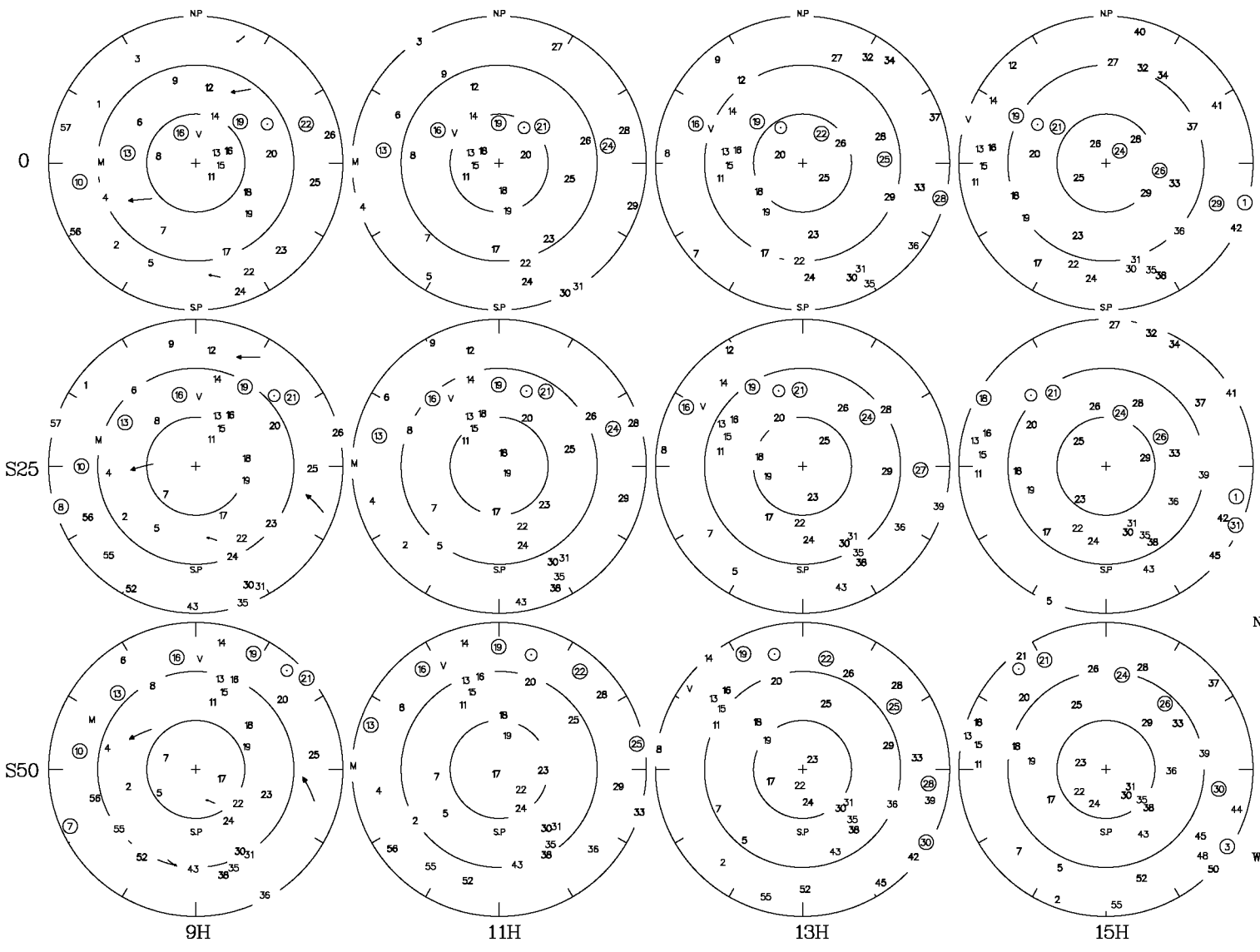
MORNING Sky Diagrams 2020 JULY

DAY Sky Diagrams 2020 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

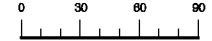
PLANETS Vis. Mag.

- V Venus -4.7
- M Mars -0.8
- J Jupiter -2.8
- S Saturn 0.1

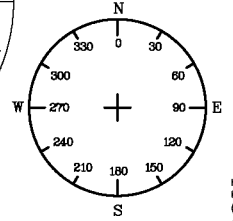
POLES

N•P North S•P South

ALTITUDE SCALE

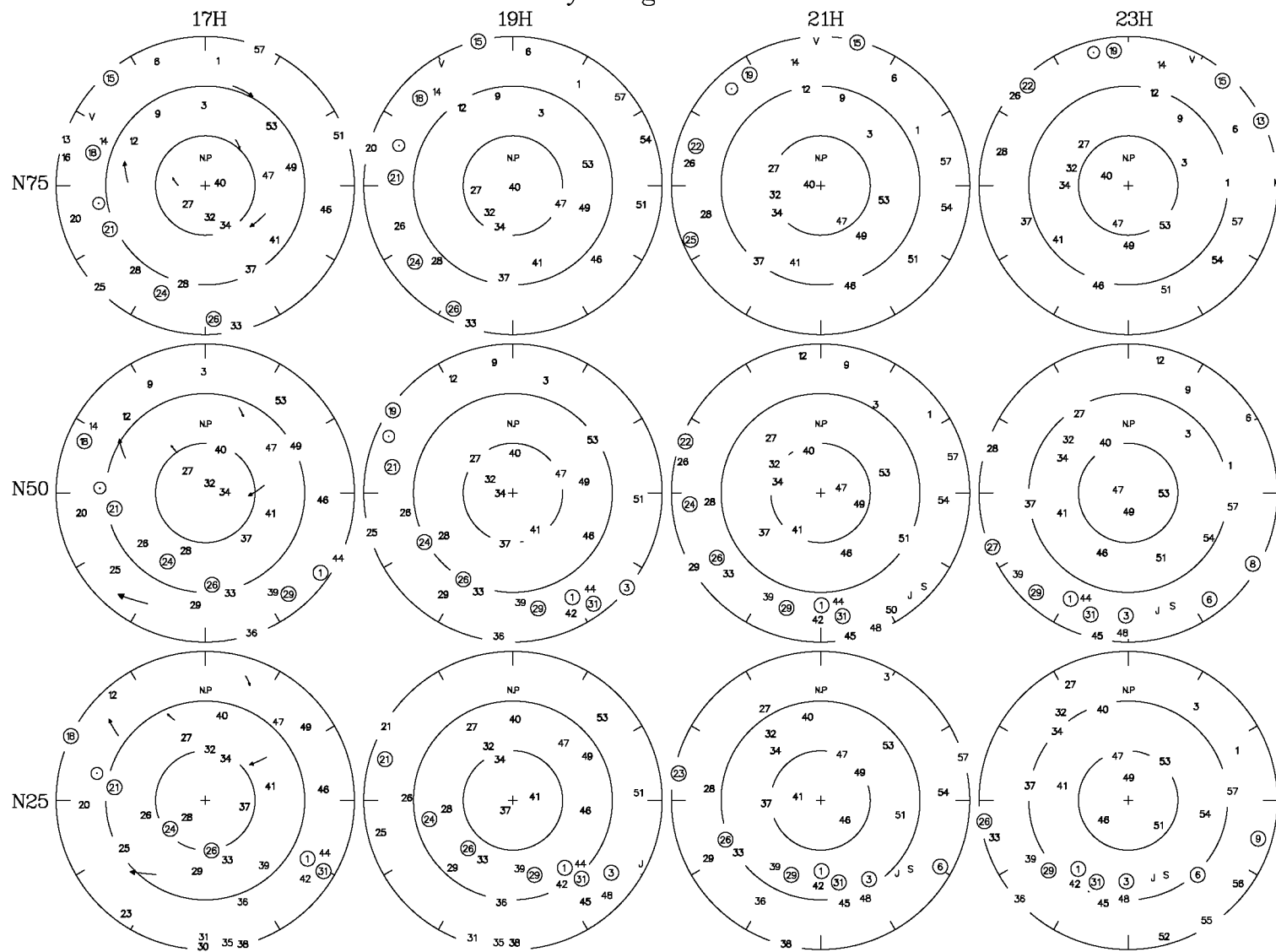


AZIMUTH



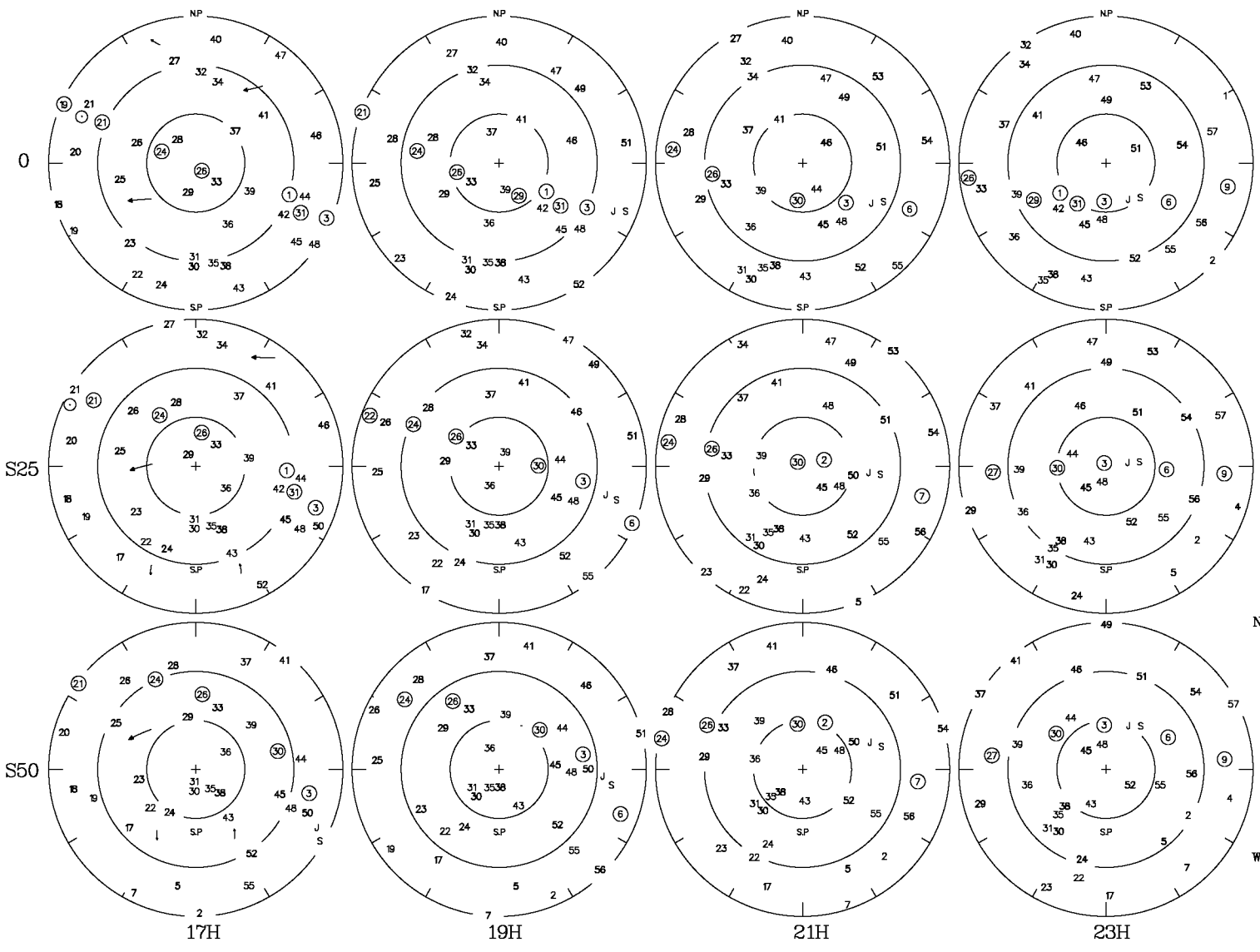
DAY Sky Diagrams 2020 JULY

EVENING Sky Diagrams 2020 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

① Position, 1st of month
 ② Position, 2nd of month etc.

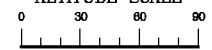
PLANETS Vis. Mag.

V Venus -4.7
 M Mars -0.8
 J Jupiter -2.8
 S Saturn 0.1

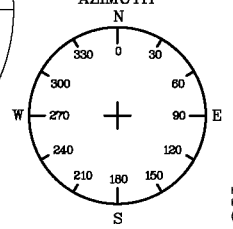
POLES

N•P North S•P South

ALTITUDE SCALE

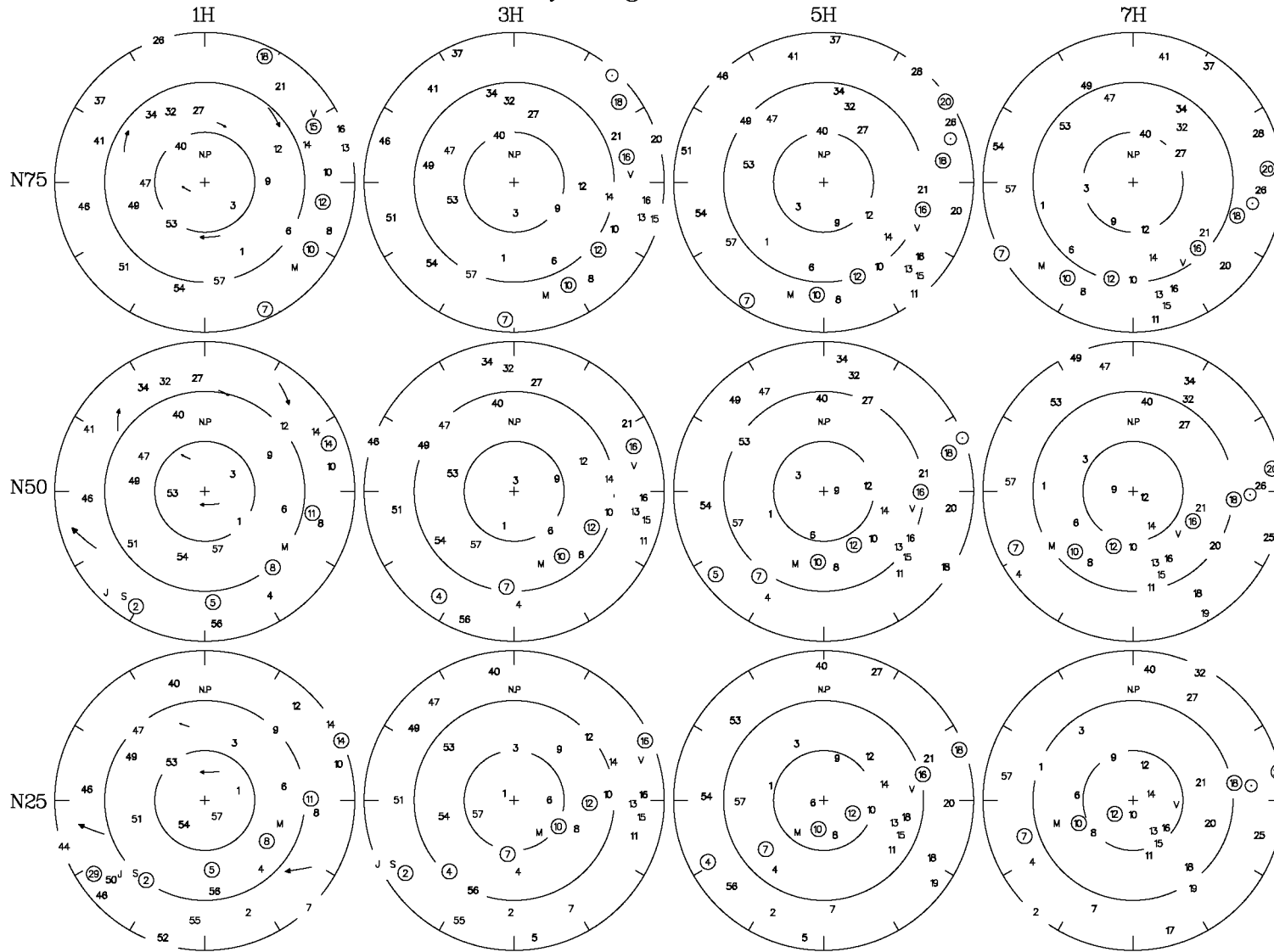


AZIMUTH



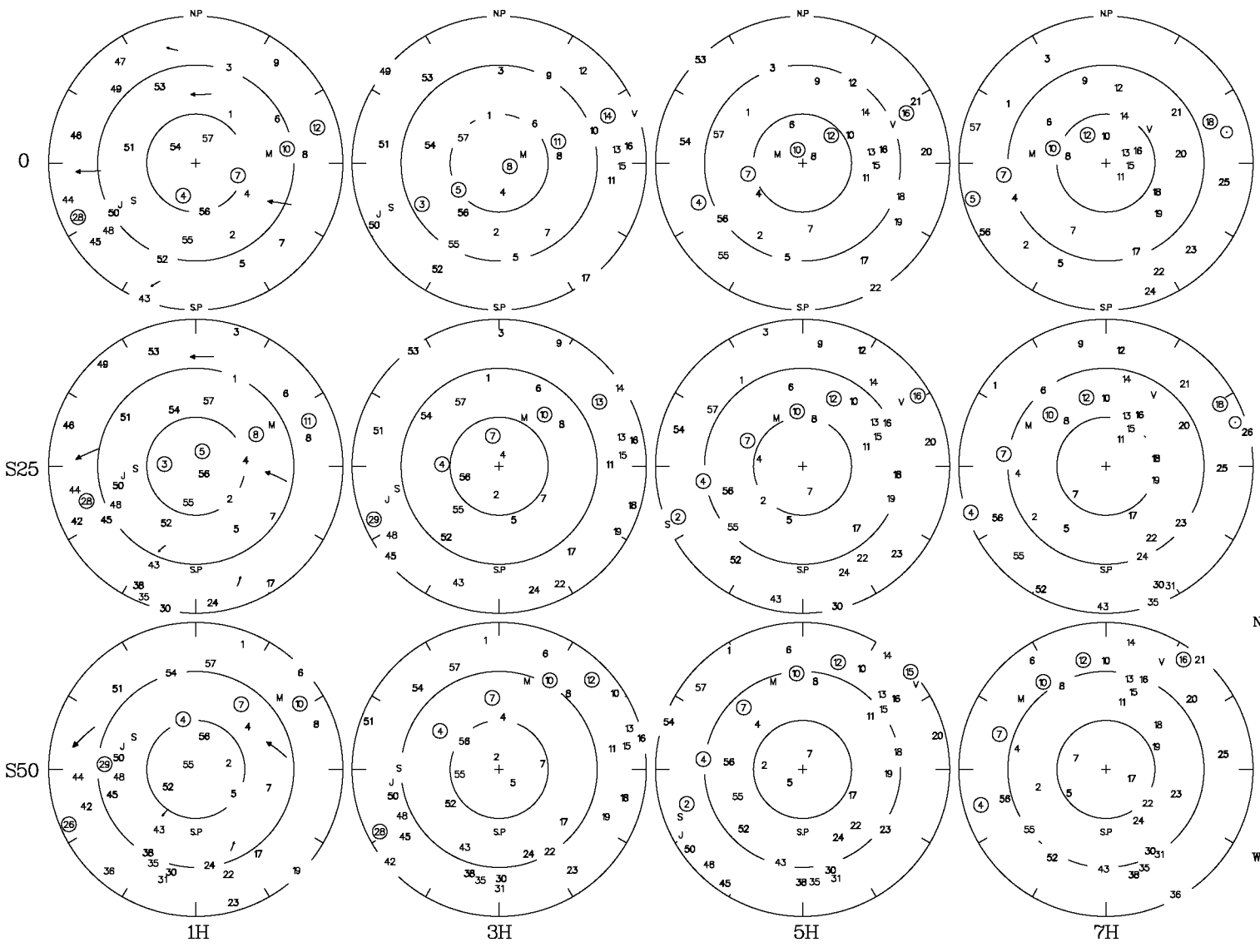
EVENING Sky Diagrams 2020 JULY

MORNING Sky Diagrams 2020 AUGUST



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

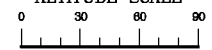
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars -1.4
- J Jupiter -2.7
- S Saturn 0.2

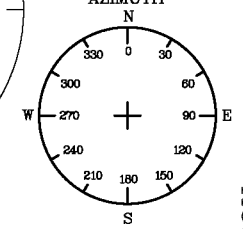
POLES

N•P North S•P South

ALTITUDE SCALE

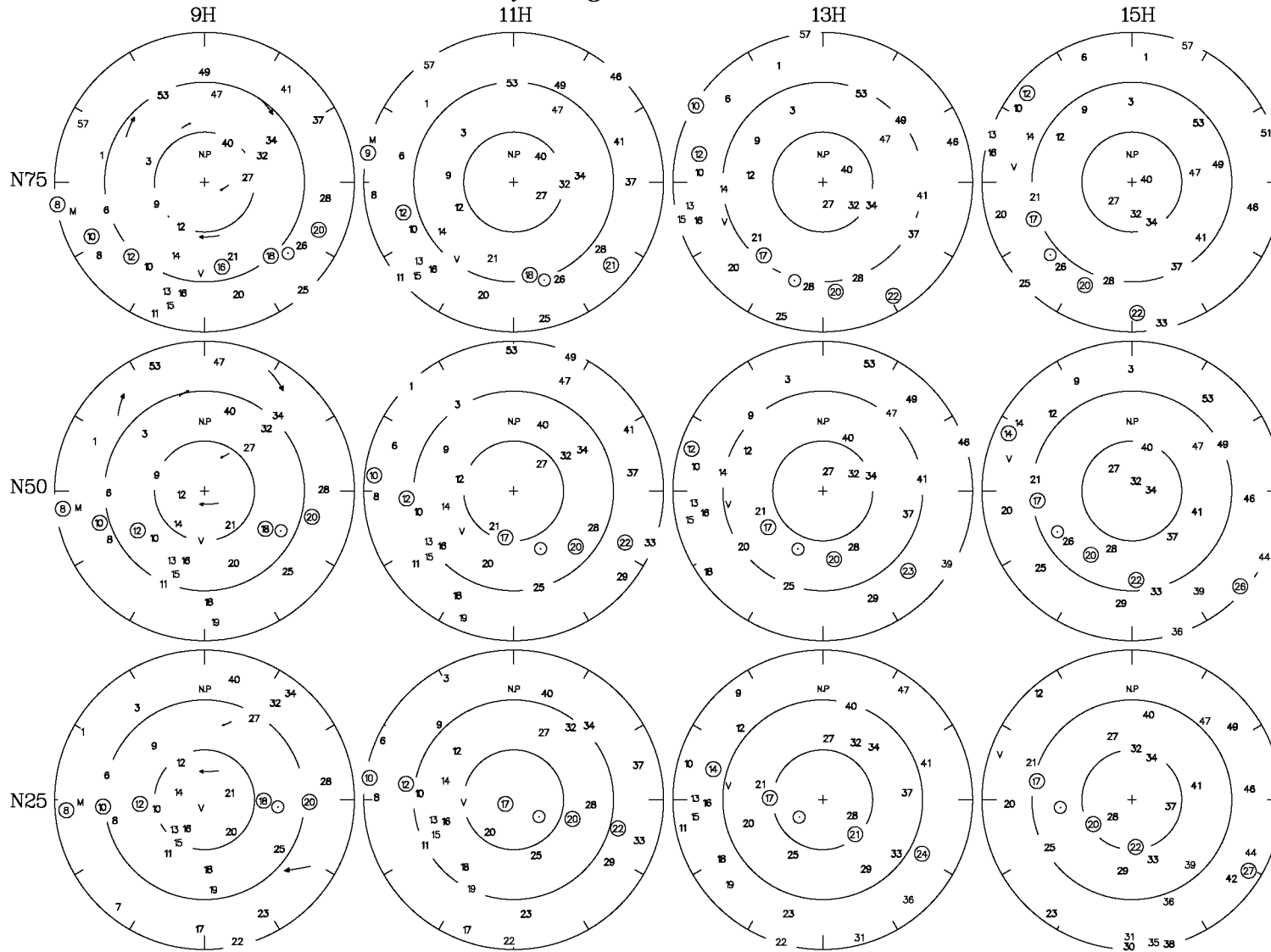


AZIMUTH



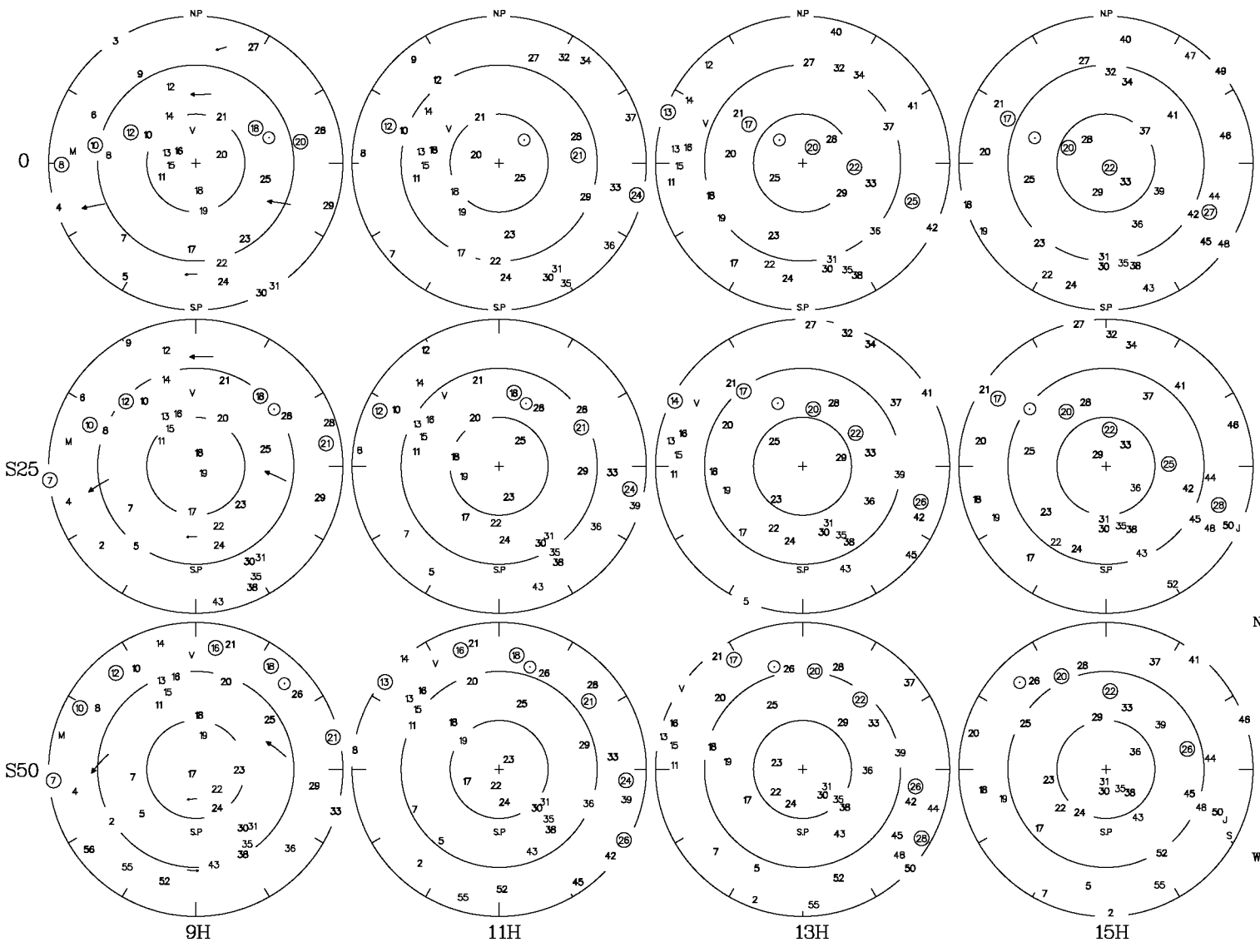
MORNING Sky Diagrams 2020 AUGUST

DAY Sky Diagrams 2020 AUGUST



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

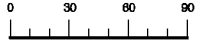
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars -1.4
- J Jupiter -2.7
- S Saturn 0.2

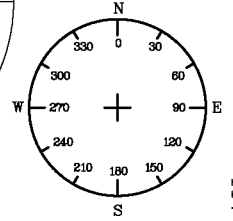
POLES

N•P North S•P South

ALTITUDE SCALE

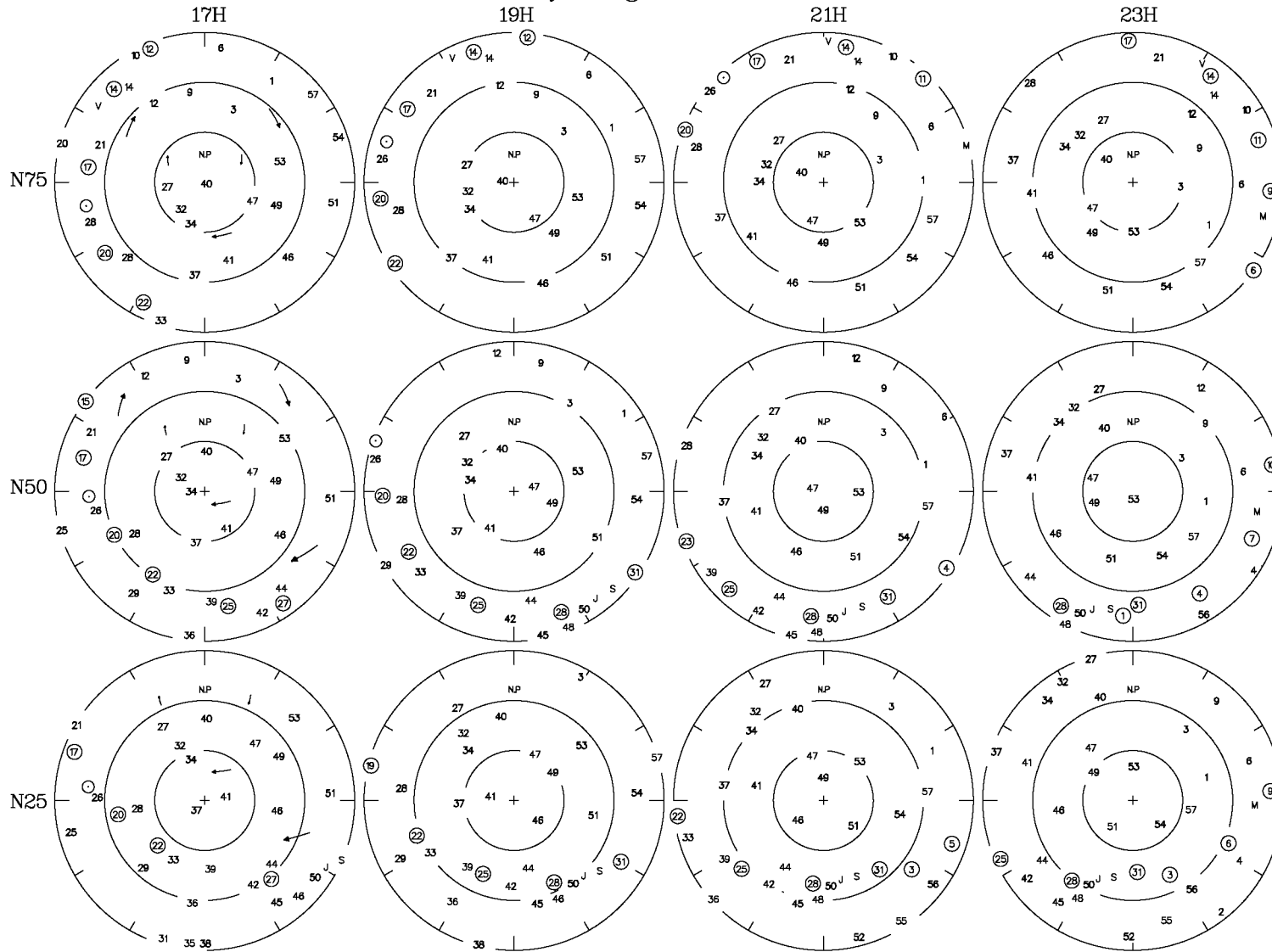


AZIMUTH



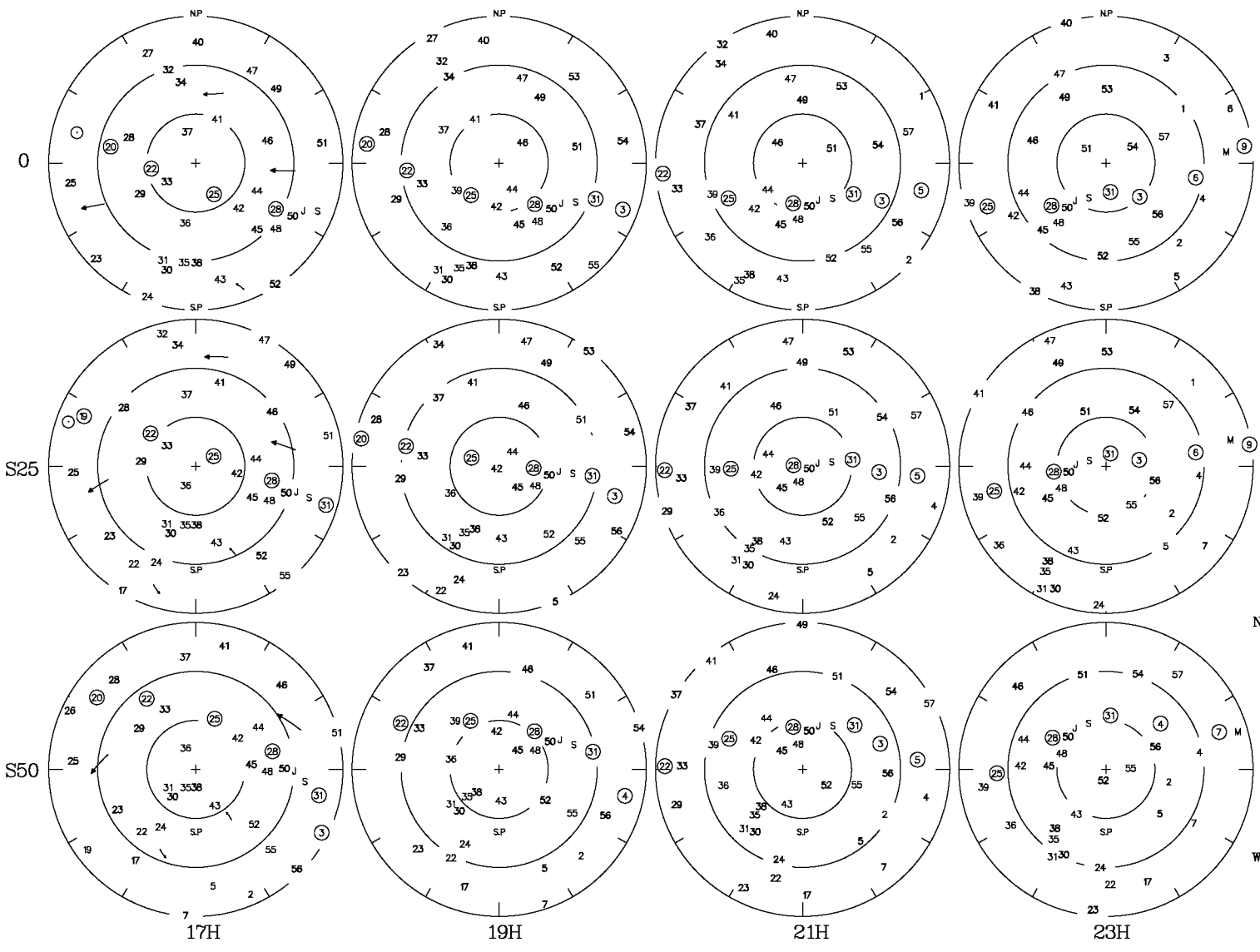
DAY Sky Diagrams 2020 AUGUST

EVENING Sky Diagrams 2020 AUGUST



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

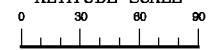
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars -1.4
- J Jupiter -2.7
- S Saturn 0.2

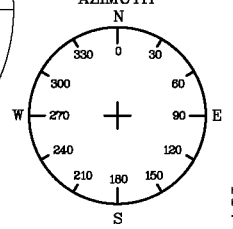
POLES

N•P North S•P South

ALTITUDE SCALE

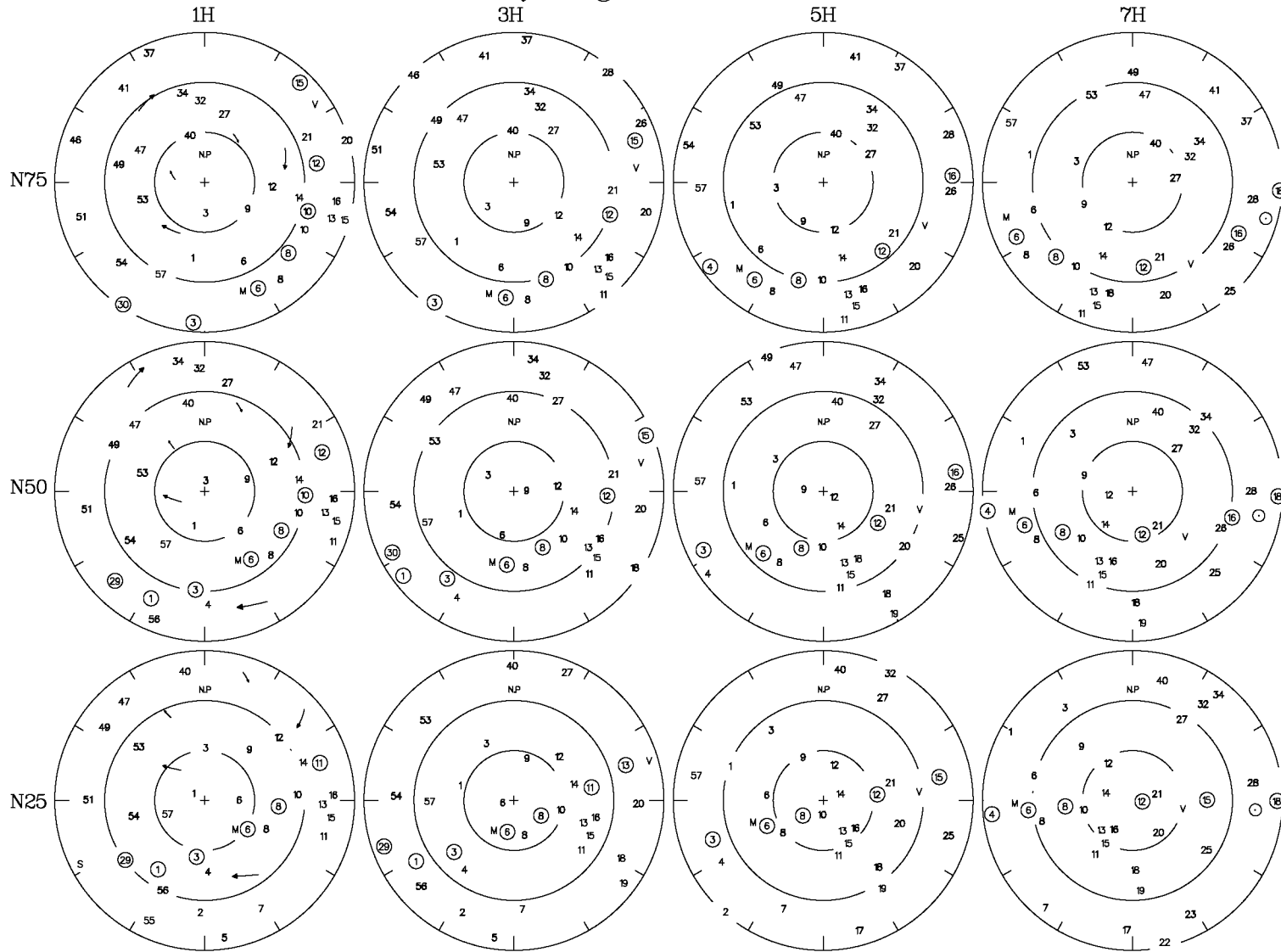


AZIMUTH



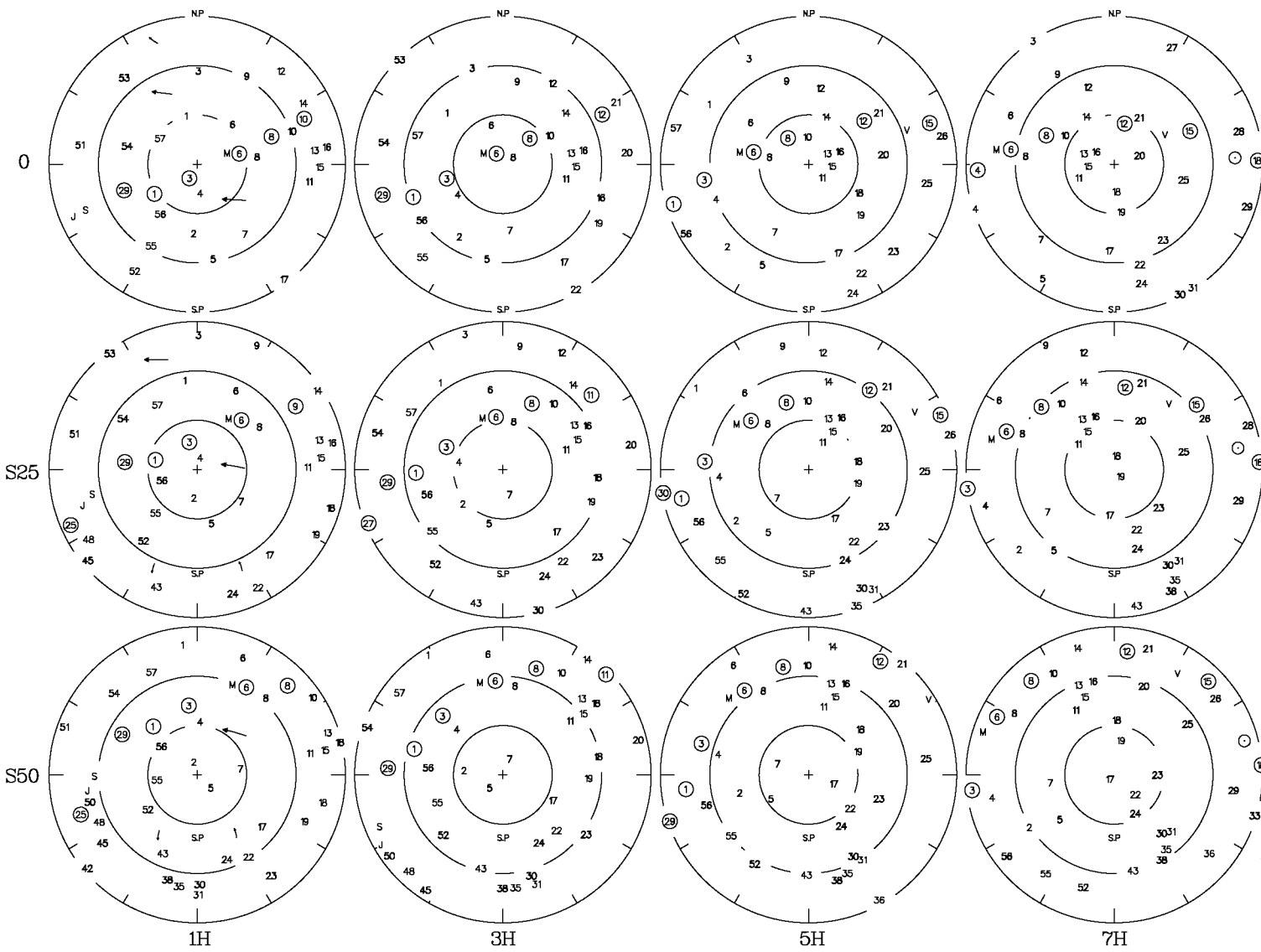
EVENING Sky Diagrams 2020 AUGUST

MORNING Sky Diagrams 2020 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

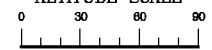
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars -2.1
- J Jupiter -2.5
- S Saturn 0.4

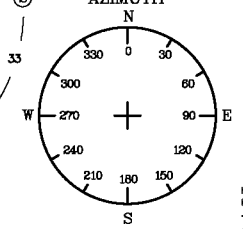
POLES

N•P North S•P South

ALTITUDE SCALE

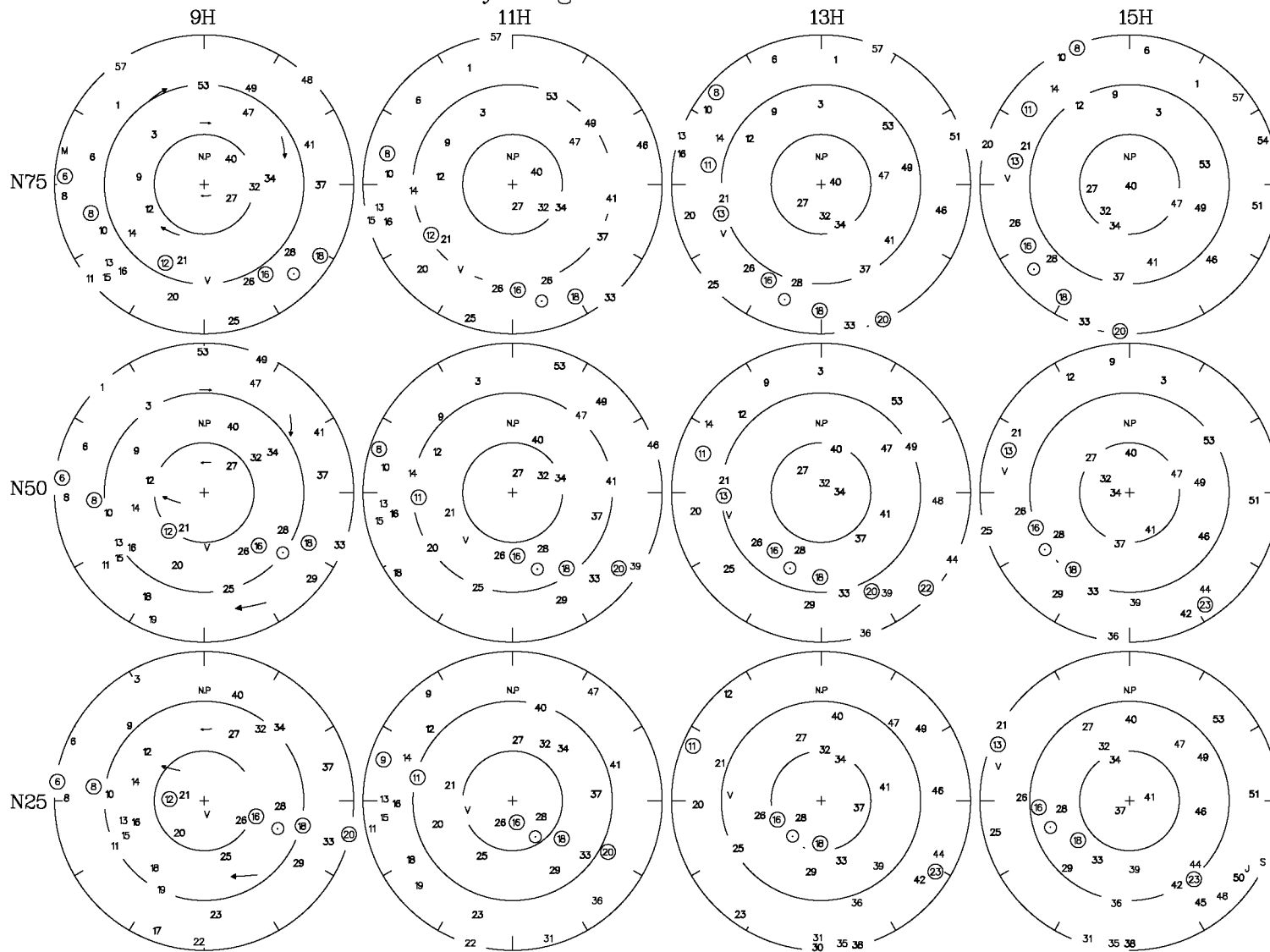


AZIMUTH



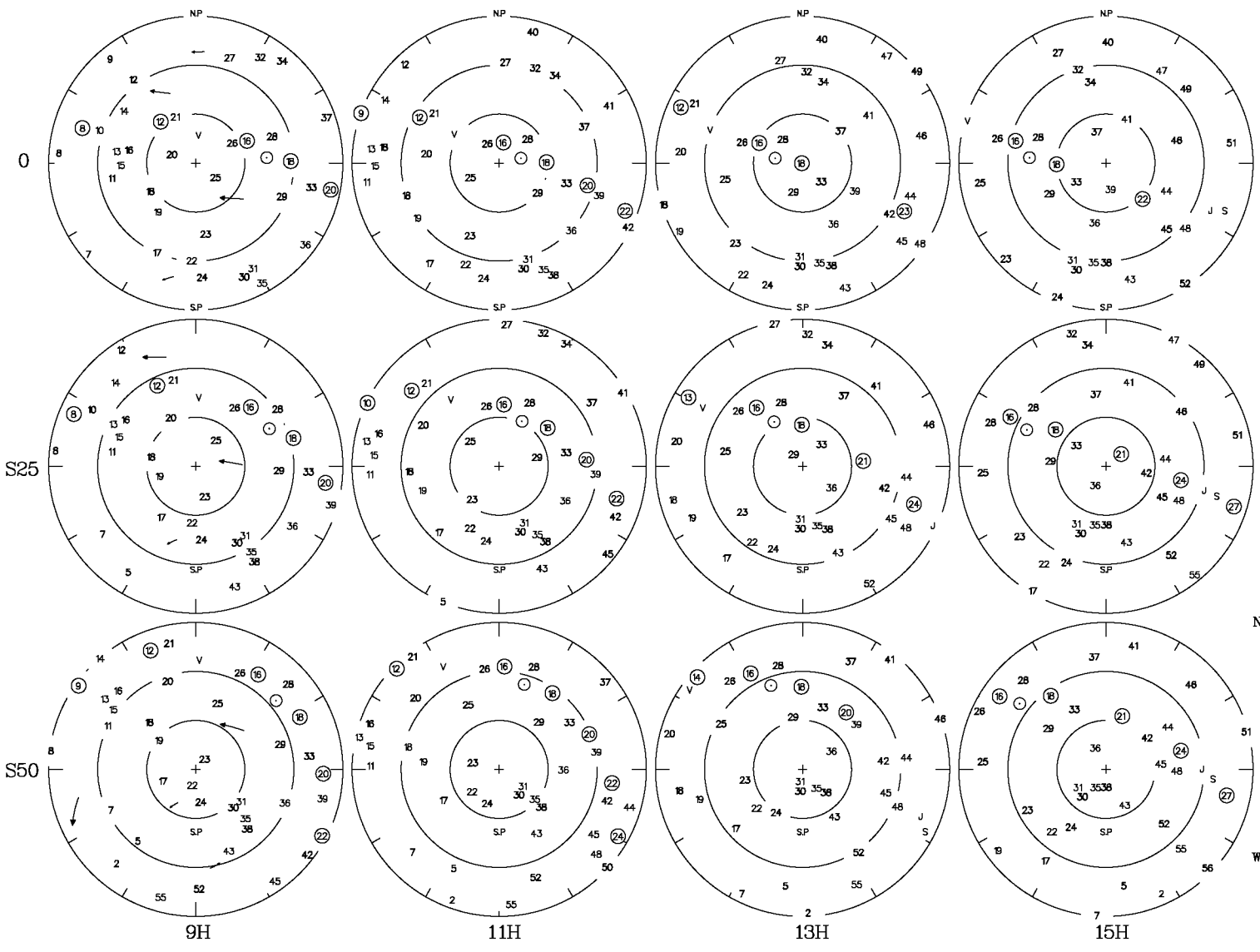
MORNING Sky Diagrams 2020 SEPTEMBER

DAY Sky Diagrams 2020 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

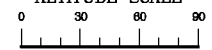
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars -2.1
- J Jupiter -2.5
- S Saturn 0.4

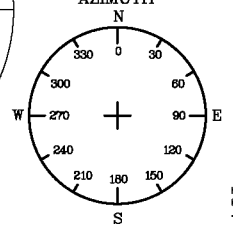
POLES

N•P North S•P South

ALTITUDE SCALE



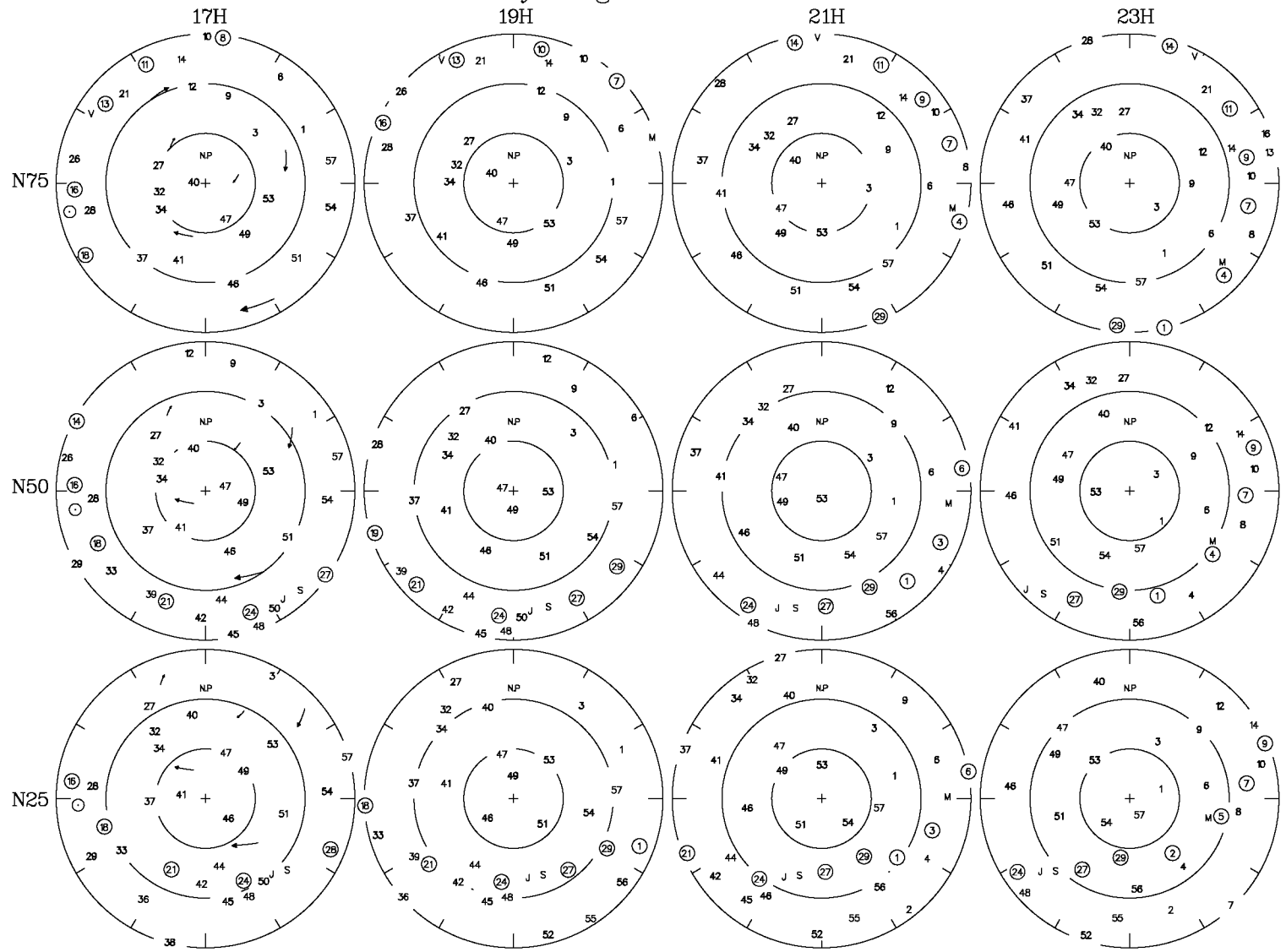
AZIMUTH



DAY Sky Diagrams 2020 SEPTEMBER

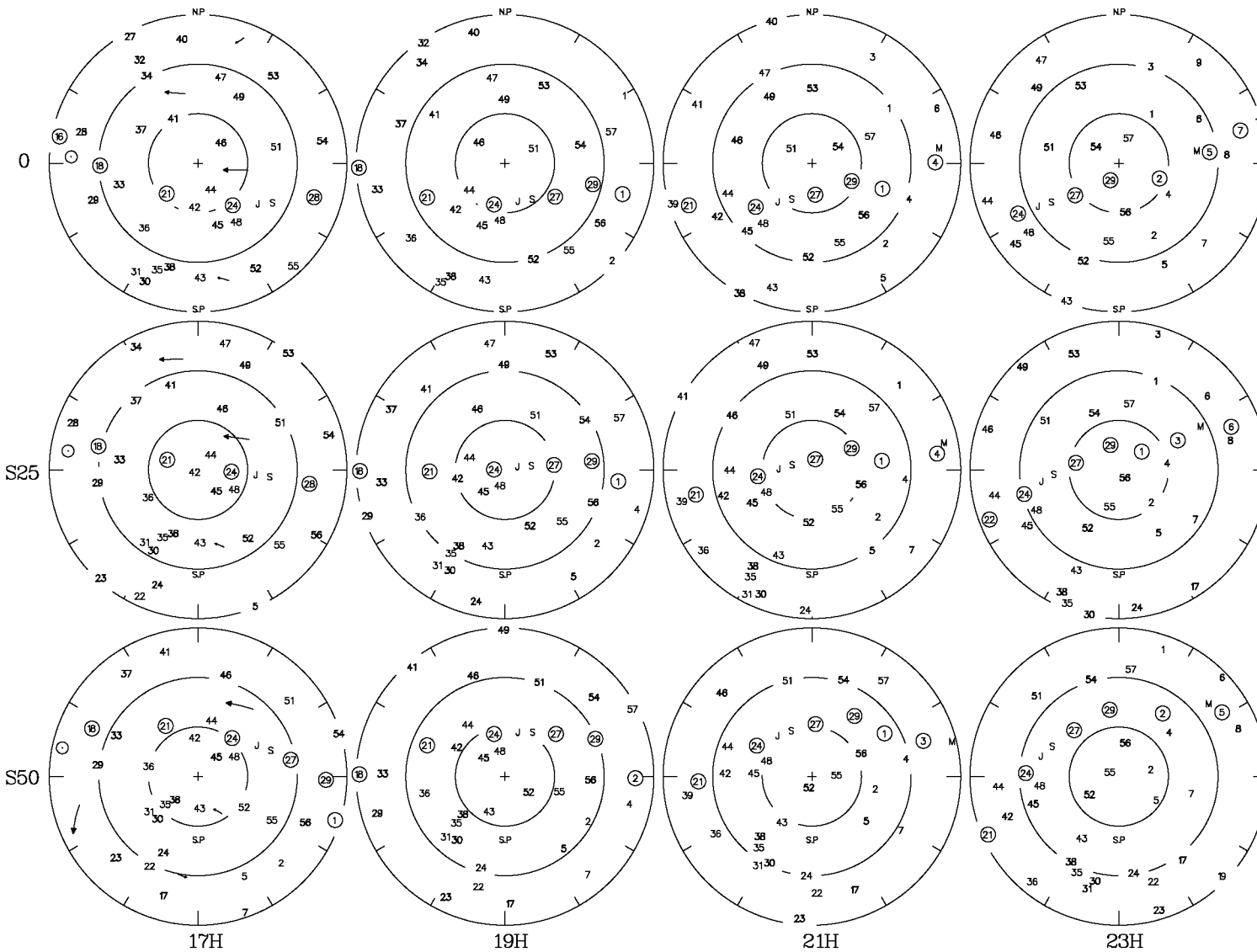
A77

EVENING Sky Diagrams 2020 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

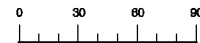
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars -2.1
- J Jupiter -2.5
- S Saturn 0.4

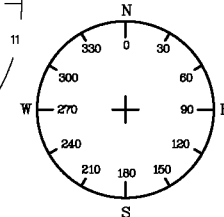
POLES

N•P North S•P South

ALTITUDE SCALE

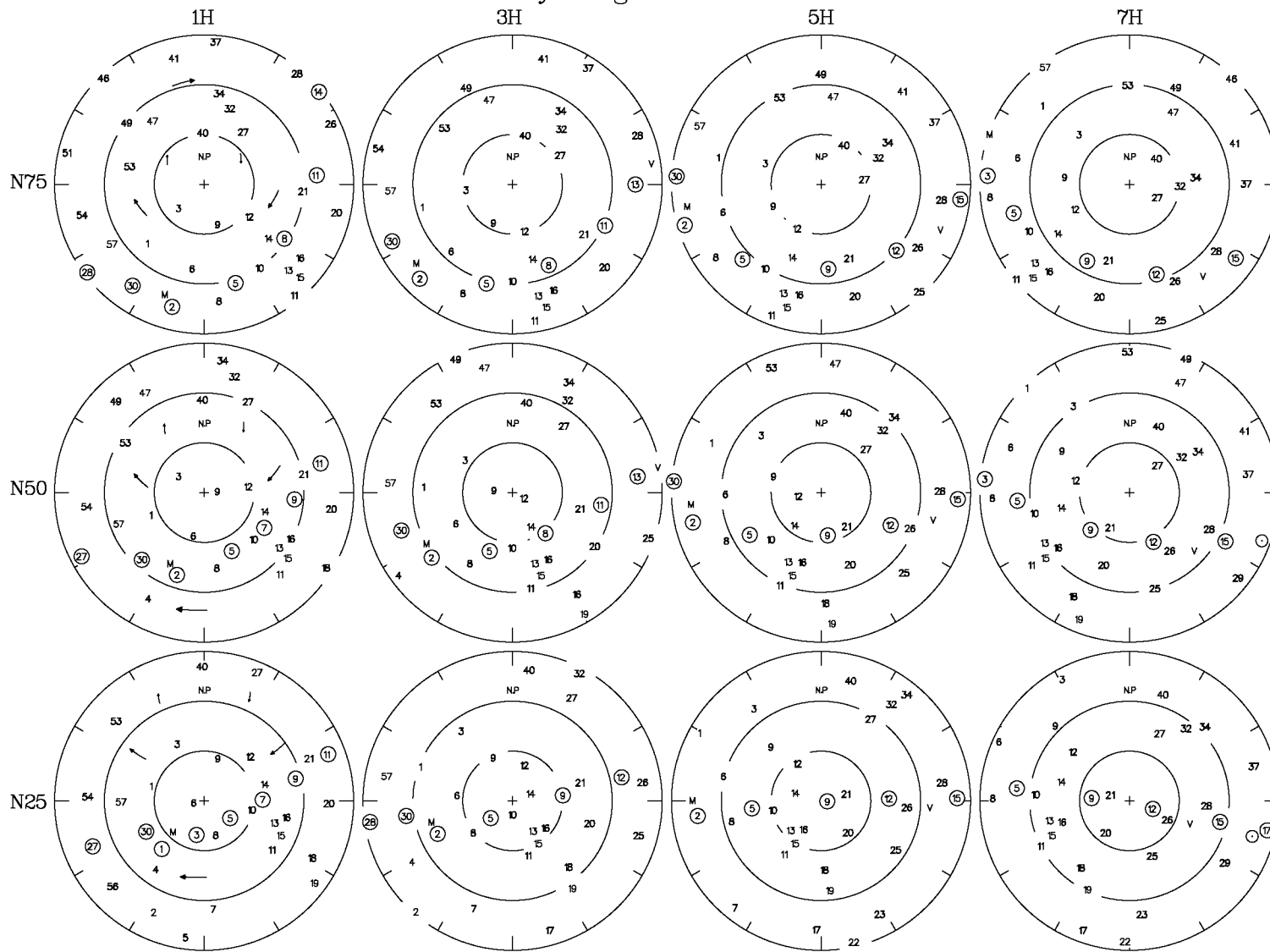


AZIMUTH



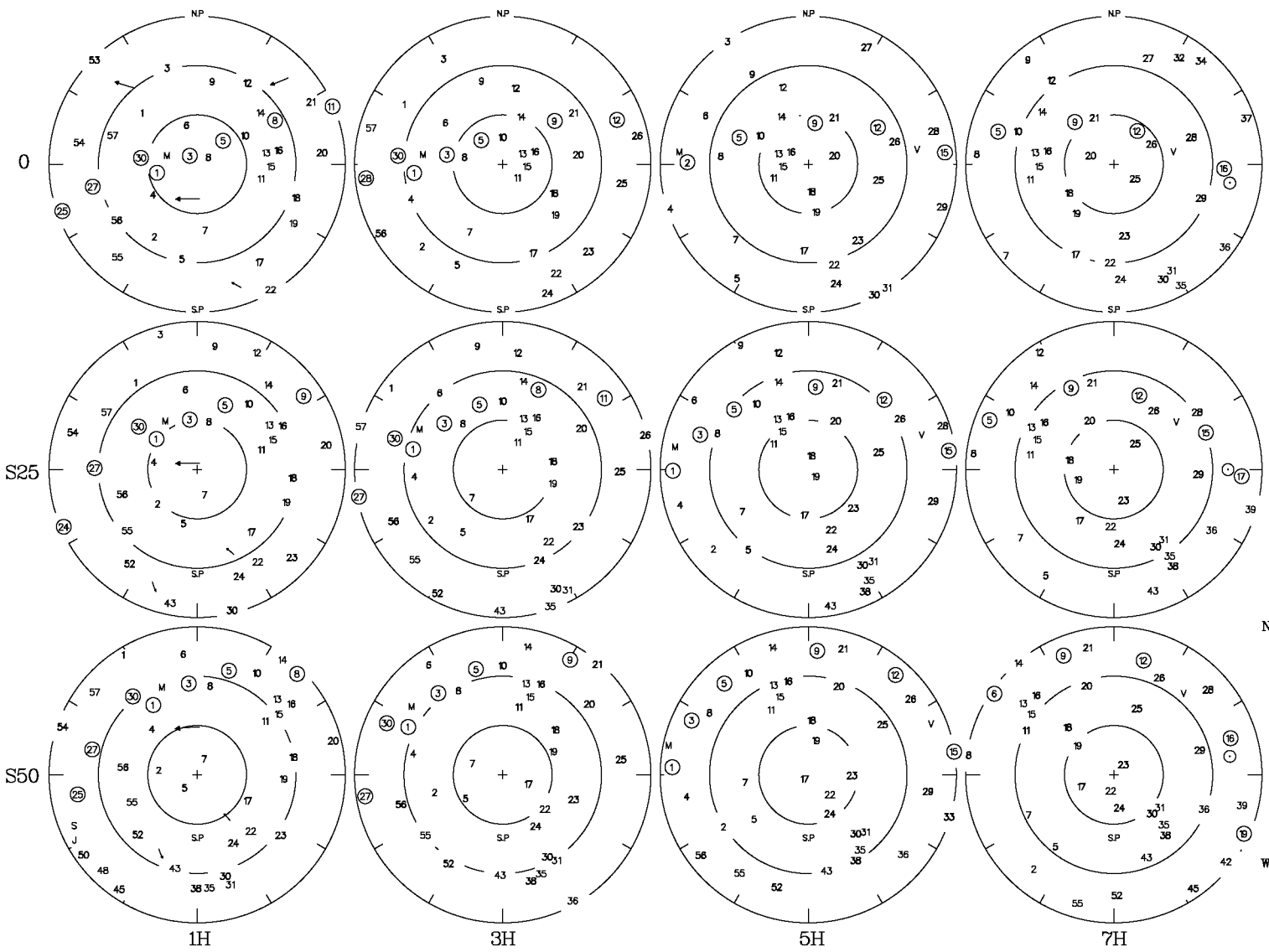
EVENING Sky Diagrams 2020 SEPTEMBER

MORNING Sky Diagrams 2020 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

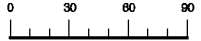
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars -2.6
- J Jupiter -2.3
- S Saturn 0.5

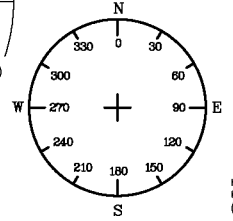
POLES

N•P North S•P South

ALTITUDE SCALE

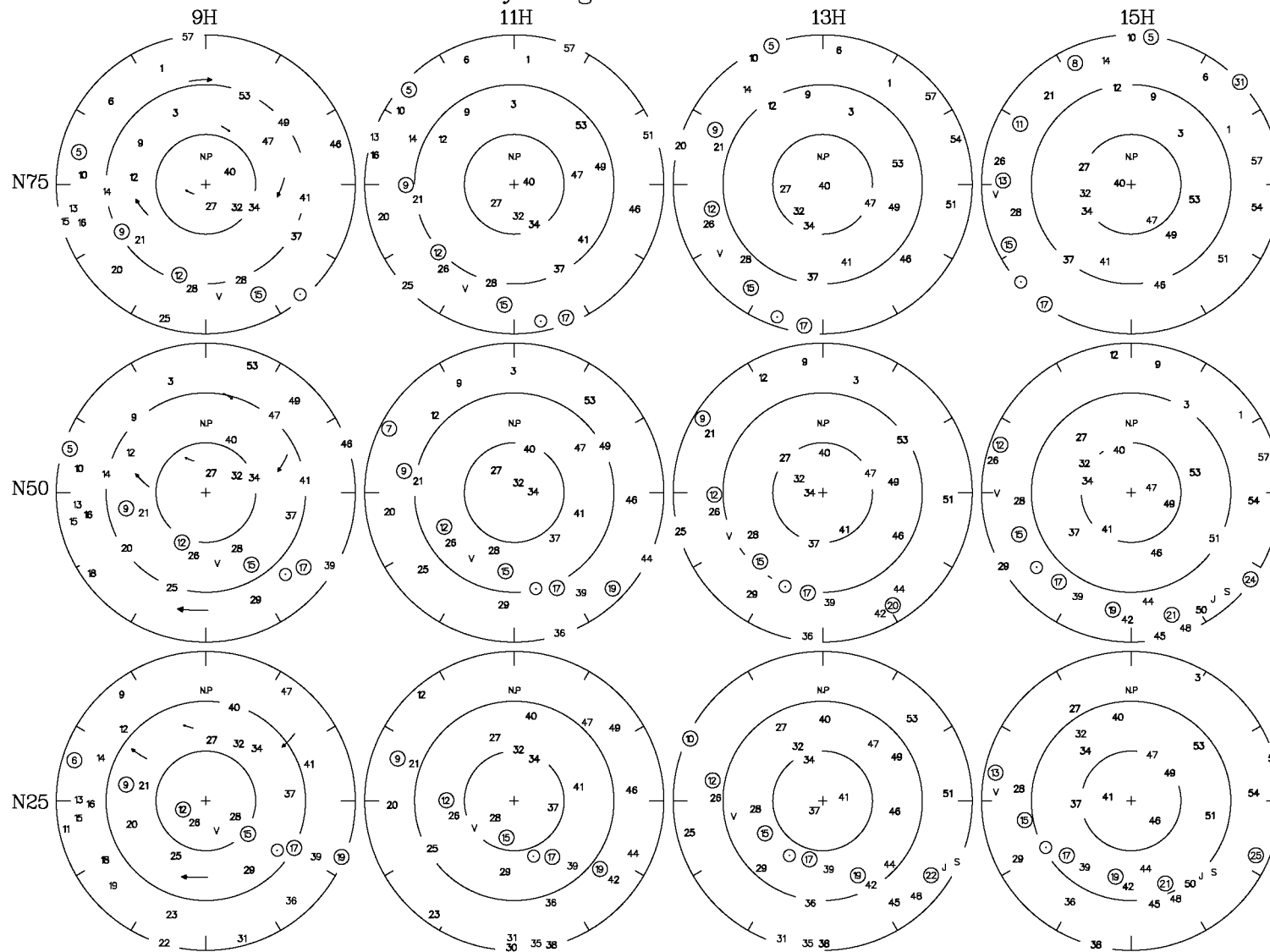


AZIMUTH



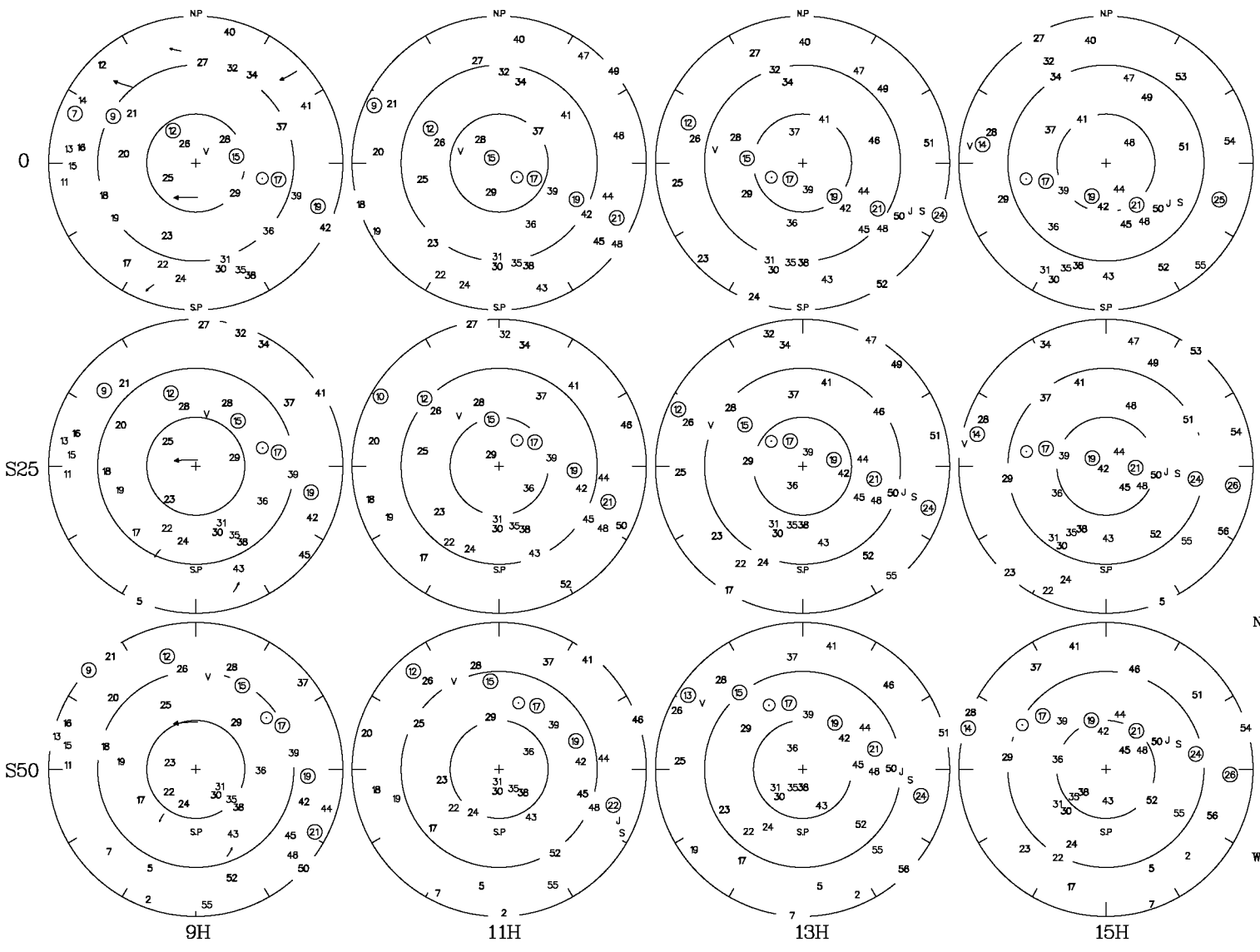
MORNING Sky Diagrams 2020 OCTOBER

DAY Sky Diagrams 2020 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

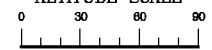
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars -2.6
- J Jupiter -2.3
- S Saturn 0.5

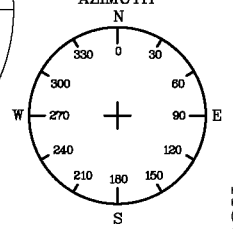
POLES

N•P North S•P South

ALTITUDE SCALE

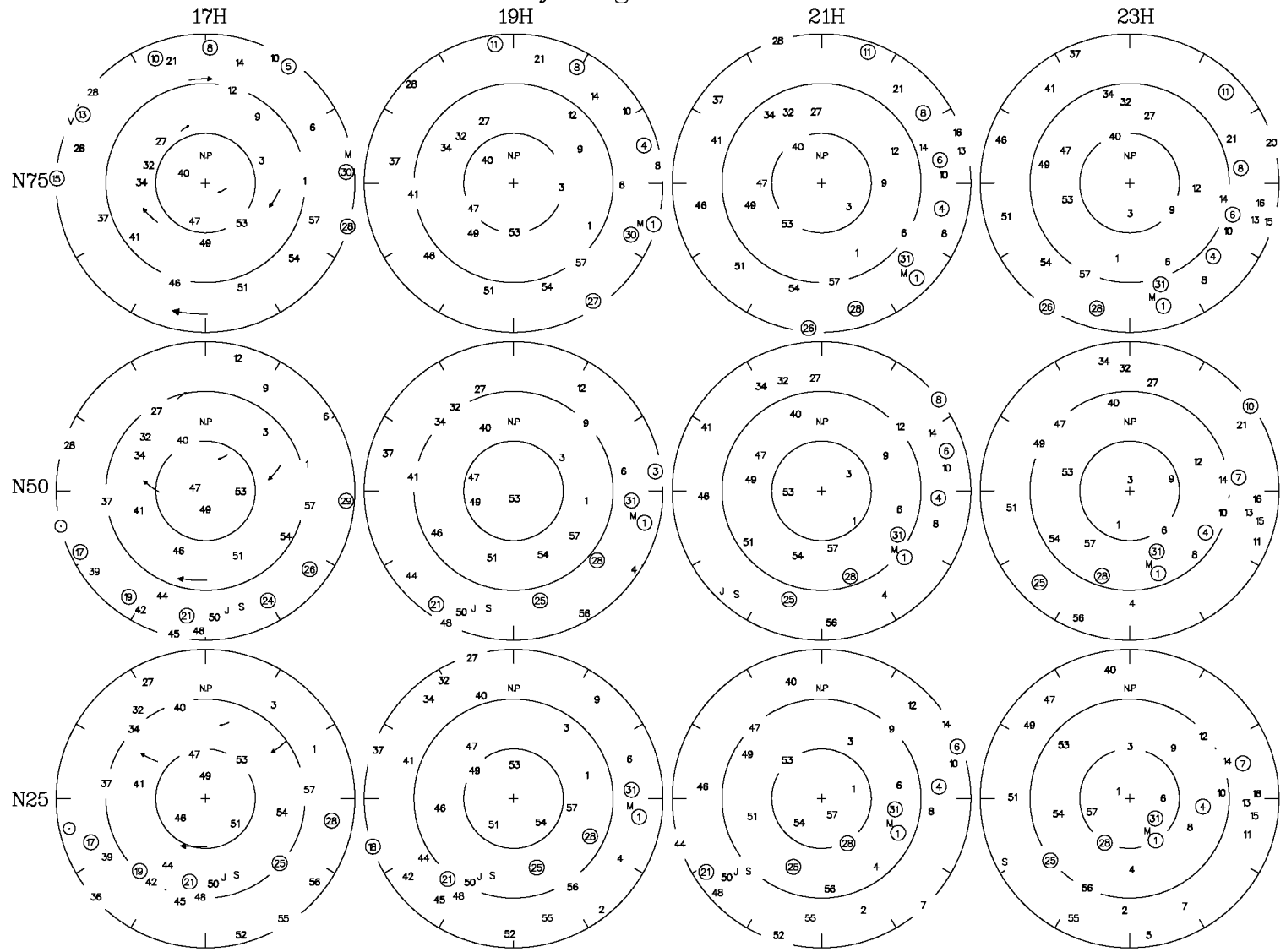


AZIMUTH



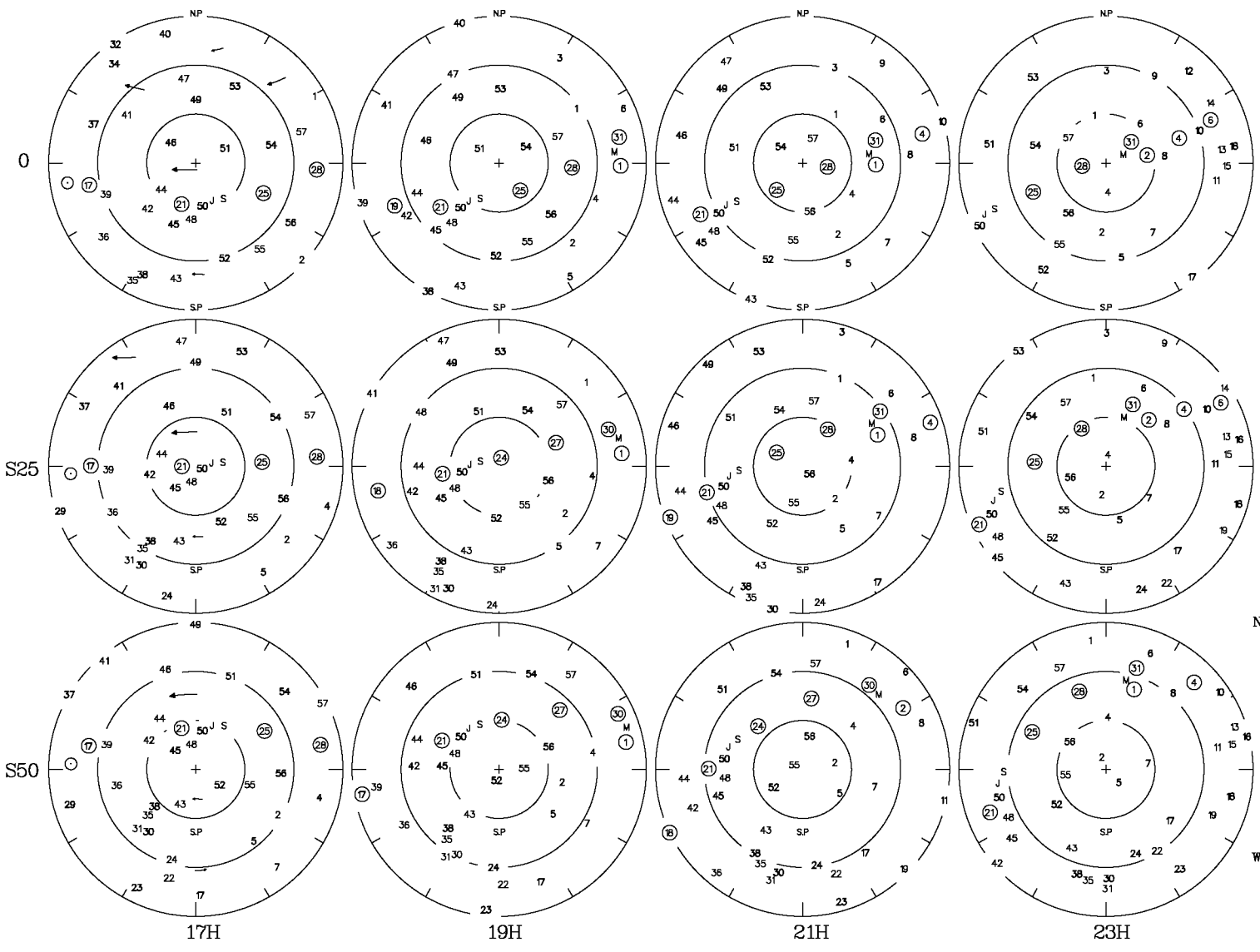
DAY Sky Diagrams 2020 OCTOBER

EVENING Sky Diagrams 2020 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

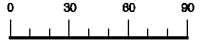
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars -2.6
- J Jupiter -2.3
- S Saturn 0.5

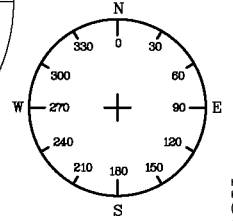
POLES

N•P North S•P South

ALTITUDE SCALE

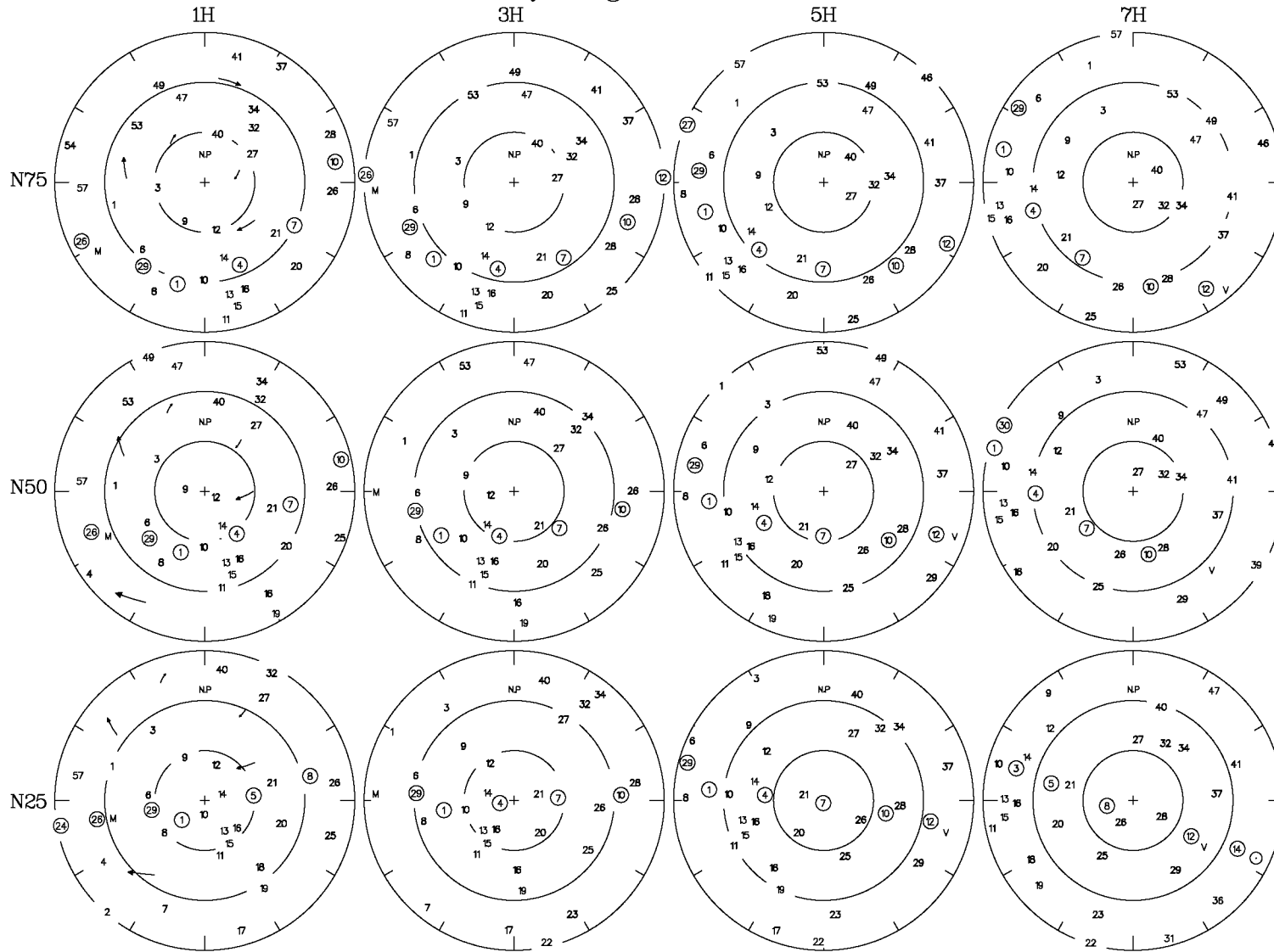


AZIMUTH



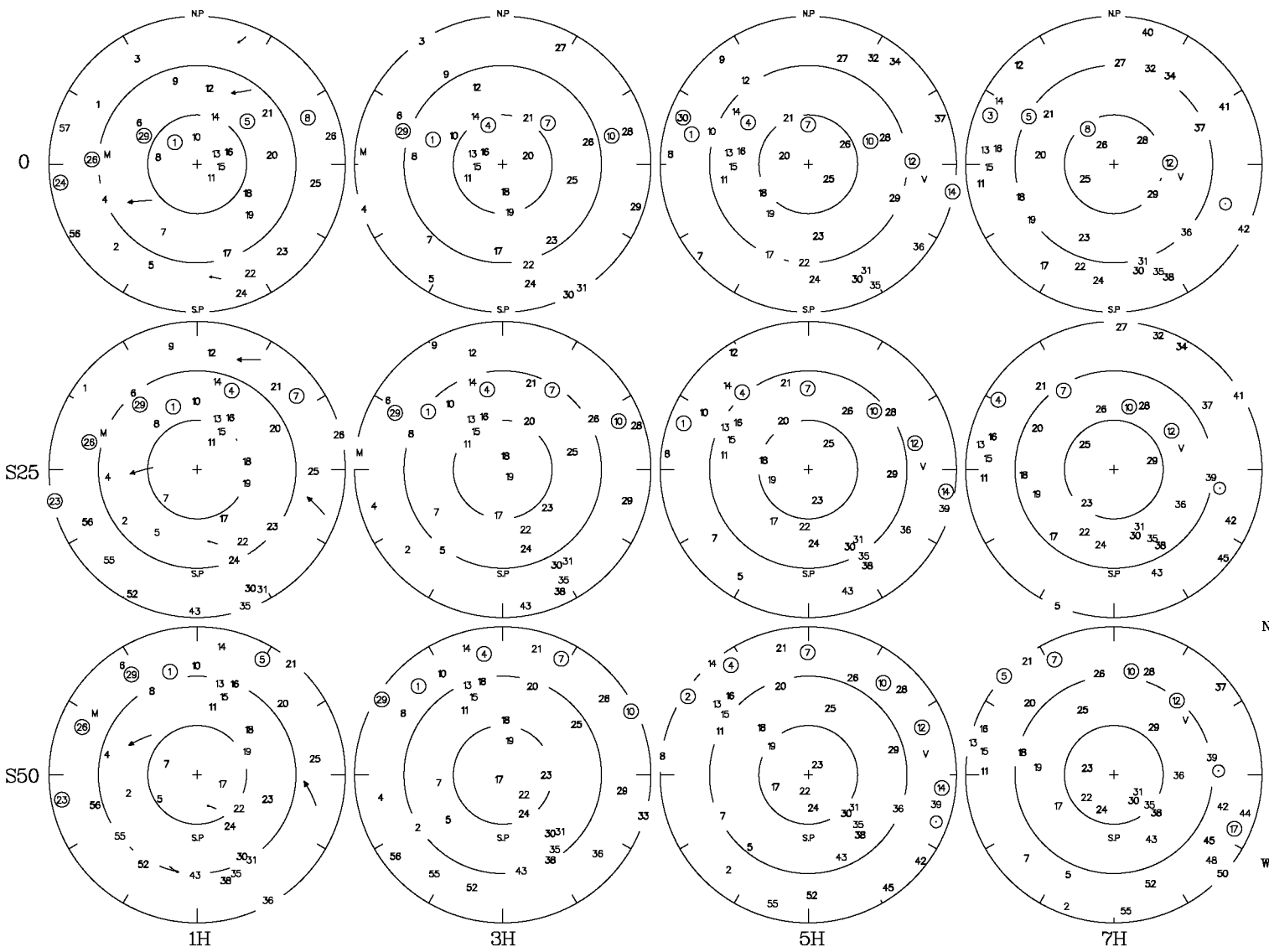
EVENING Sky Diagrams 2020 OCTOBER

MORNING Sky Diagrams 2020 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

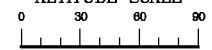
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -1.7
- J Jupiter -2.1
- S Saturn 0.6

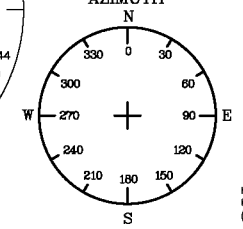
POLES

N•P North S•P South

ALTITUDE SCALE

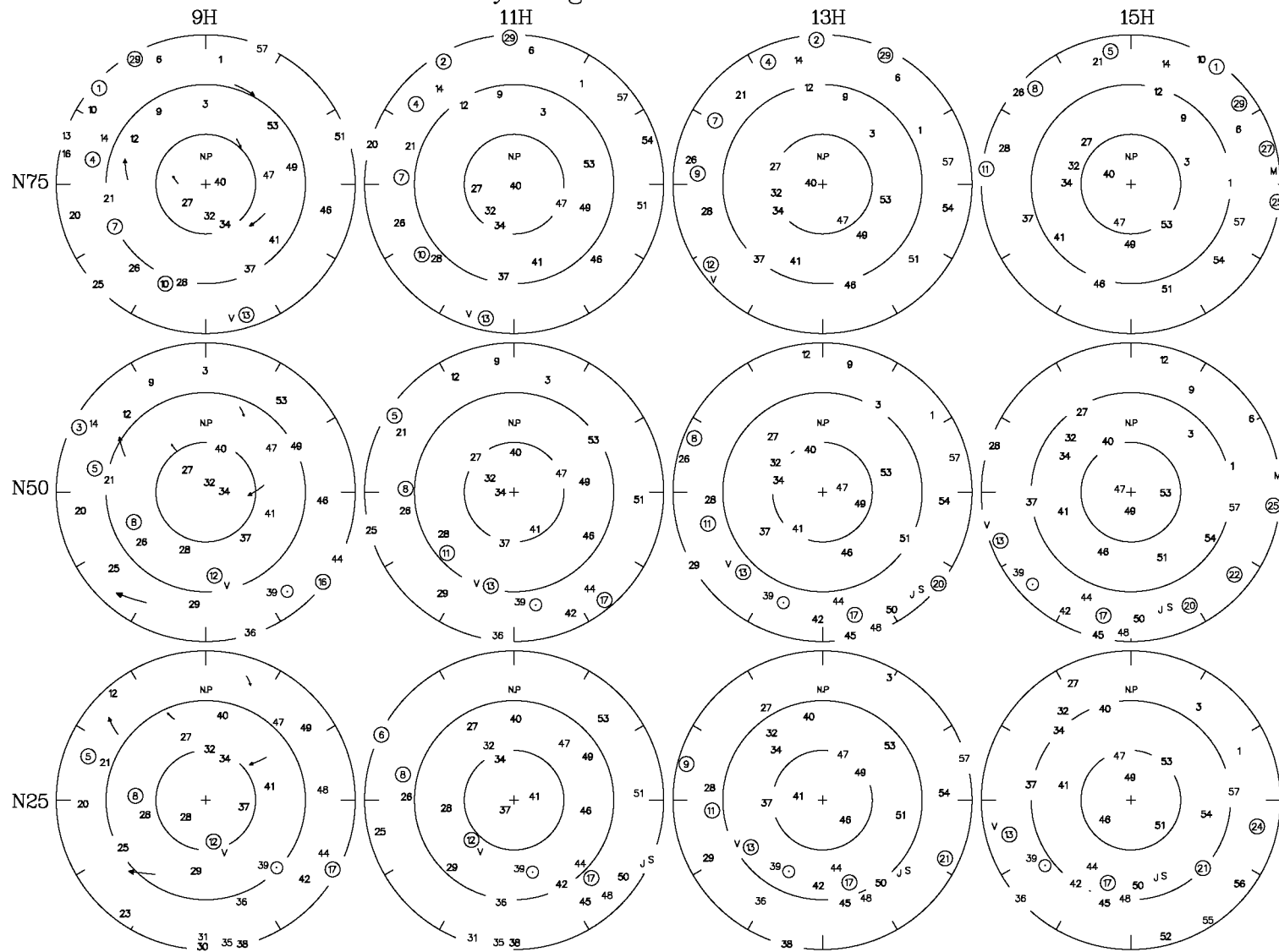


AZIMUTH



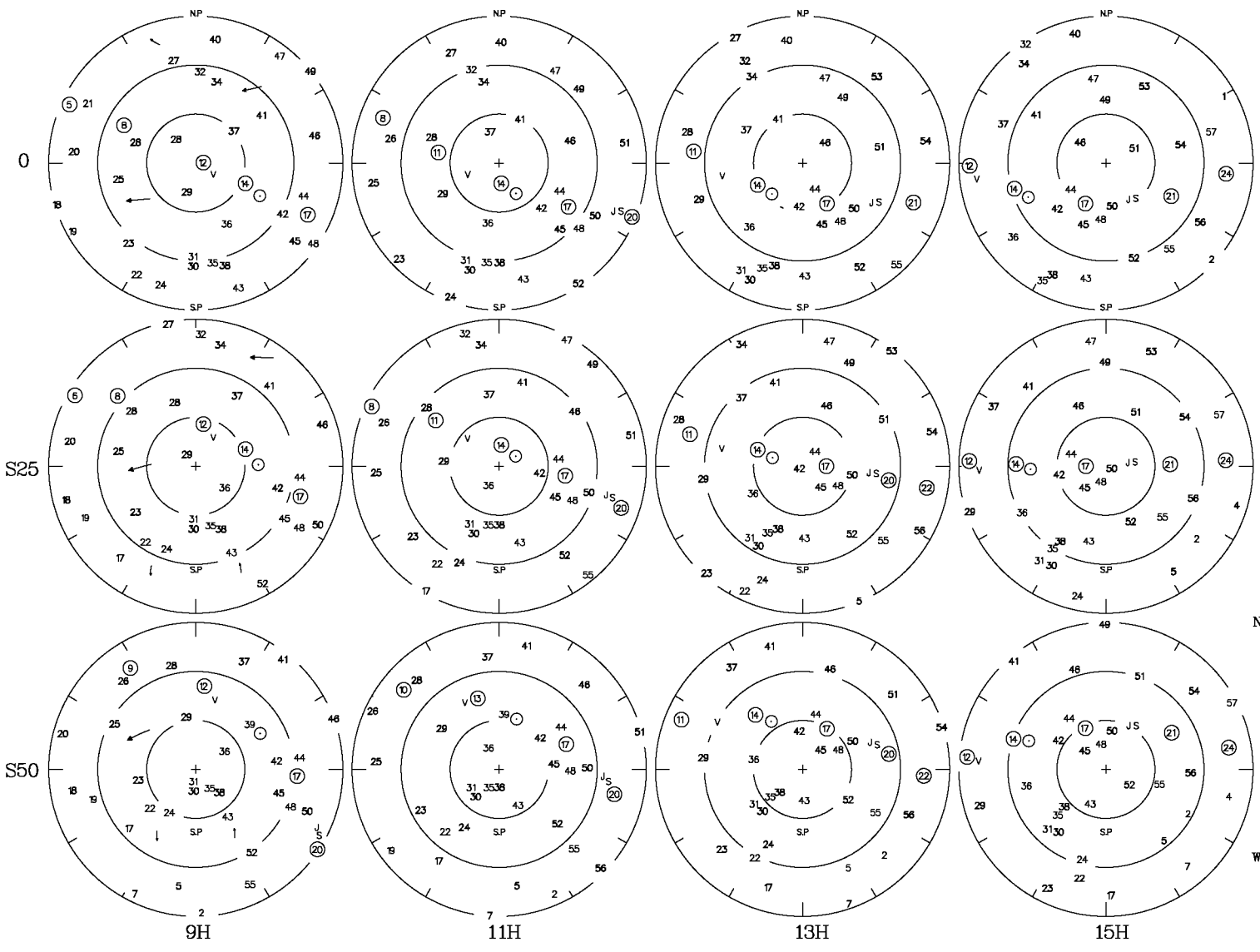
MORNING Sky Diagrams 2020 NOVEMBER

DAY Sky Diagrams 2020 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

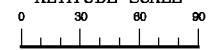
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -1.7
- J Jupiter -2.1
- S Saturn 0.6

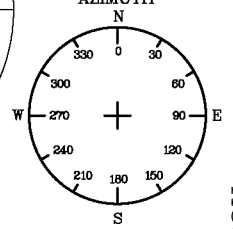
POLES

N•P North S•P South

ALTITUDE SCALE

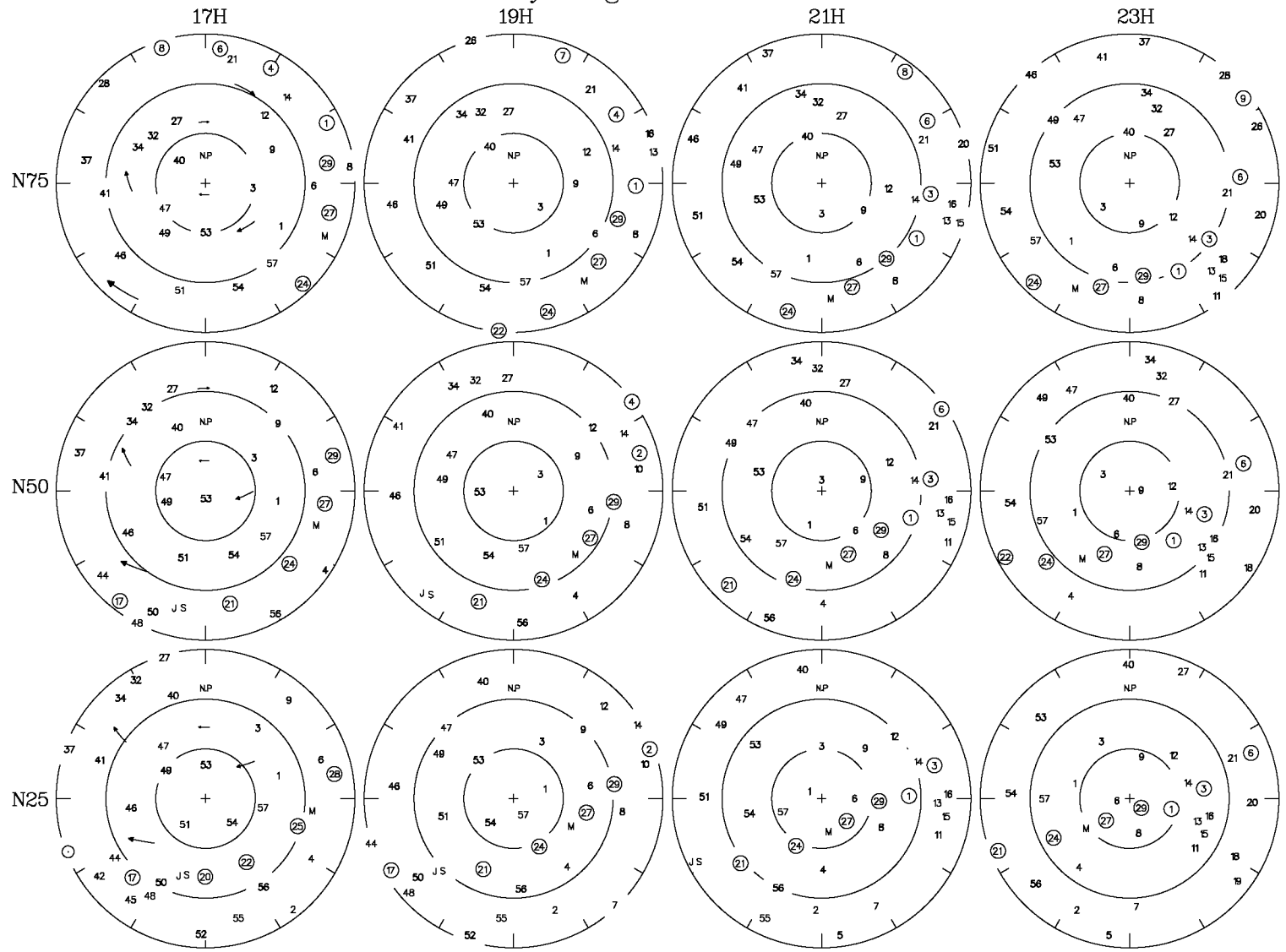


AZIMUTH



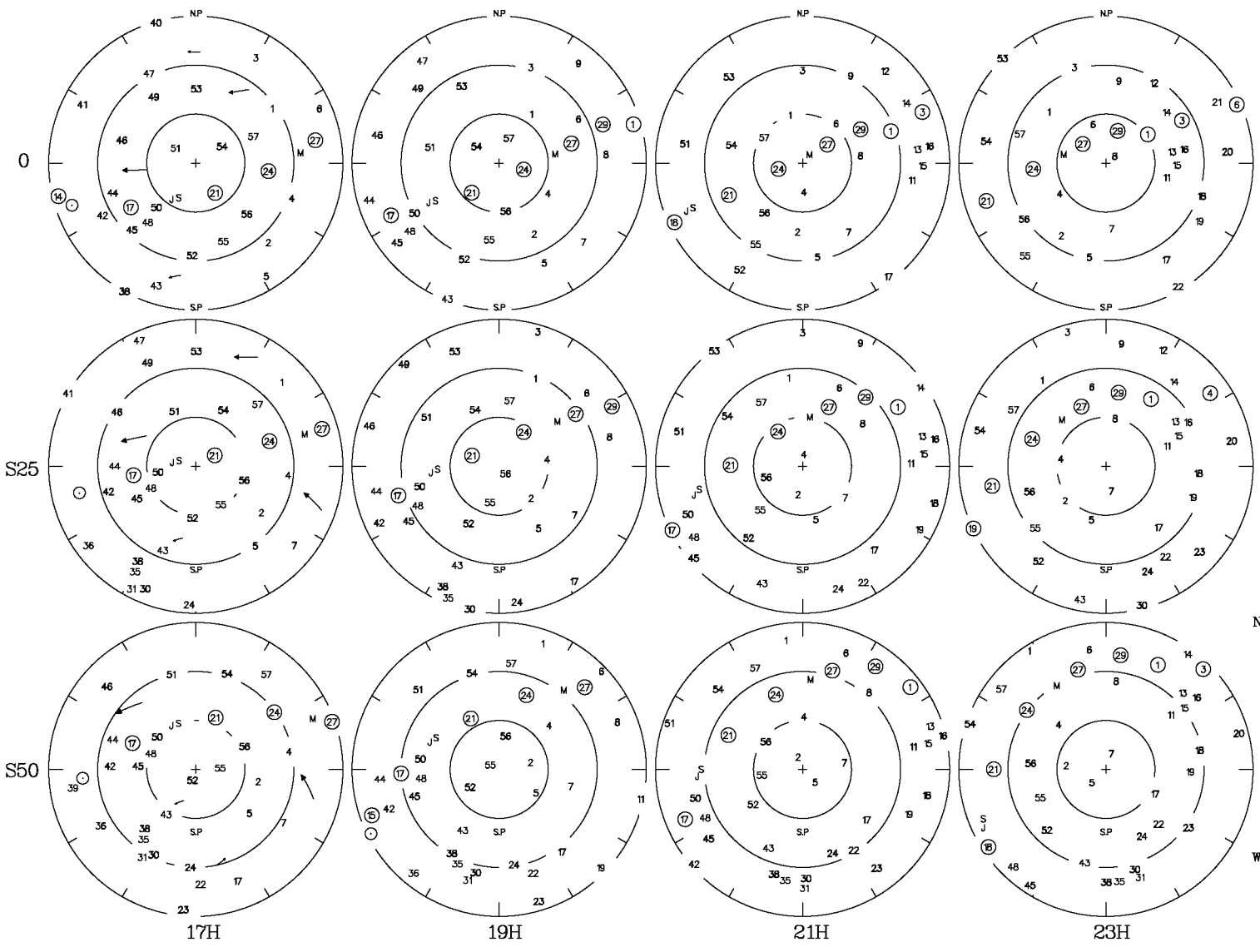
DAY Sky Diagrams 2020 NOVEMBER

EVENING Sky Diagrams 2020 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

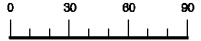
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -1.7
- J Jupiter -2.1
- S Saturn 0.6

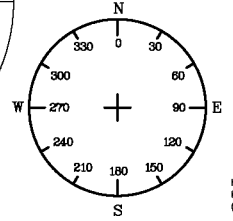
POLES

N•P North S•P South

ALTITUDE SCALE

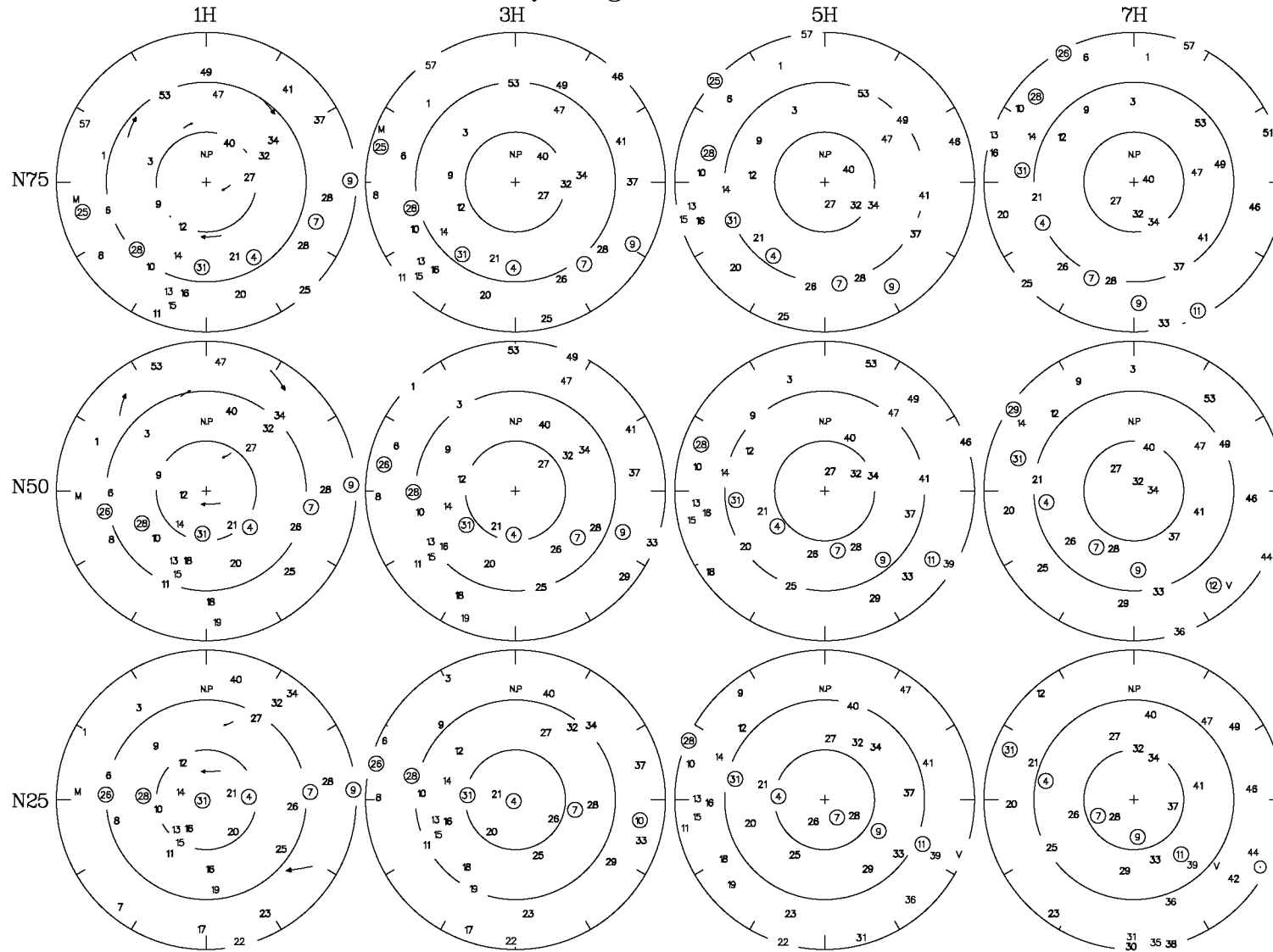


AZIMUTH



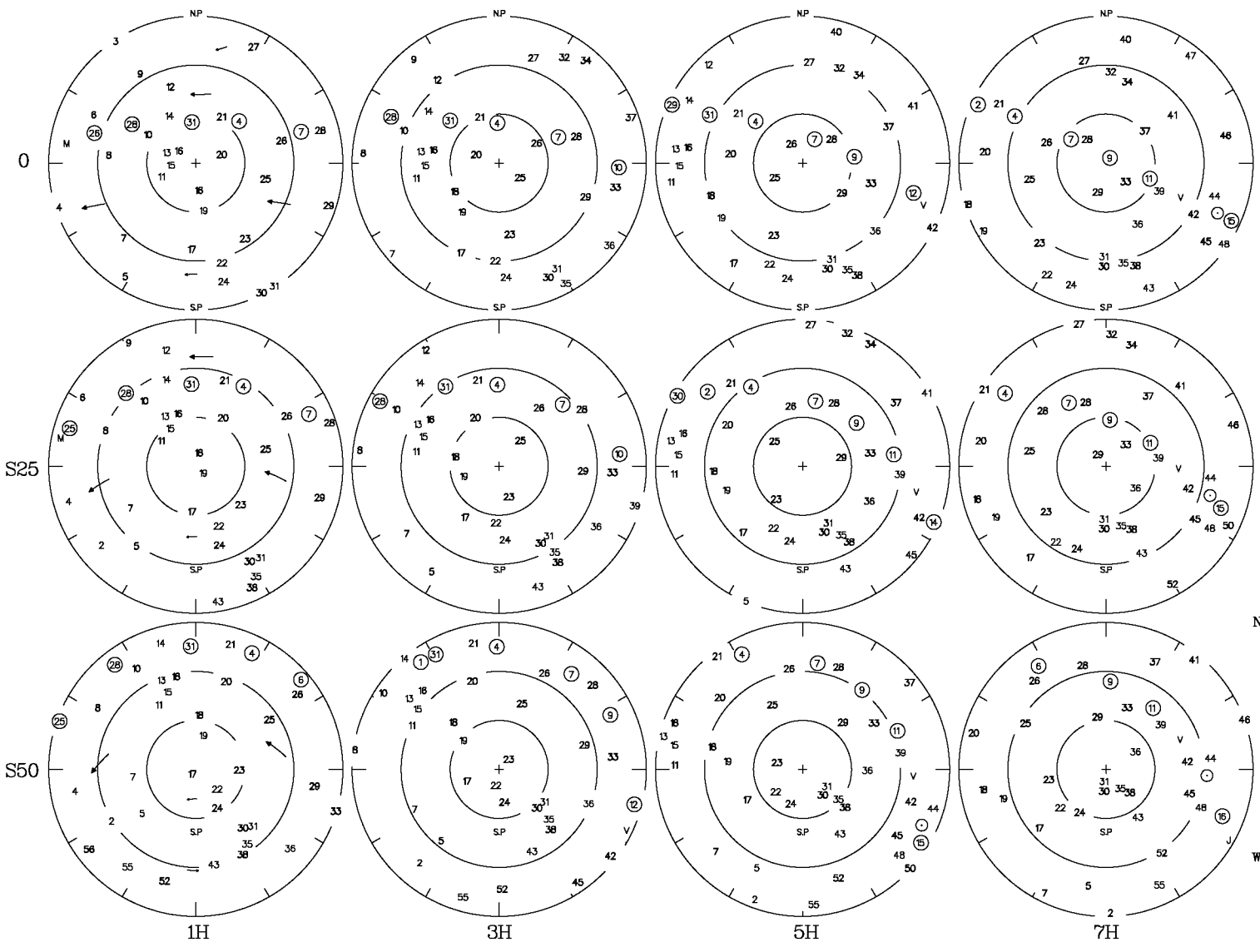
EVENING Sky Diagrams 2020 NOVEMBER

MORNING Sky Diagrams 2020 DECEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

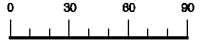
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -0.7
- J Jupiter -2.0
- S Saturn 0.6

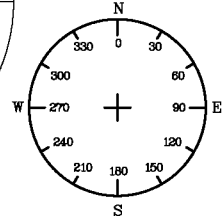
POLES

N•P North S•P South

ALTITUDE SCALE

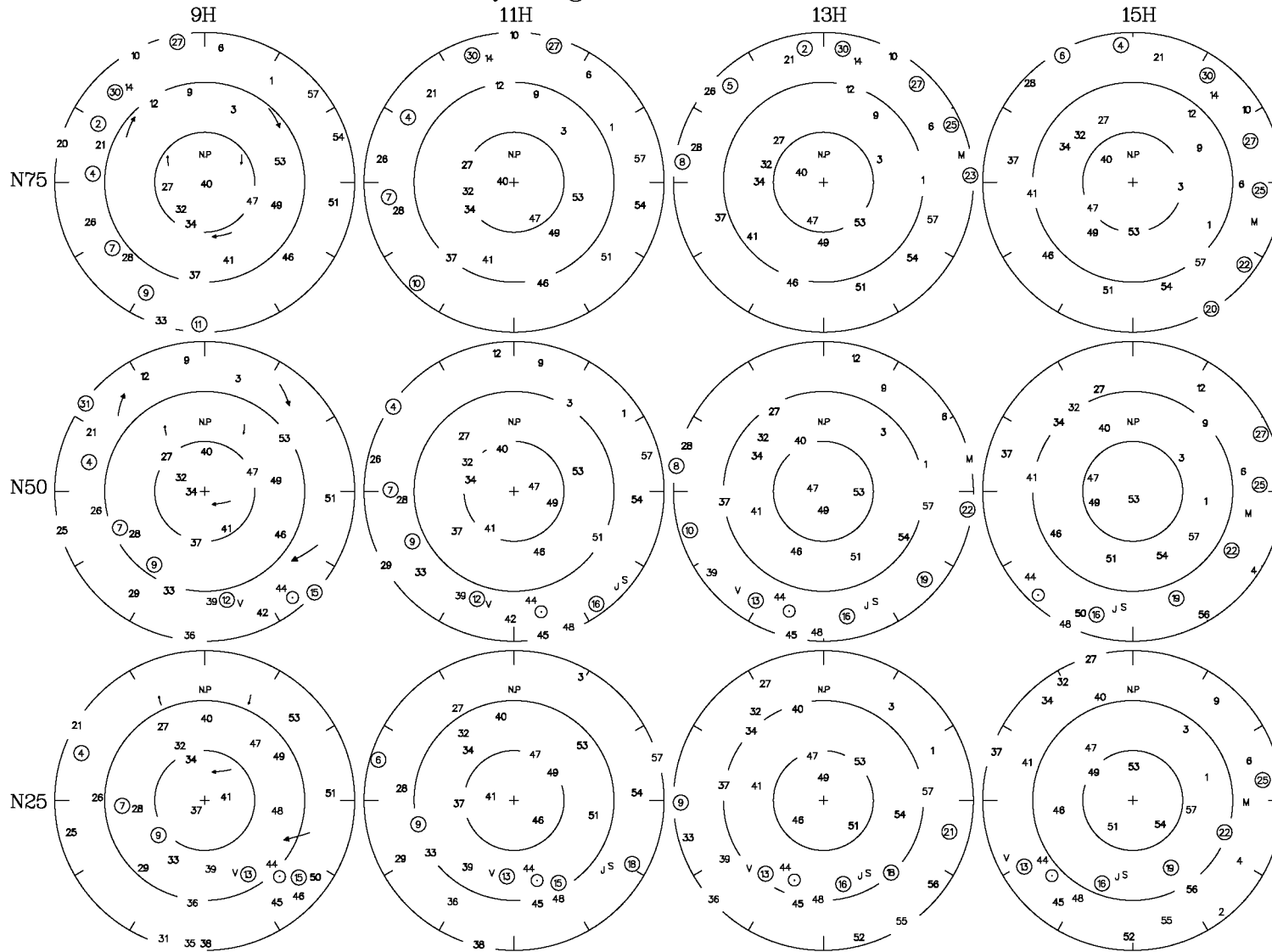


AZIMUTH



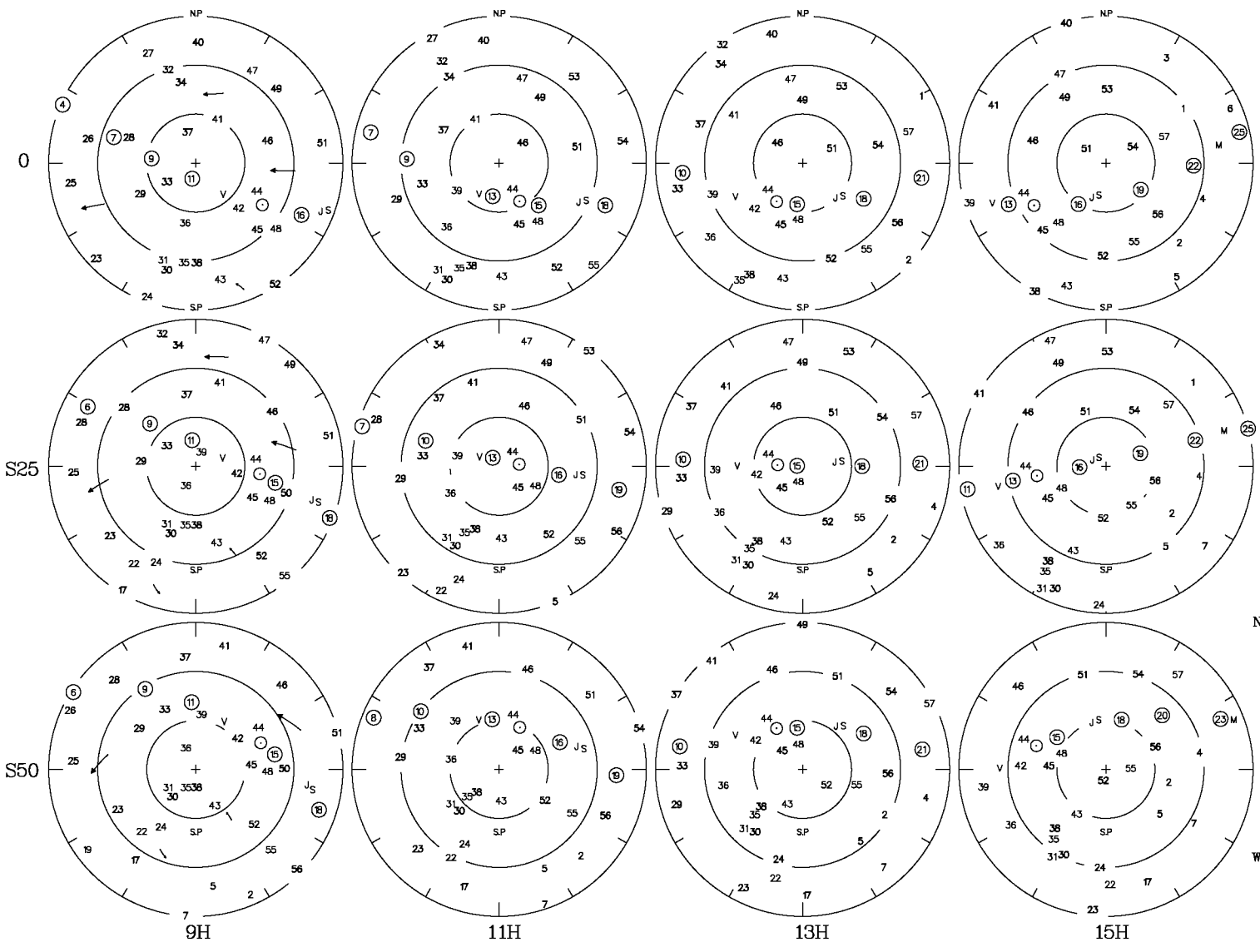
MORNING Sky Diagrams 2020 DECEMBER

DAY Sky Diagrams 2020 DECEMBER



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

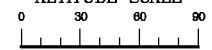
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -0.7
- J Jupiter -2.0
- S Saturn 0.6

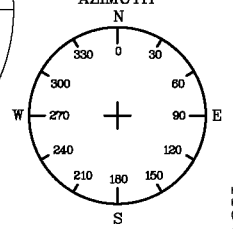
POLES

N•P North S•P South

ALTITUDE SCALE

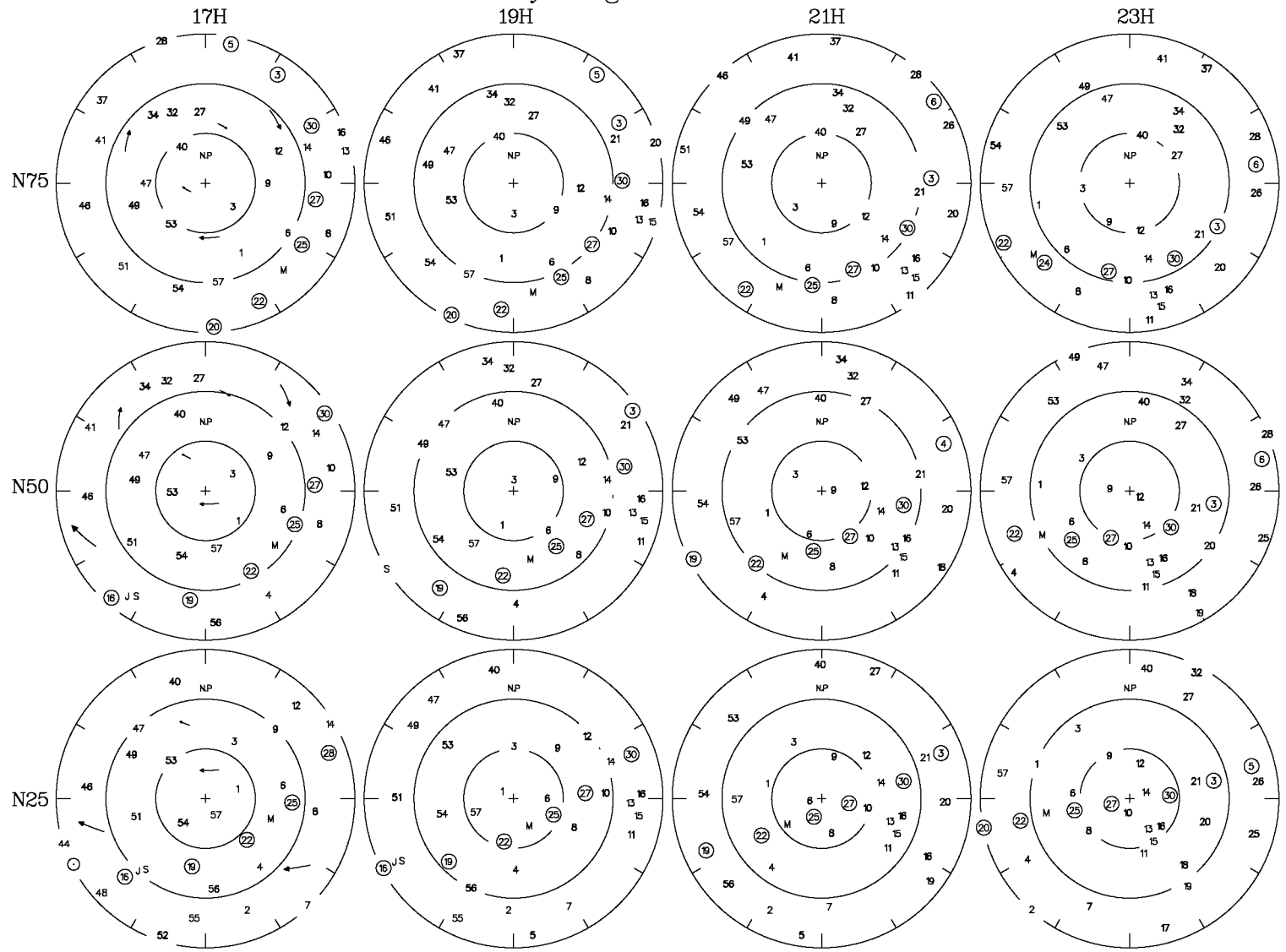


AZIMUTH



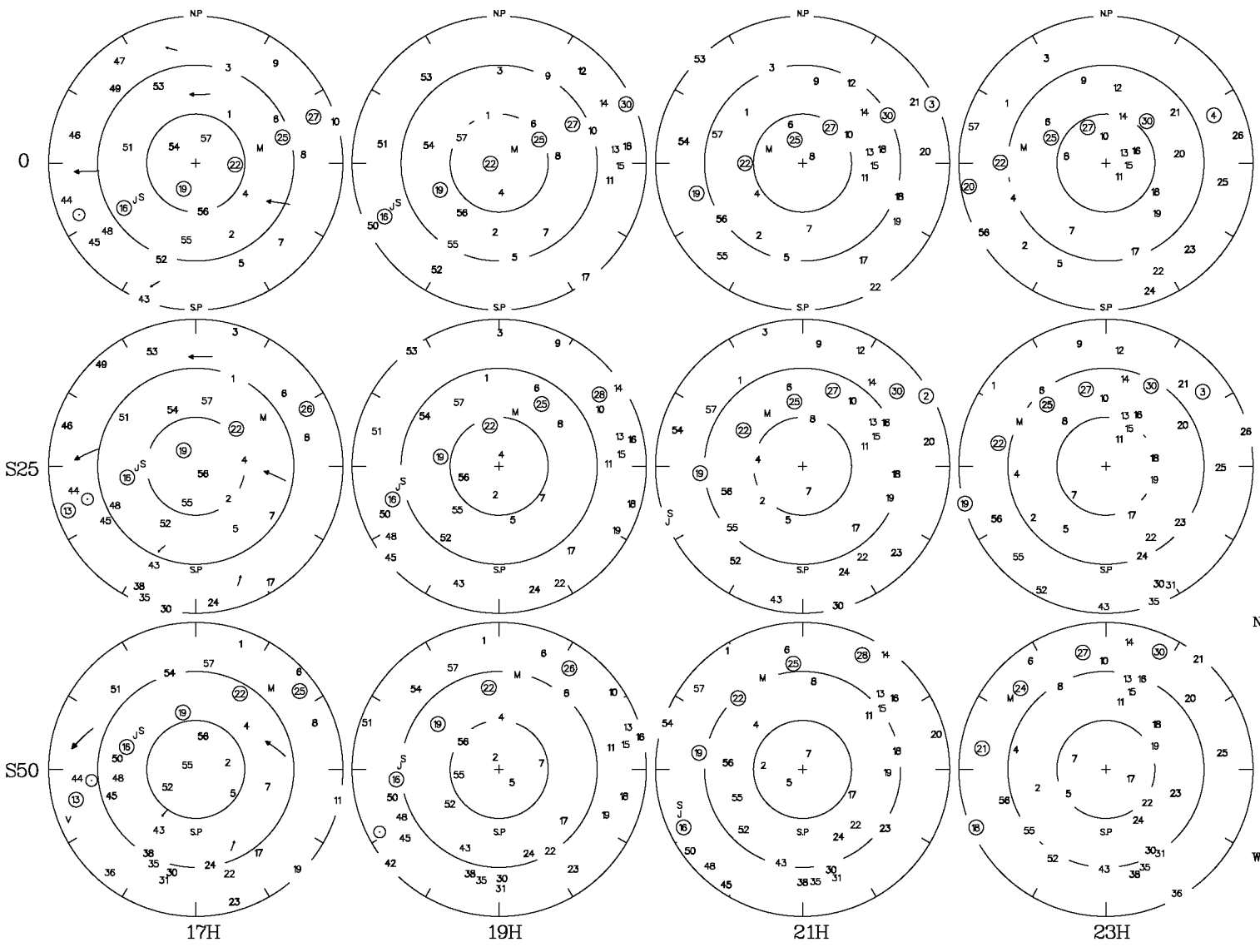
DAY Sky Diagrams 2020 DECEMBER

EVENING Sky Diagrams 2020 DECEMBER



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

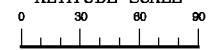
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -0.7
- J Jupiter -2.0
- S Saturn 0.6

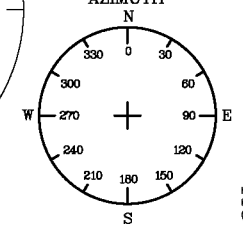
POLES

N•P North S•P South

ALTITUDE SCALE

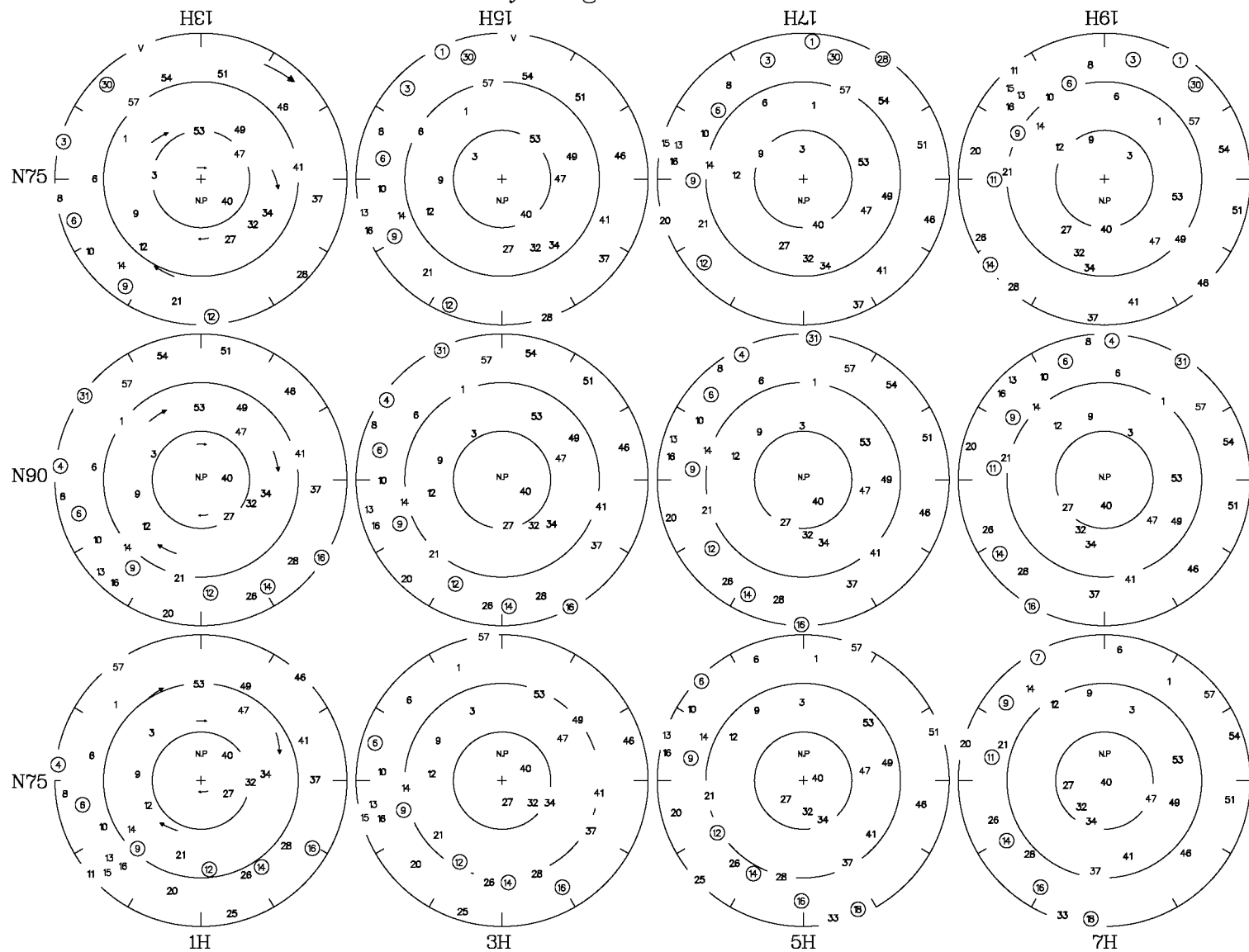


AZIMUTH



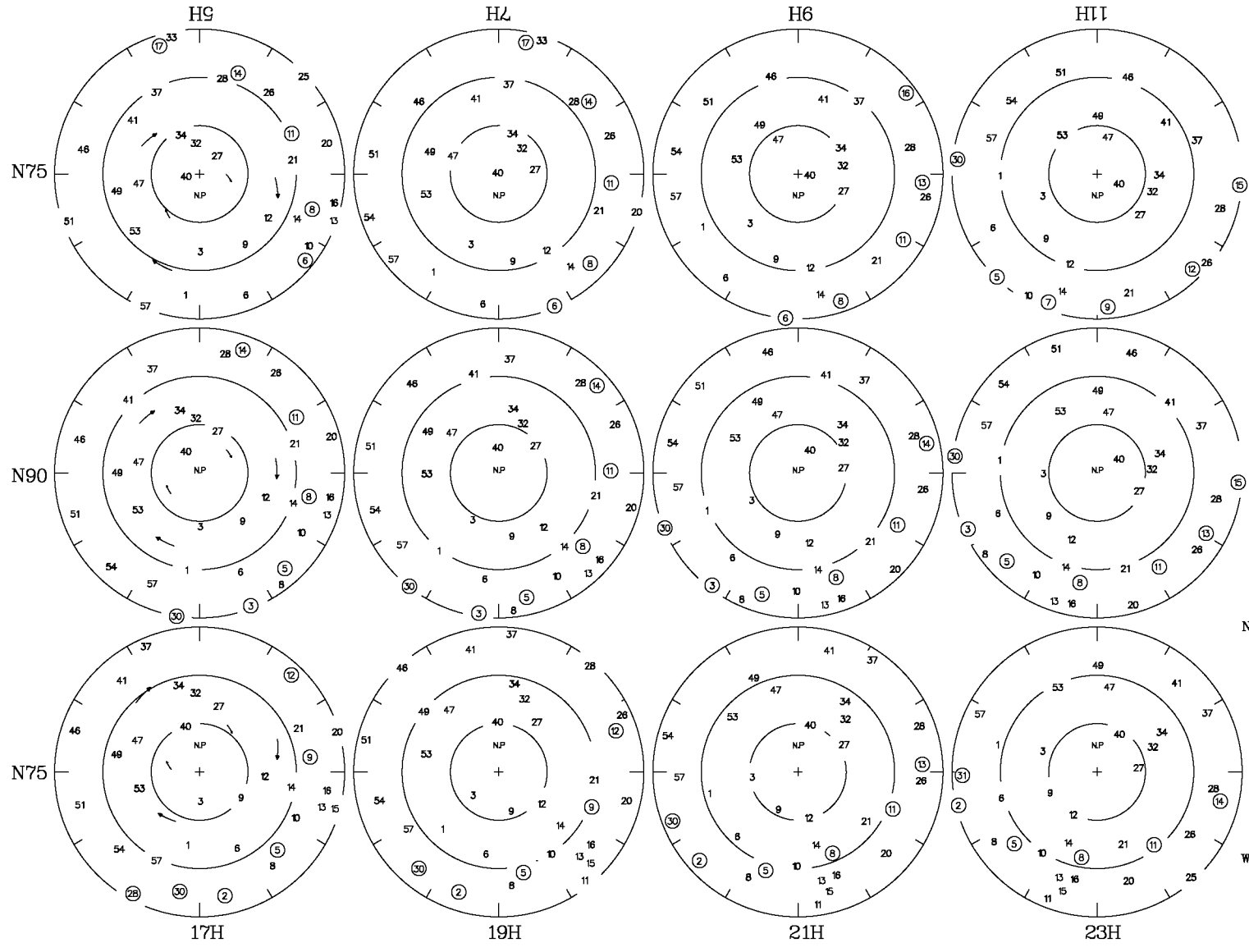
EVENING Sky Diagrams 2020 DECEMBER

POLAR Sky Diagrams 2020 JANUARY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

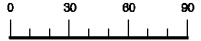
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.5
- J Jupiter -1.8
- S Saturn 0.5

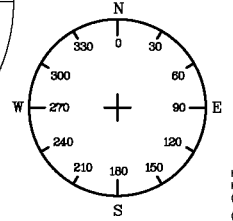
POLES

N•P North S•P South

ALTITUDE SCALE

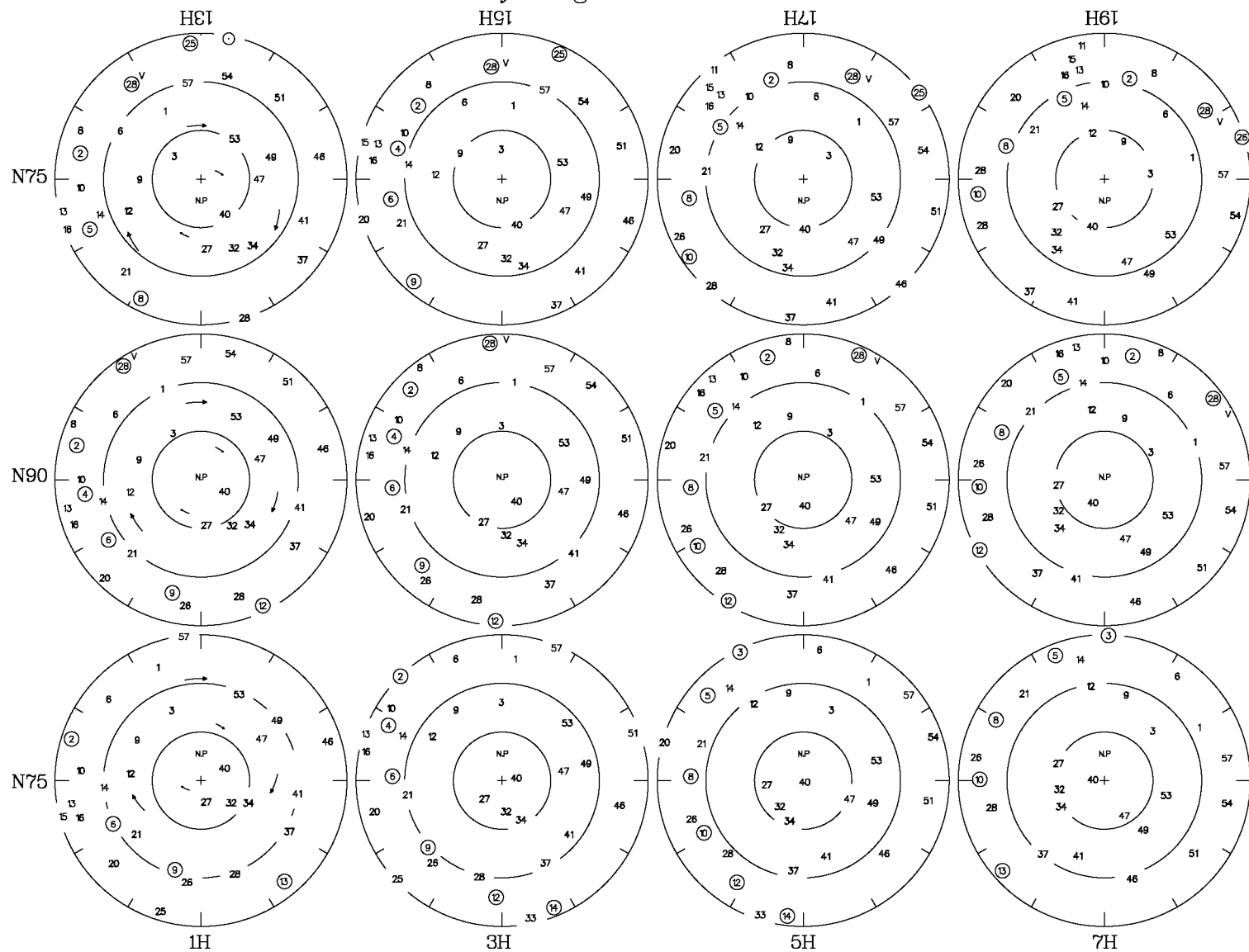


AZIMUTH



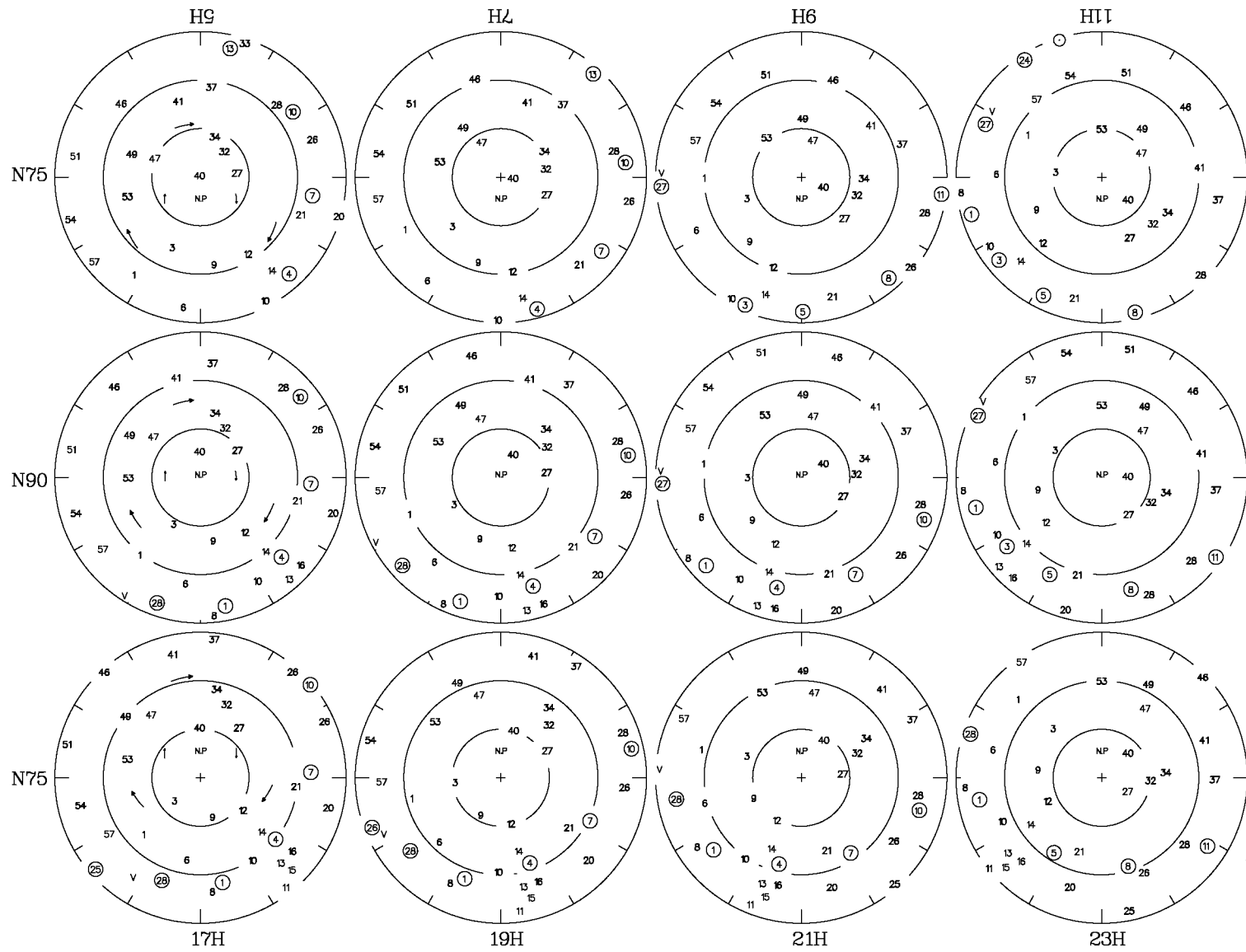
POLAR Sky Diagrams 2020 JANUARY

POLAR Sky Diagrams 2020 FEBRUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

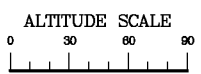
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

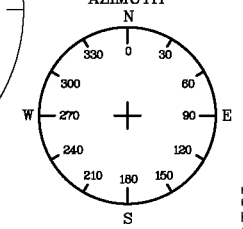
- V Venus -4.2
- M Mars 1.3
- J Jupiter -1.9
- S Saturn 0.6

POLES

N•P North S•P South

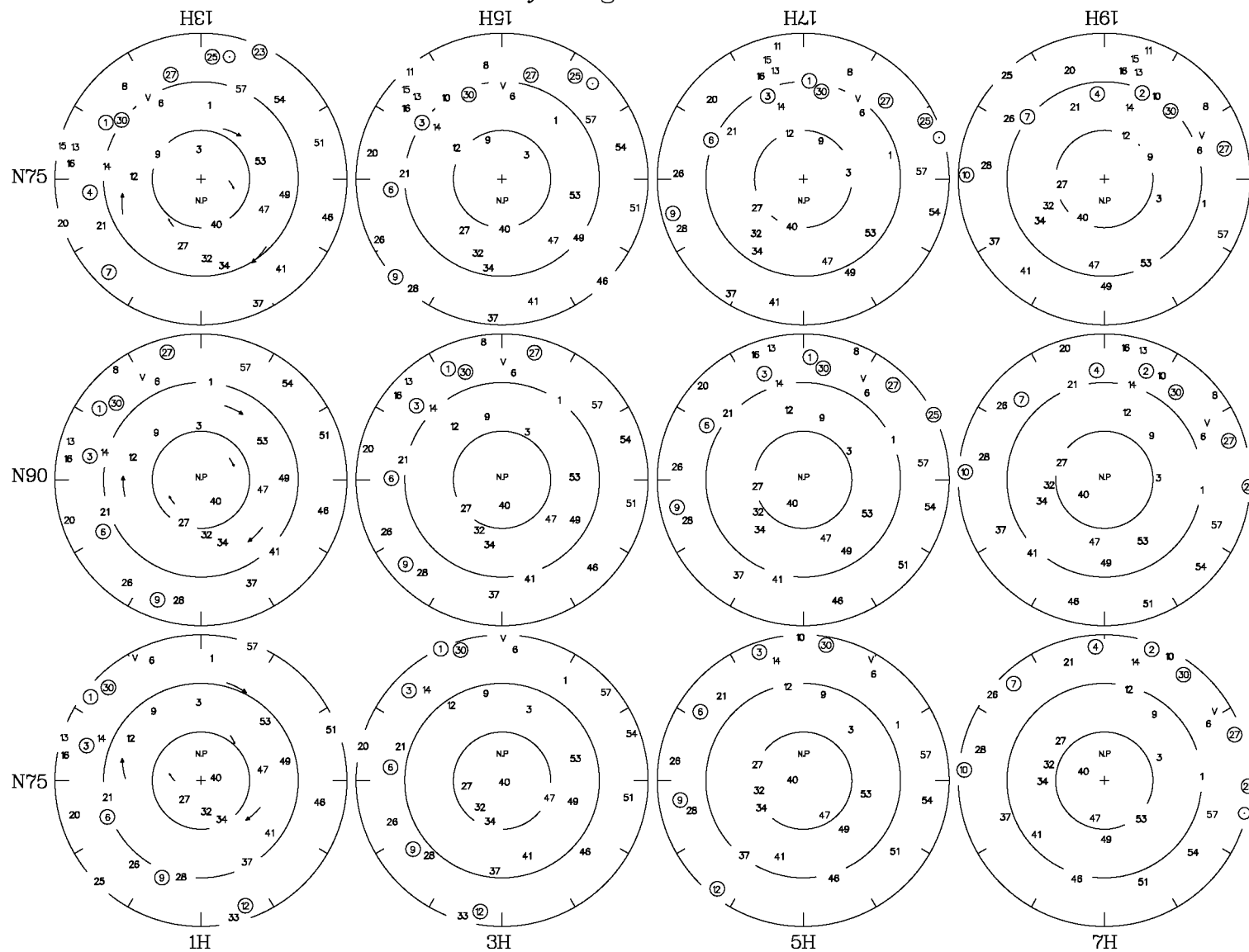


AZIMUTH



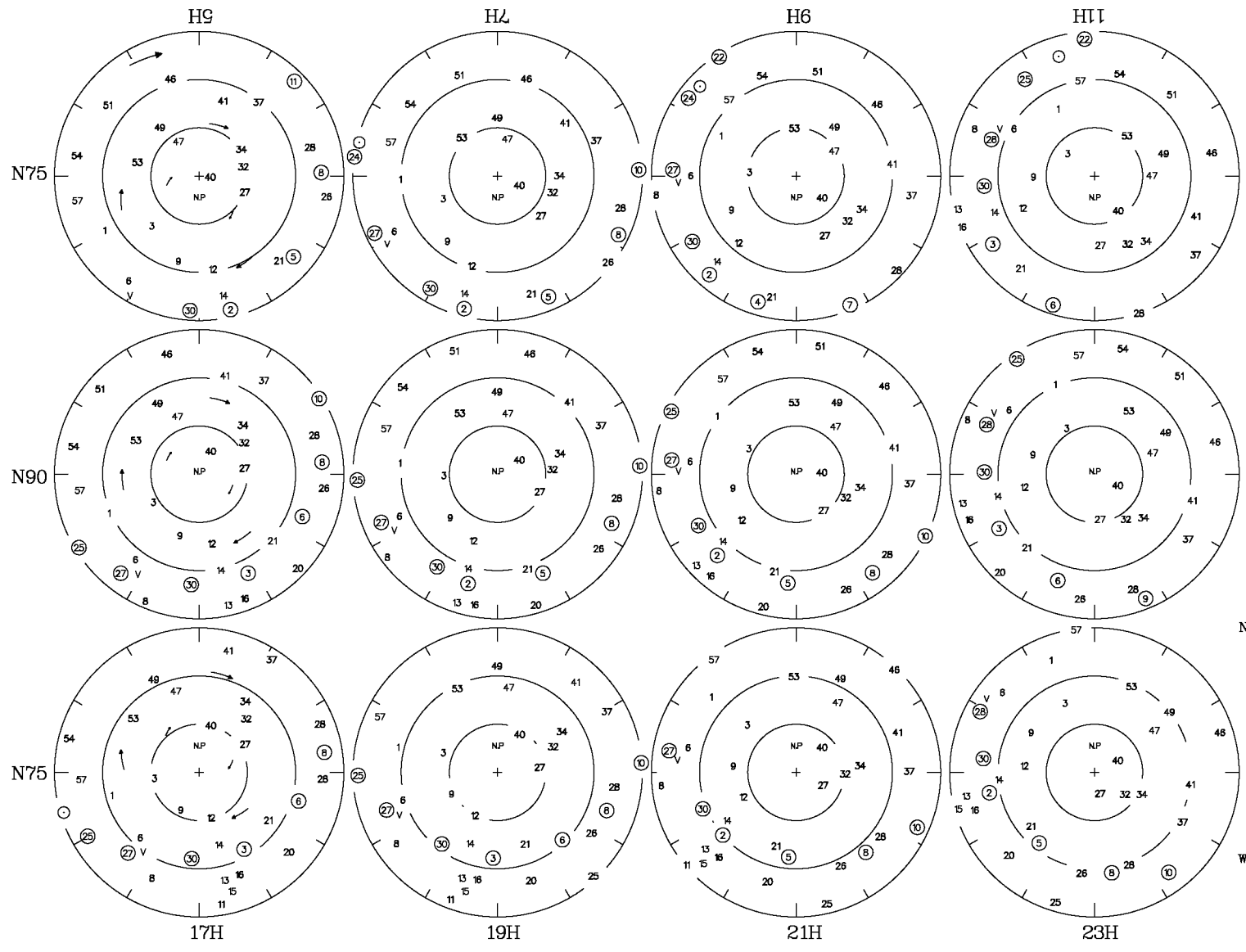
POLAR Sky Diagrams 2020 FEBRUARY

POLAR Sky Diagrams 2020 MARCH



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

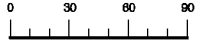
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.7

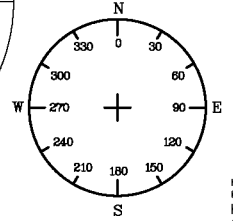
POLES

N•P North S•P South

ALTITUDE SCALE

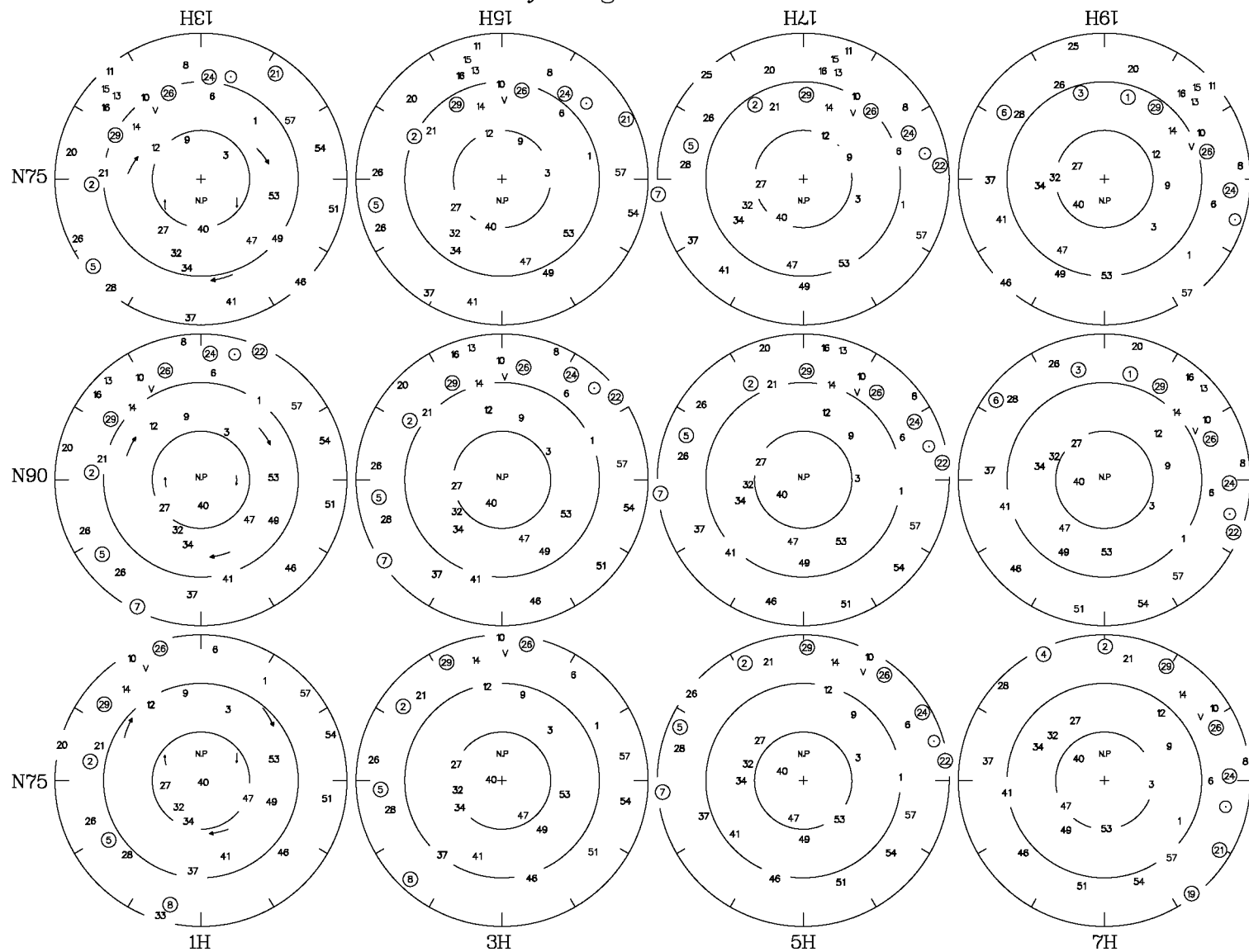


AZIMUTH



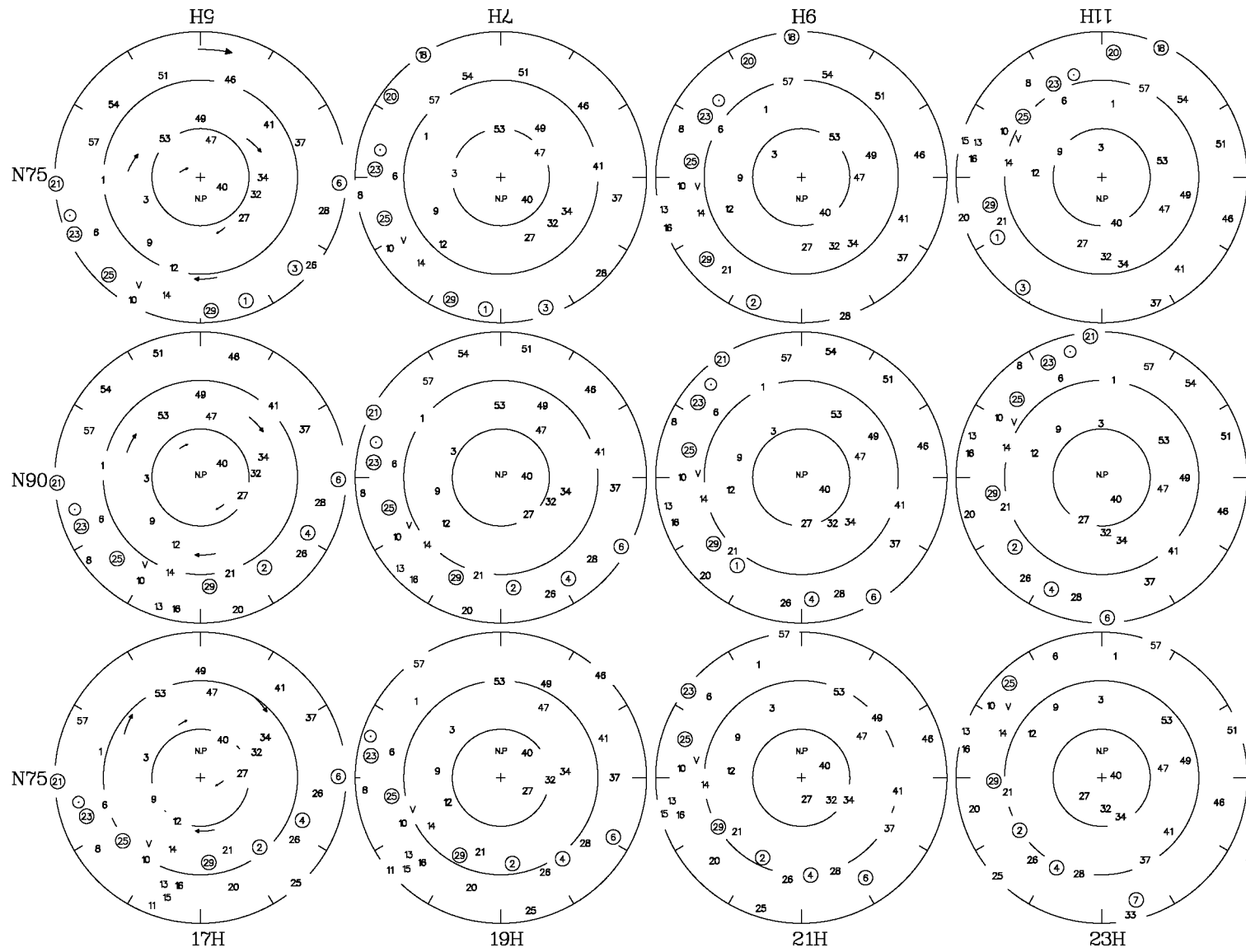
POLAR Sky Diagrams 2020 MARCH

POLAR Sky Diagrams 2020 APRIL



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

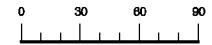
PLANETS Vis. Mag.

V	Venus	-4.7
M	Mars	0.6
J	Jupiter	-2.2
S	Saturn	0.6

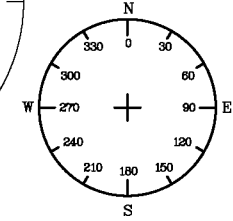
POLES

N•P North S•P South

ALTITUDE SCALE

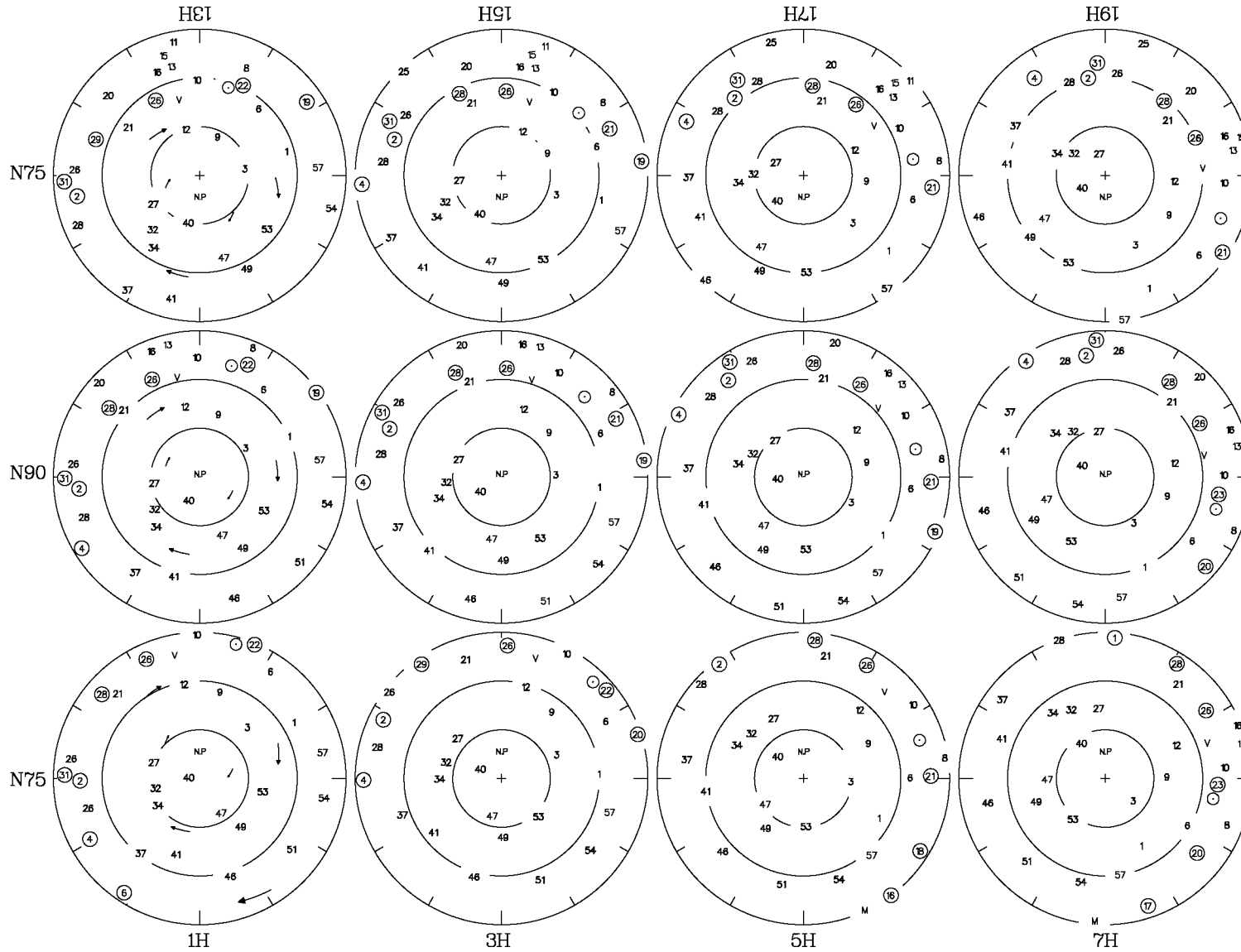


AZIMUTH



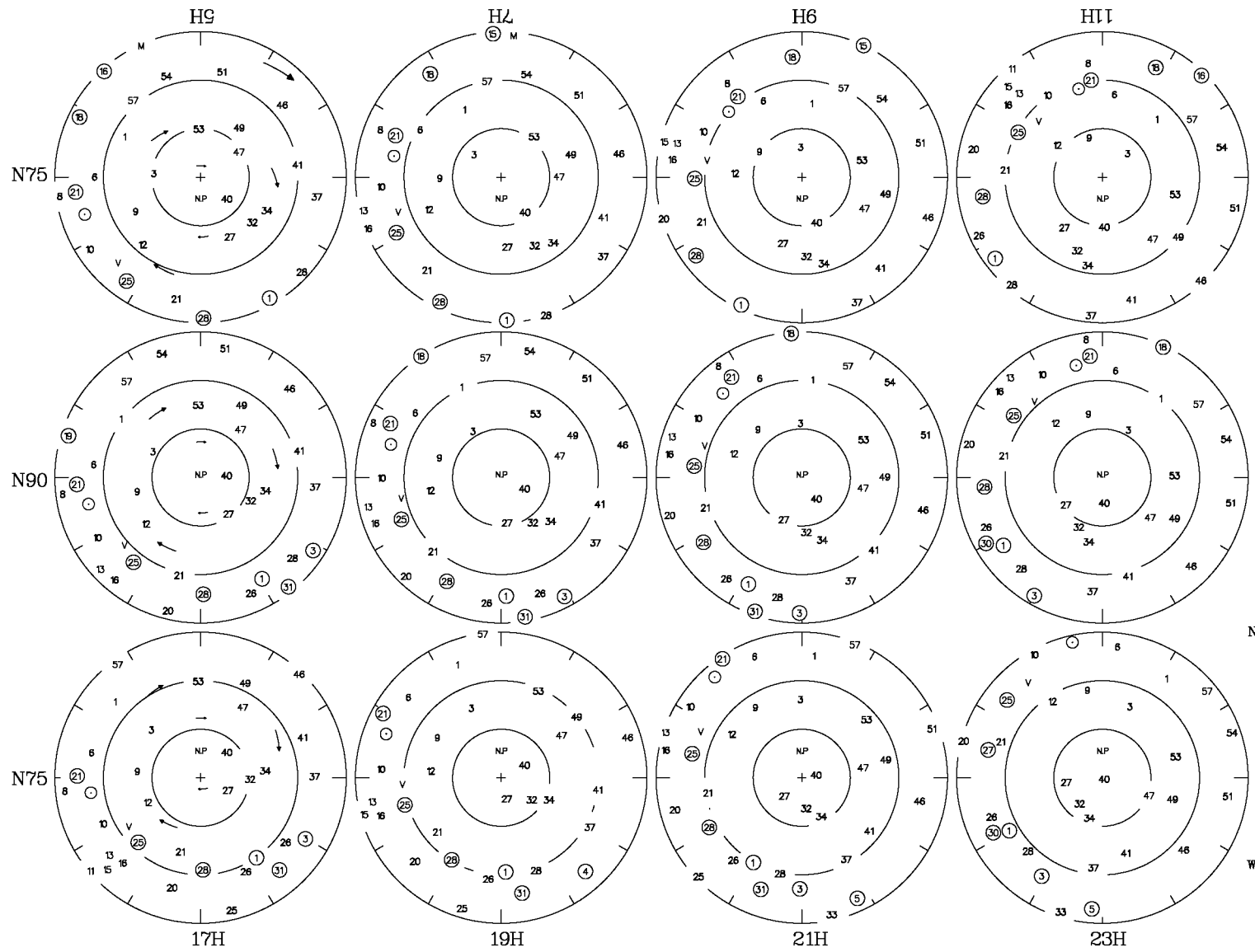
POLAR Sky Diagrams 2020 APRIL

POLAR Sky Diagrams 2020 MAY



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

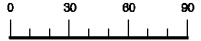
PLANETS Vis. Mag.

- V Venus -4.6
- M Mars 0.2
- J Jupiter -2.4
- S Saturn 0.5

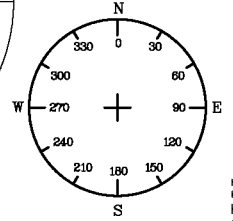
POLES

N•P North S•P South

ALTITUDE SCALE

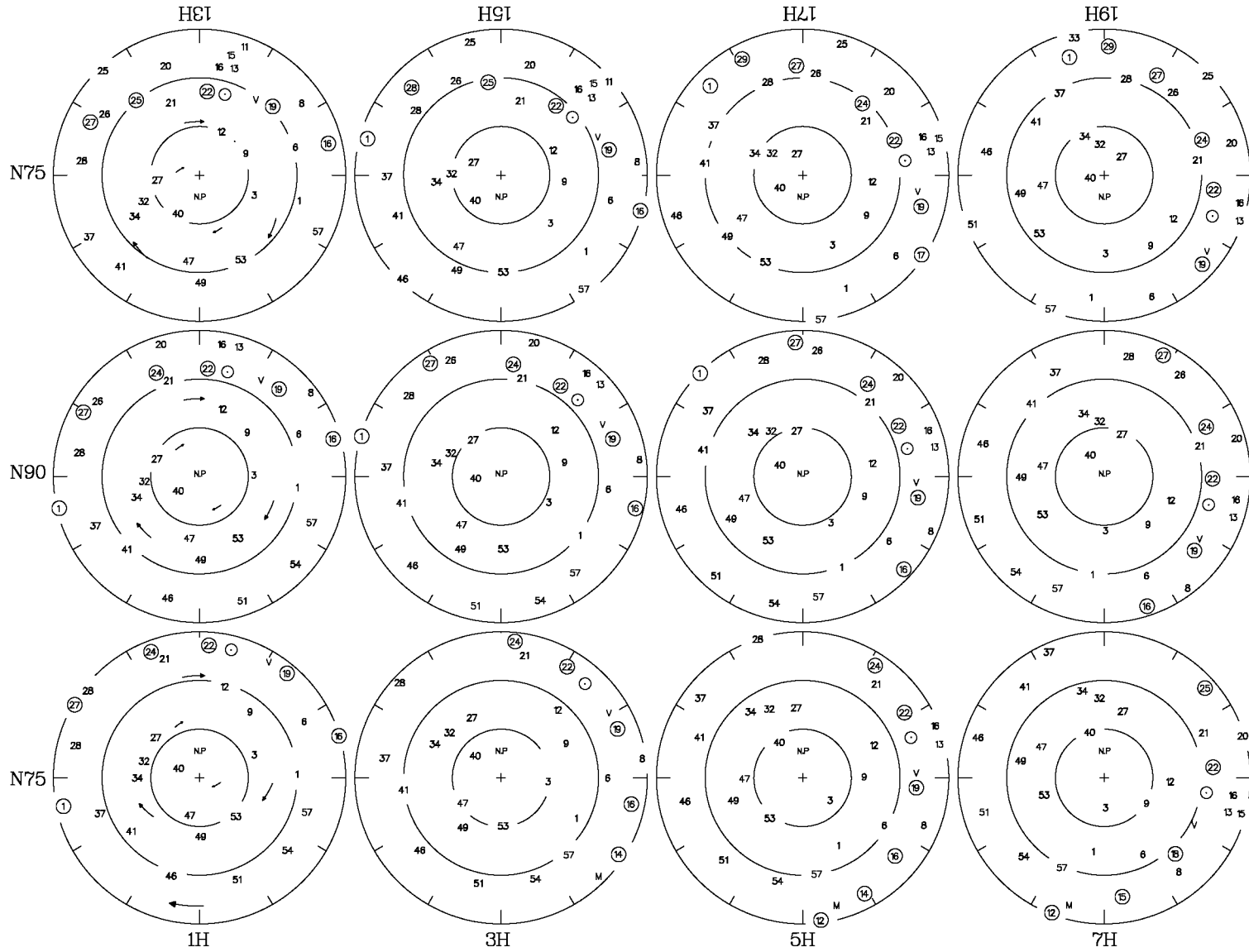


AZIMUTH



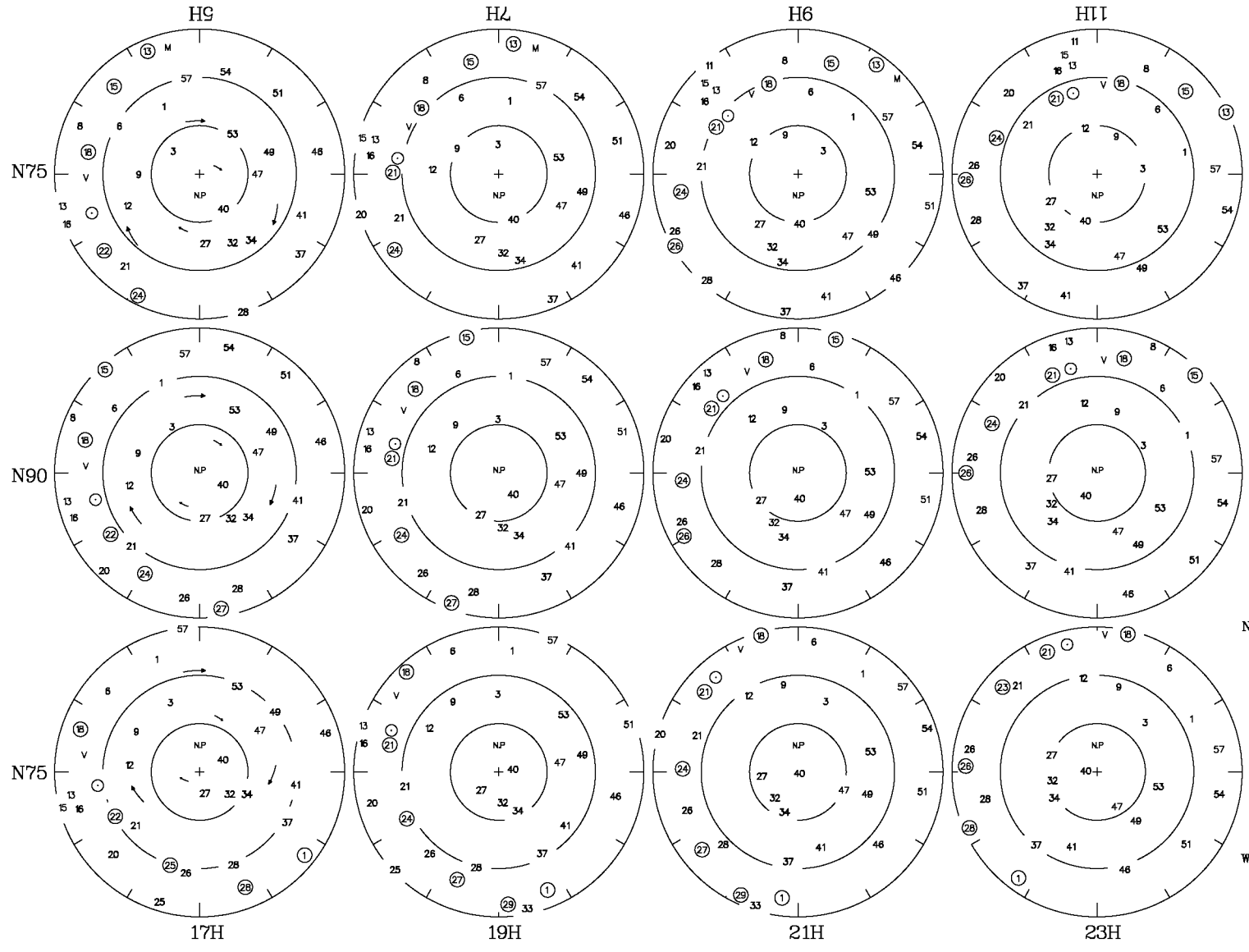
POLAR Sky Diagrams 2020 MAY

POLAR Sky Diagrams 2020 JUNE



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

① Position, 1st of month
② Position, 2nd of month etc.

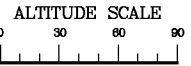
PLANETS Vis. Mag.

V Venus -4.2
M Mars -0.2
J Jupiter -2.7
S Saturn 0.3

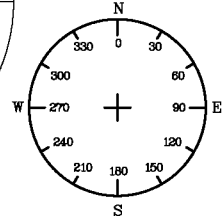
VENUS
Inferior Conjunction
on Jun 03^d 18^h UT

POLES

N•P North S•P South

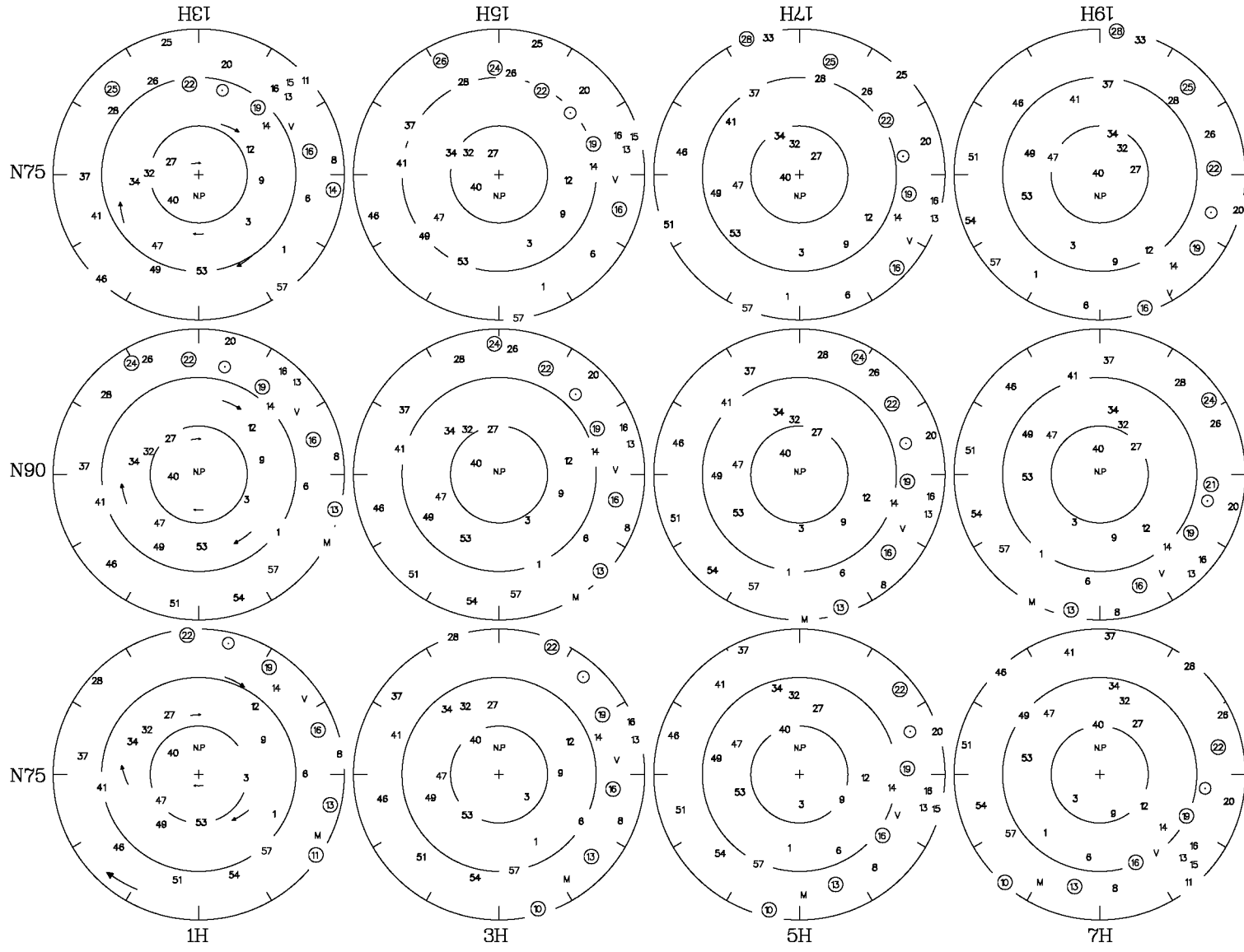


AZIMUTH



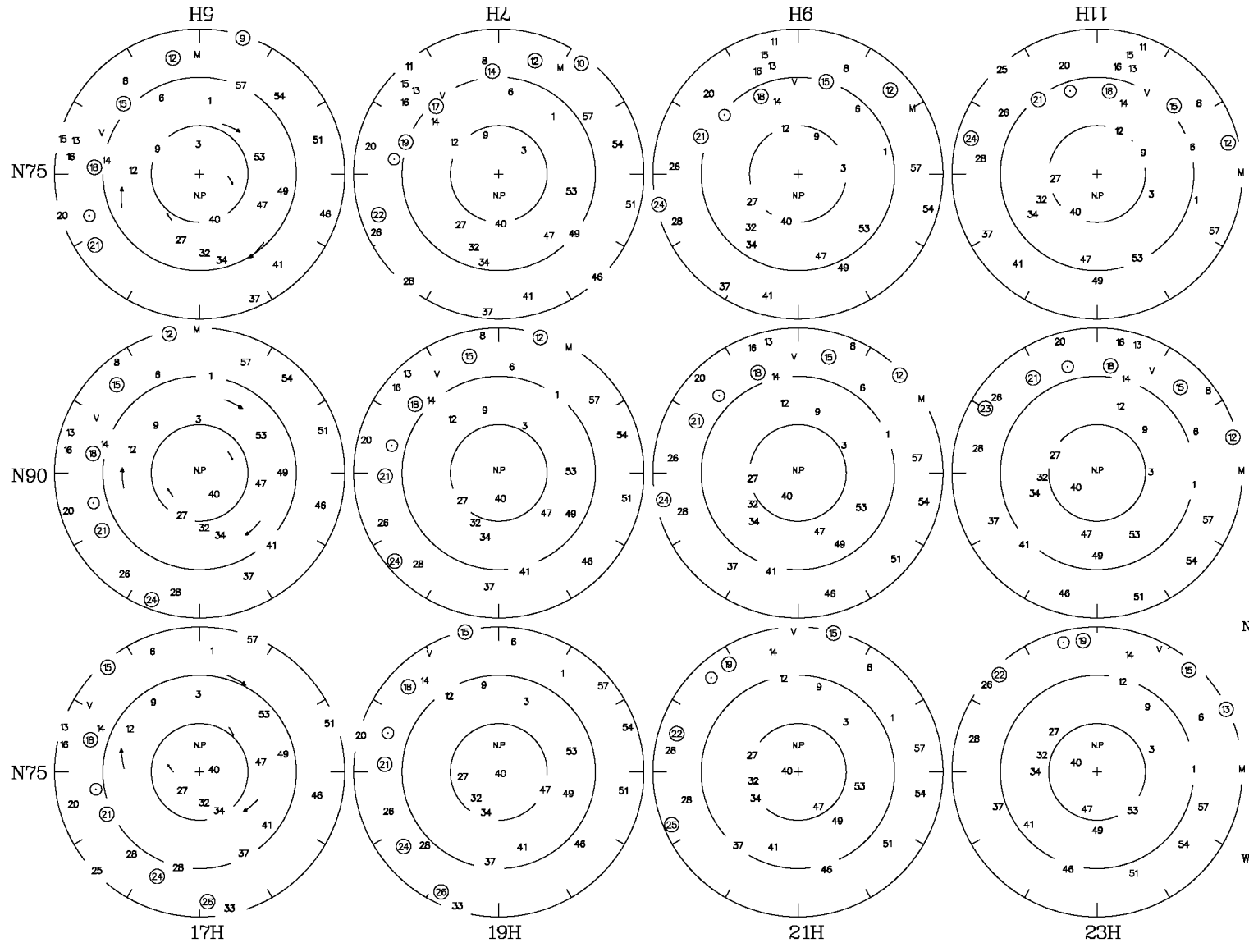
POLAR Sky Diagrams 2020 JUNE

POLAR Sky Diagrams 2020 JULY



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

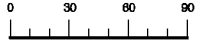
PLANETS Vis. Mag.

- V Venus -4.7
- M Mars -0.8
- J Jupiter -2.8
- S Saturn 0.1

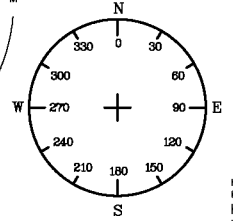
POLES

N•P North S•P South

ALTITUDE SCALE

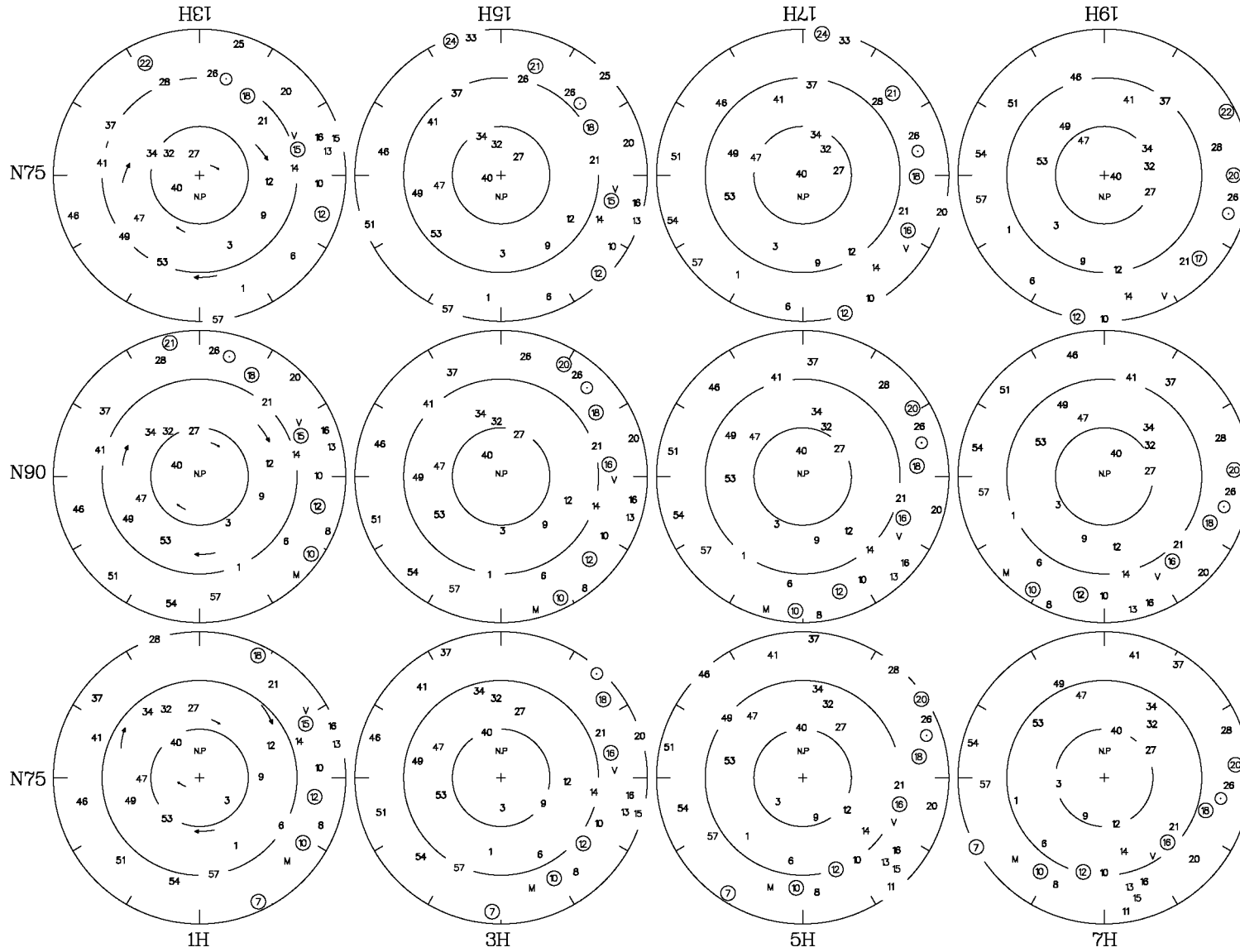


AZIMUTH



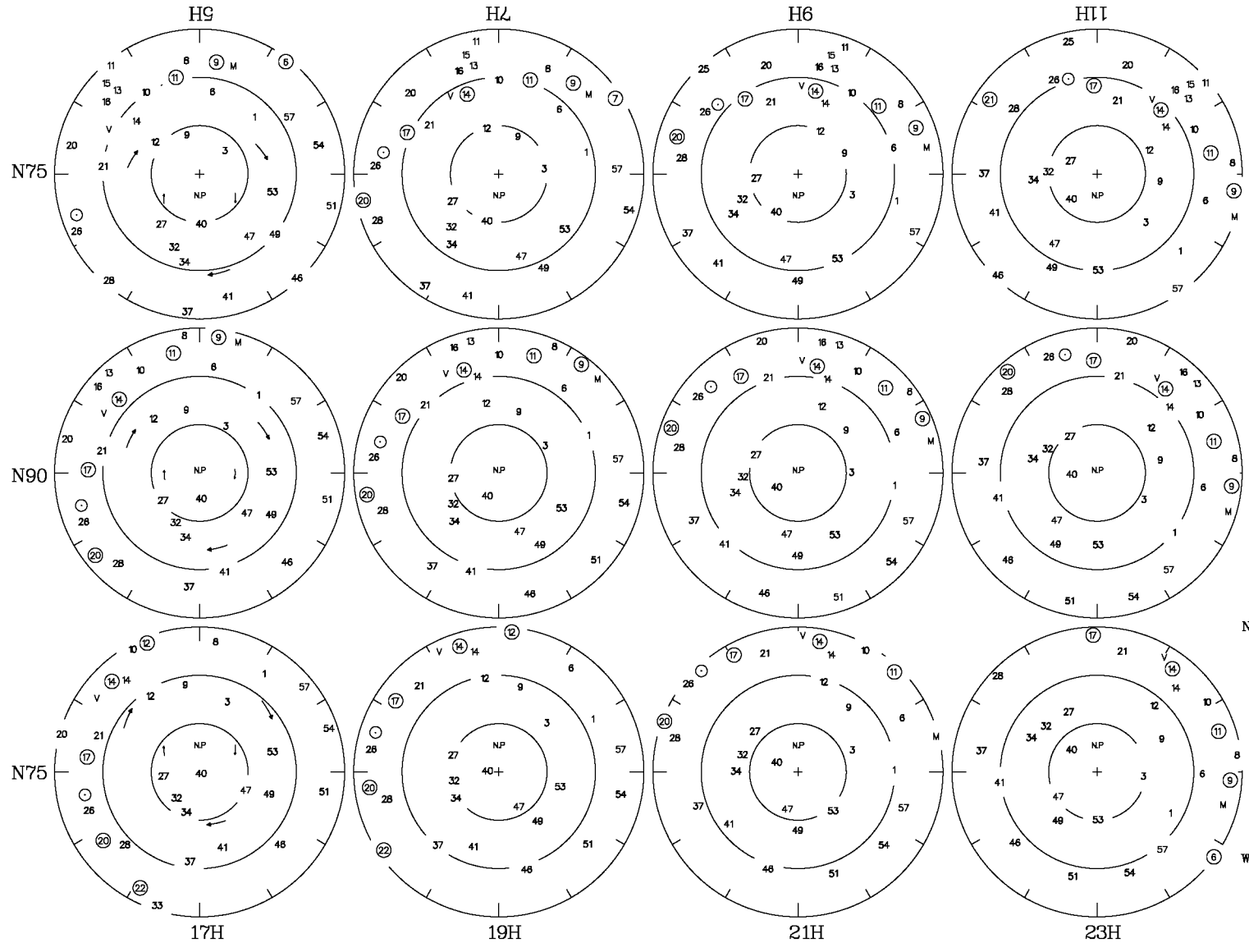
POLAR Sky Diagrams 2020 JULY

POLAR Sky Diagrams 2020 AUGUST



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

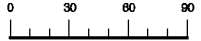
PLANETS Vis. Mag.

- V Venus -4.4
- M Mars -1.4
- J Jupiter -2.7
- S Saturn 0.2

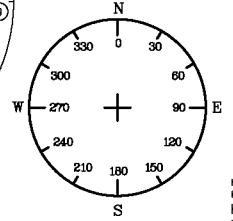
POLES

N•P North S•P South

ALTITUDE SCALE

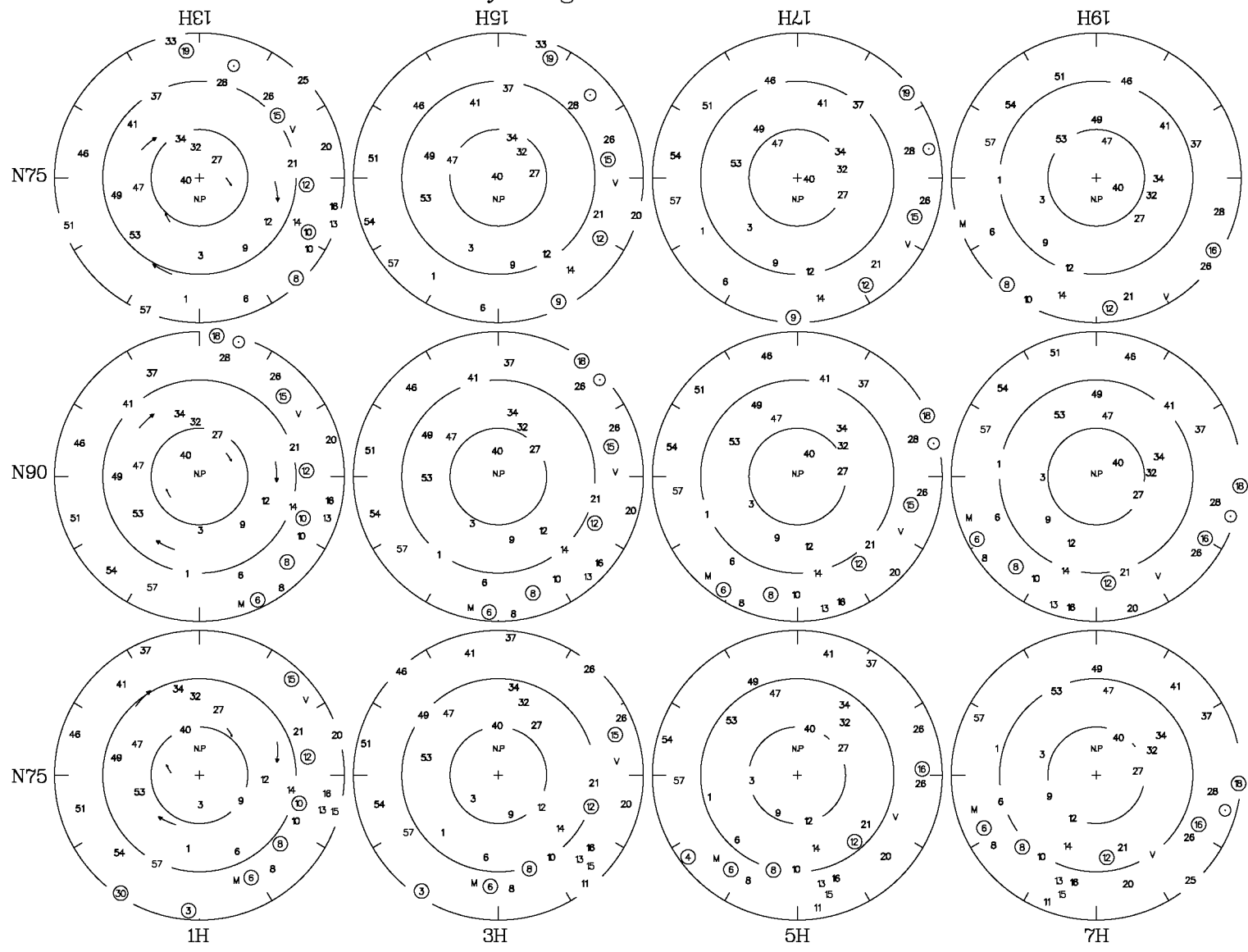


AZIMUTH



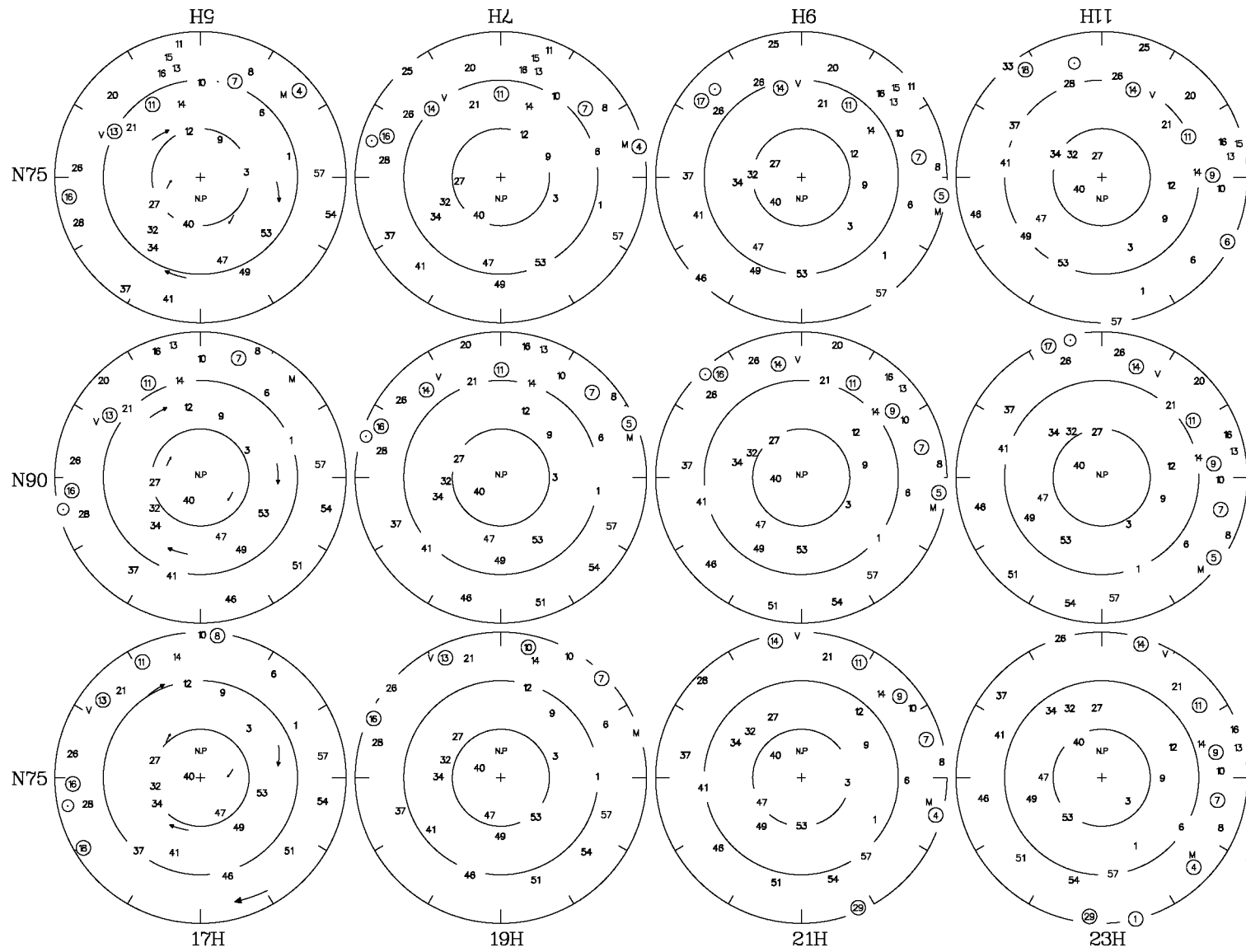
POLAR Sky Diagrams 2020 AUGUST

POLAR Sky Diagrams 2020 SEPTEMBER



STARS		
No.	Magnitude	S-4
	Vis.	
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

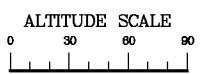
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

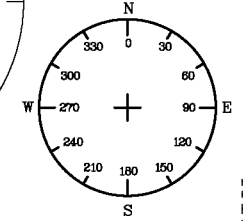
- V Venus -4.2
- M Mars -2.1
- J Jupiter -2.5
- S Saturn 0.4

POLES

N•P North S•P South

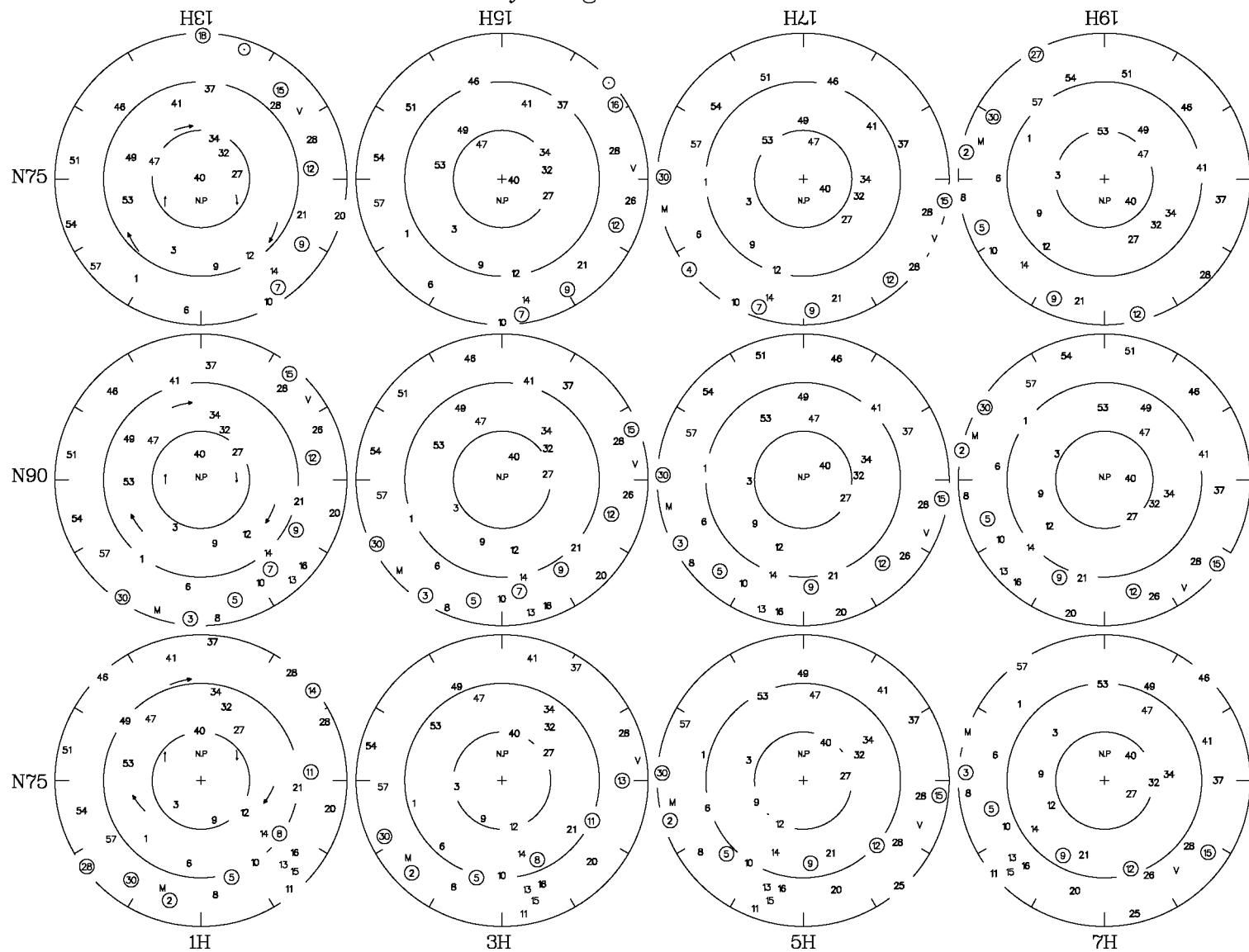


AZIMUTH



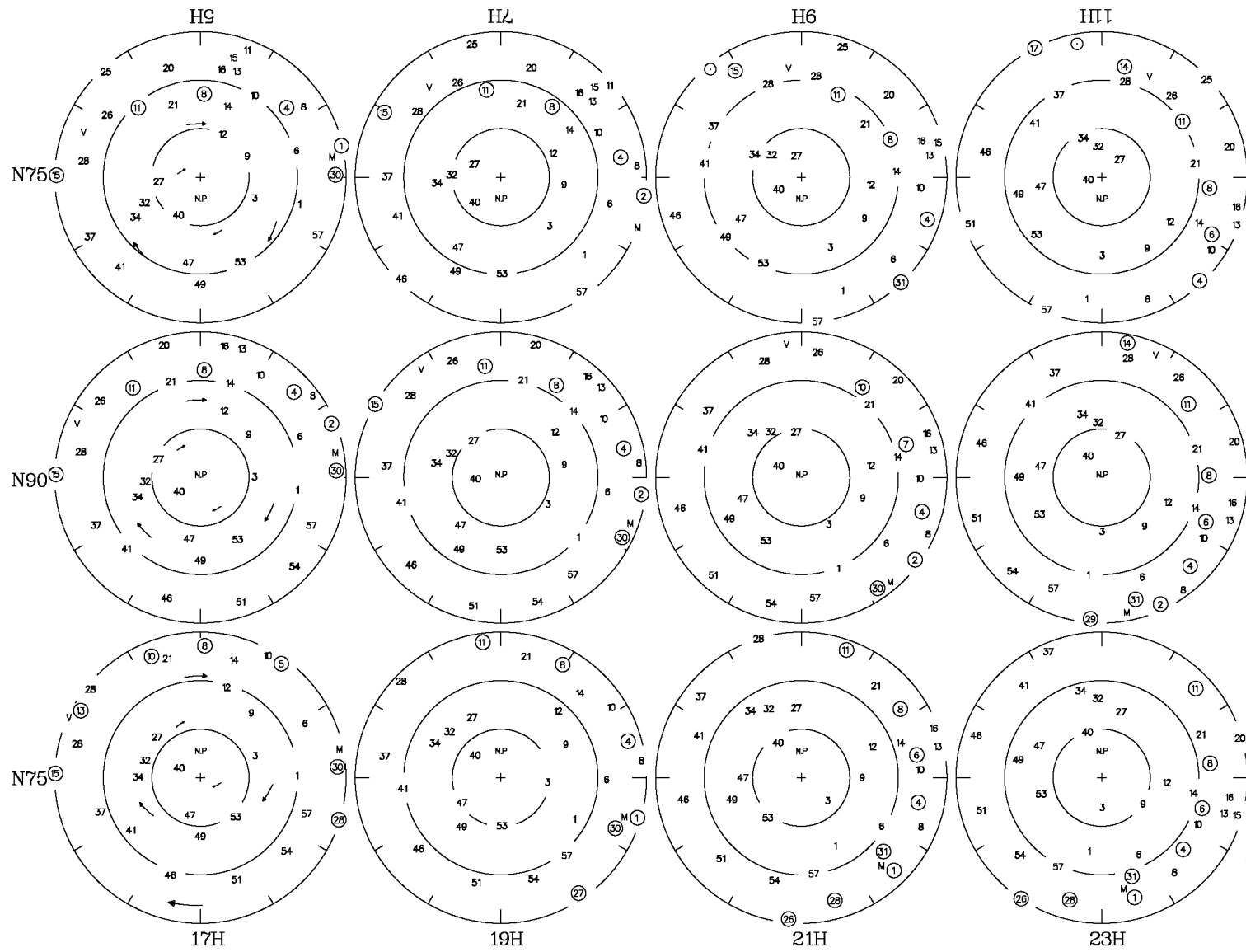
POLAR Sky Diagrams 2020 SEPTEMBER

POLAR Sky Diagrams 2020 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

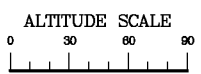
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

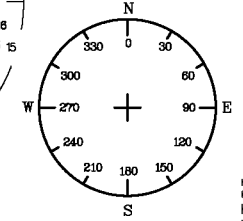
- V Venus -4.0
- M Mars -2.6
- J Jupiter -2.3
- S Saturn 0.5

POLES

N•P North S•P South

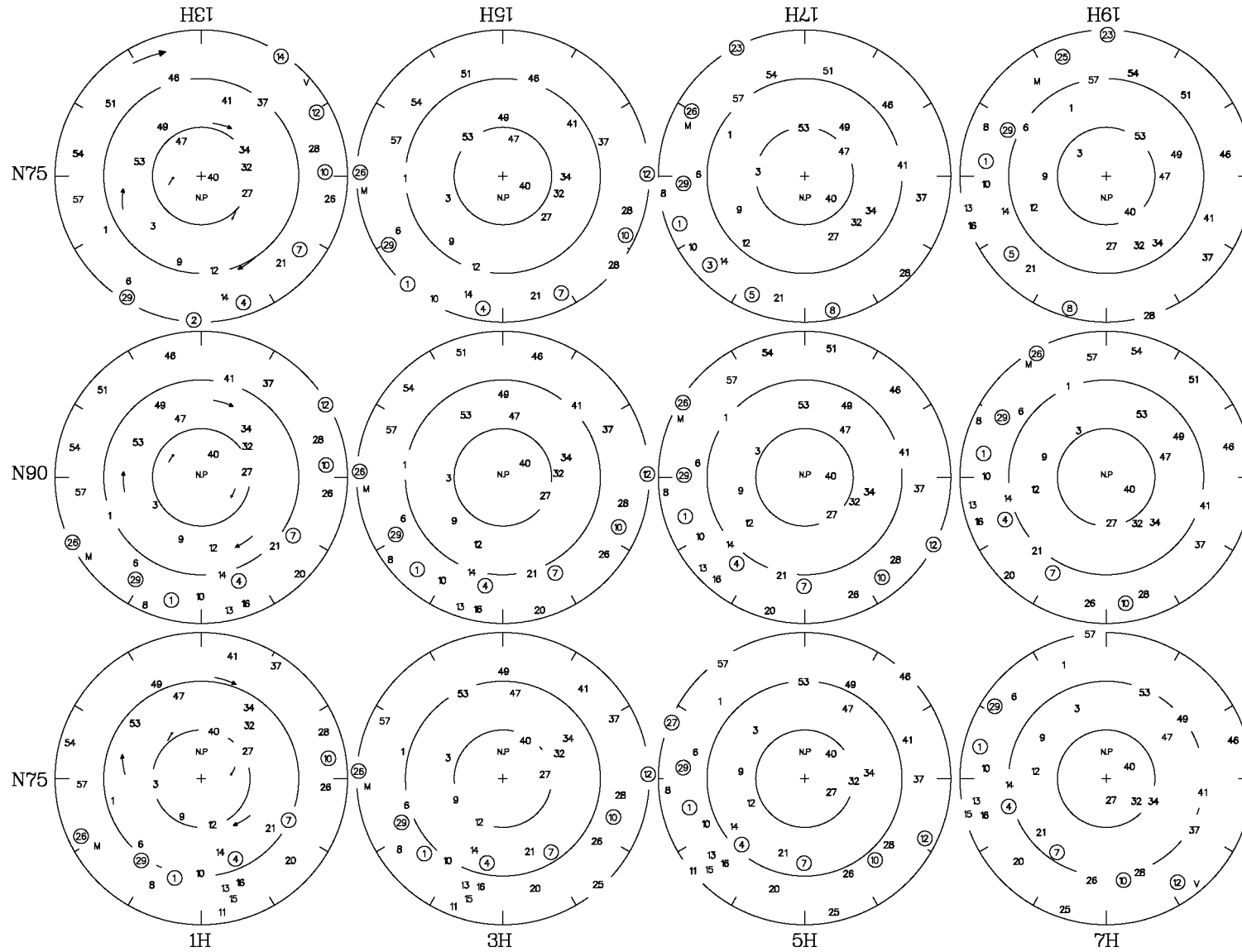


AZIMUTH



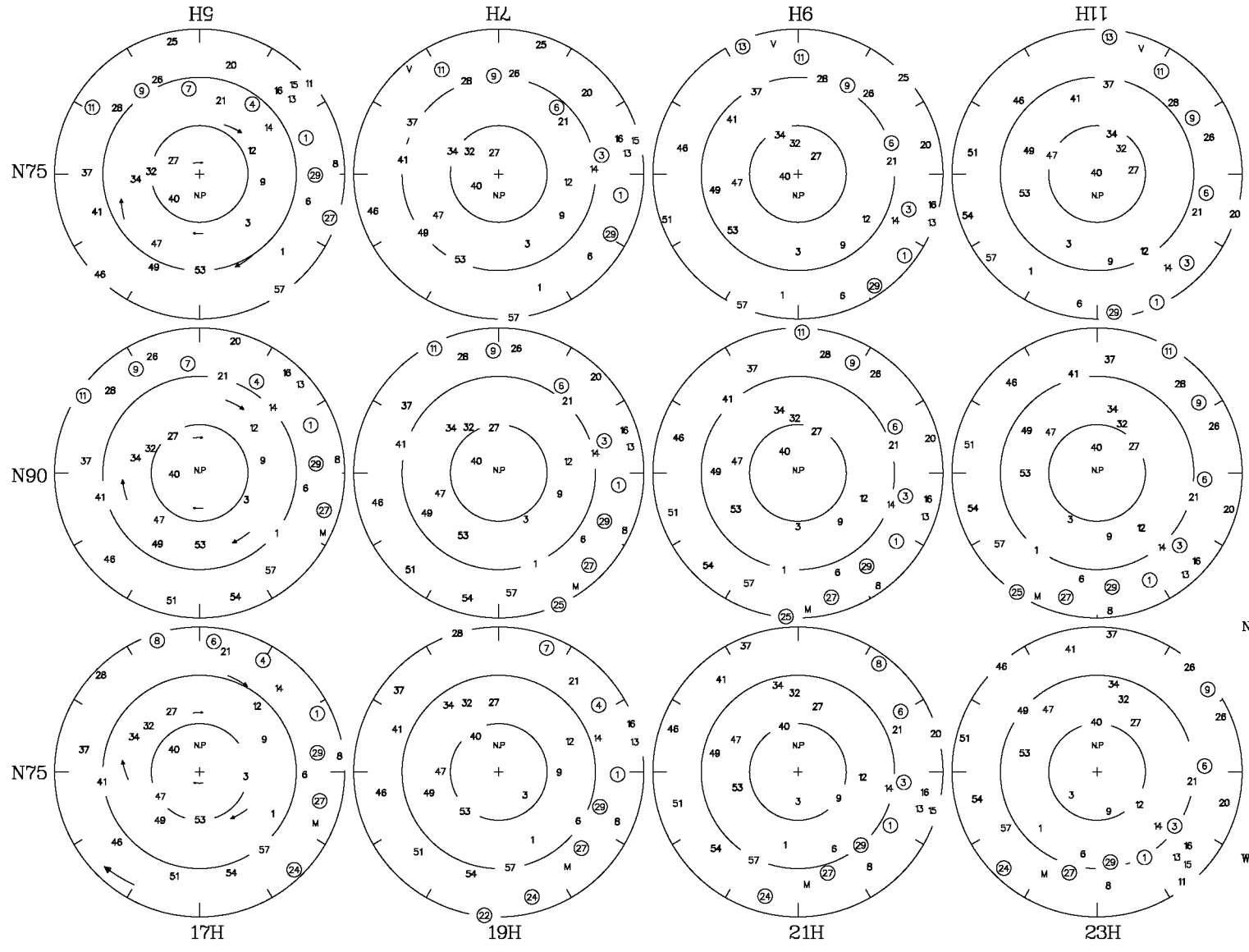
POLAR Sky Diagrams 2020 OCTOBER

POLAR Sky Diagrams 2020 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

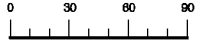
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars -1.7
- J Jupiter -2.1
- S Saturn 0.6

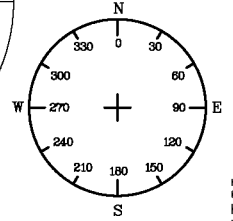
POLES

N•P North S•P South

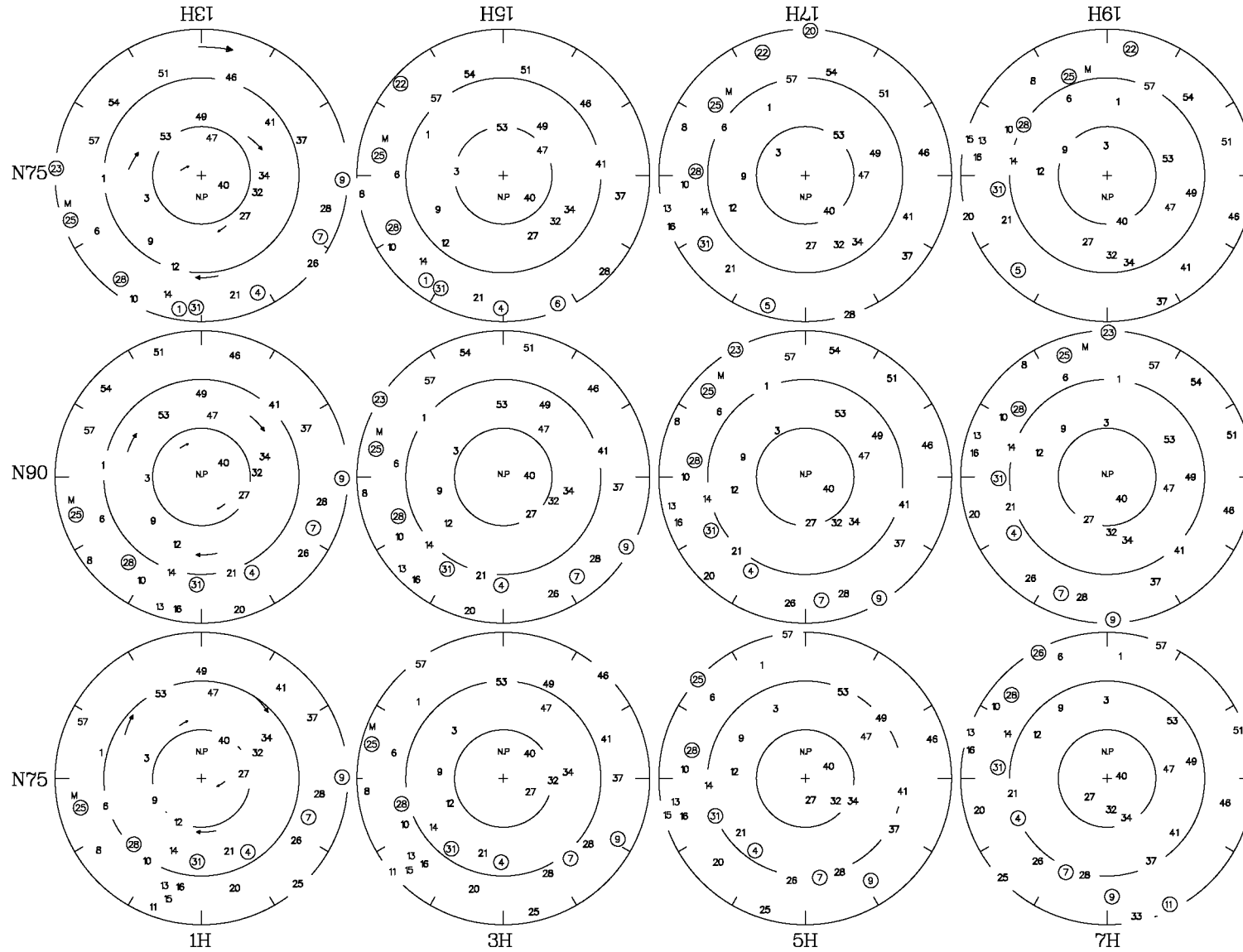
ALTITUDE SCALE



AZIMUTH

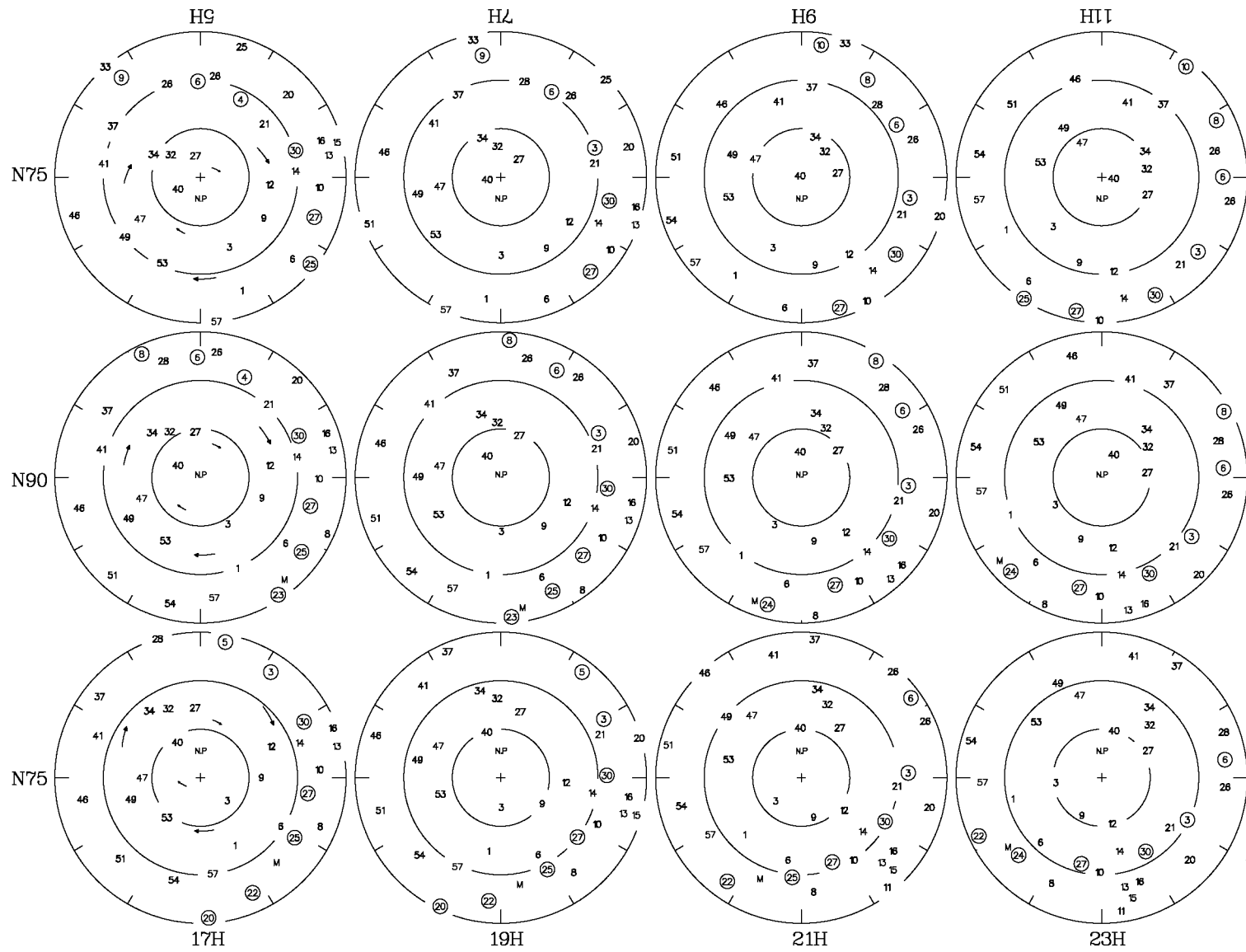


POLAR Sky Diagrams 2020 DECEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

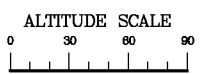
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

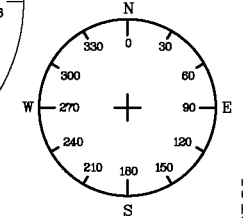
- V Venus -3.9
- M Mars -0.7
- J Jupiter -2.0
- S Saturn 0.6

POLES

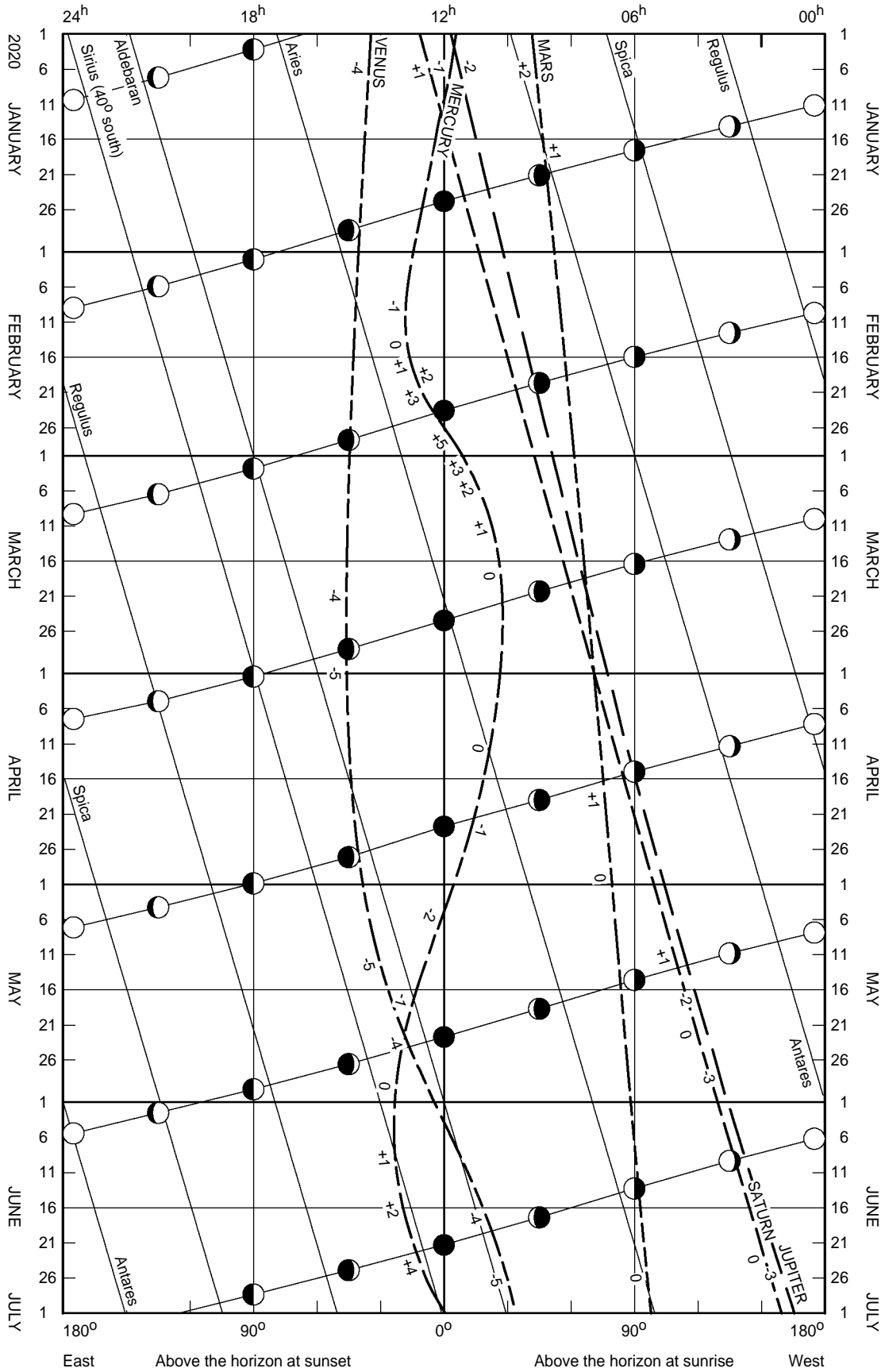
N•P North S•P South



AZIMUTH

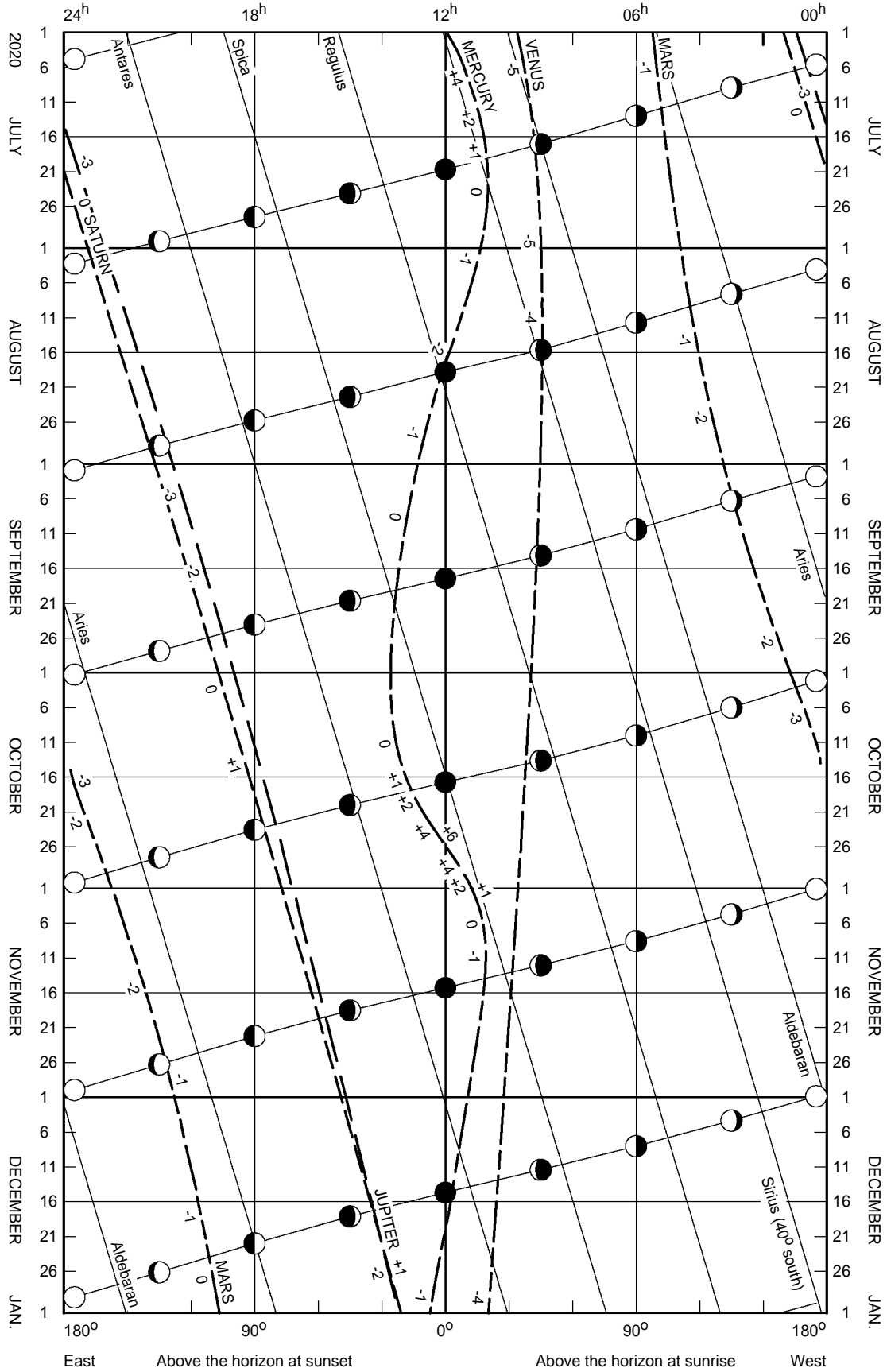


PLANET LOCATION DIAGRAM, January – June



PLANET LOCATION DIAGRAM, July – December

A123



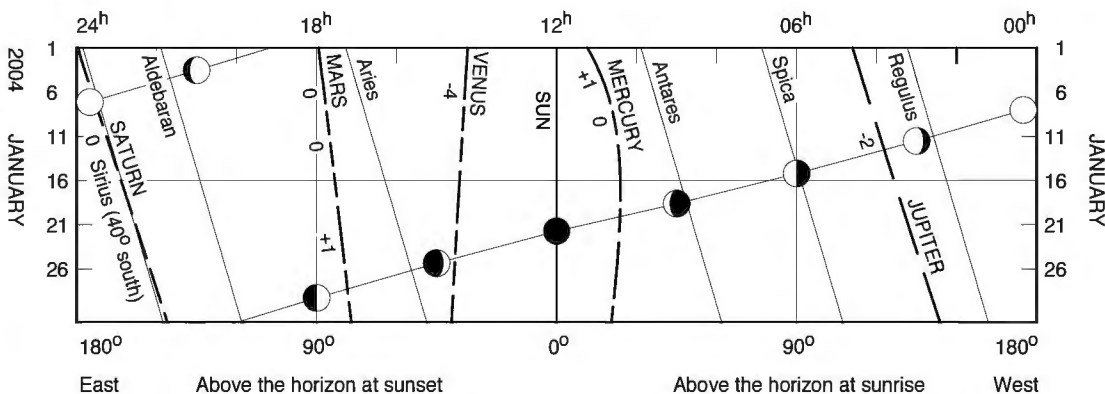
EXPLANATION

The diagrams on pages A122 and A123 represent the region of the sky along the ecliptic within which the Sun, Moon and planets always move; they show, for each date, the Sun in the centre and the relative positions of the Moon, the five planets Mercury, Venus, Mars, Jupiter, Saturn and the four first magnitude stars *Aldebaran*, *Antares*, *Spica* and *Regulus*, and also the position on the ecliptic which is north of *Sirius* (i.e., *Sirius* is 40° south of this point). The first point of Aries is also shown for reference. The magnitudes of the planets are given at suitable intervals along the curves. The Moon symbol shows the correct phase. A straight line joining the date on the left-hand side of the appropriate diagram with the same date on the right-hand side represents a complete circle around the sky, the two ends of the line representing the point 180° from the Sun; the intersections with the curves show the spacing of the bodies along the ecliptic on that date. The time scale indicates very approximately the local mean time at which an object will be on the observer's meridian.

At any time only about half the region on the appropriate diagram is above the horizon. At sunrise the Sun (and hence the region near the middle of the diagram) is rising in the east and the region at the end marked "West" is setting in the west; the region half-way between these extremes is on the meridian, as will be indicated by the local time (about 6^{h}). At the time of sunset (local time about 18^{h}) the Sun is setting in the west, and the region at the end marked "East" is rising in the east.

The diagrams should be used in conjunction with the *Sky Diagrams* on pages A26–A121; these are described on pages A24 and A25.

Example. At sunrise on 2004 January 1 the diagram below indicates that Mercury and *Antares* are visible in the east, *Spica* is well placed for observation east of the meridian, while *Regulus* and Jupiter are visible in the west. At sunset *Aldebaran* is visible in the east, Venus is in the west and Mars is at the meridian. The Moon, just past first quarter, is visible just to the east of the meridian. Saturn is rising in the east and may be visible at northern latitudes.



SUN-MOON FIXES

Times when the Sun and Moon are available for a two-body fix may be found as follows:

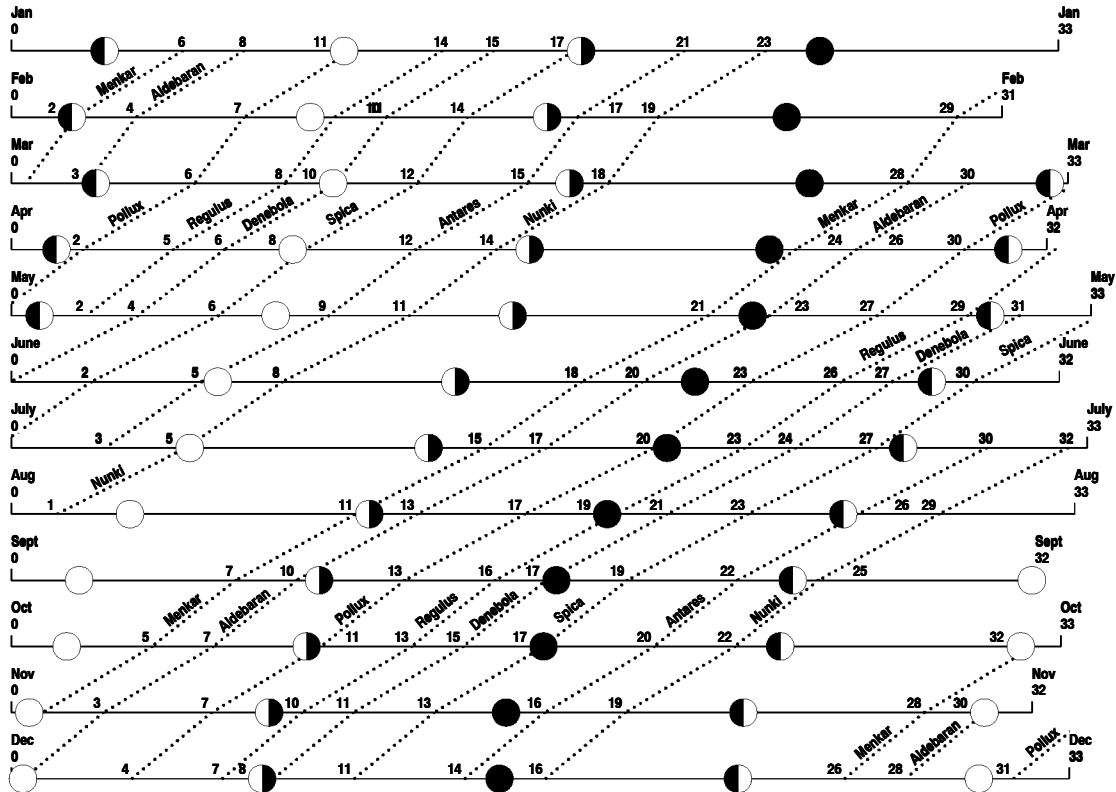
- (1) Inspect the Planet Location Diagram to determine the days on which the Sun and Moon appear to have a suitable separation; these will usually occur a few days on either side of first quarter, and a few days on either side of last quarter.
- (2) Inspect the Sky Diagrams for the appropriate latitude to determine the local times at which the two bodies have suitable altitudes and relative azimuth.
- (3) If either the Sun or the Moon is close to the horizon or appears to be below the horizon, consult the rising and setting tables, or the Semiduration Graphs for high latitudes, for more precise times of availability.

STAR RECOGNITION DIAGRAMS FOR PERISCPIC SEXTANTS A125

RELATED DATA

The star recognition diagrams for periscopic sextants and instructions for their use are given on pages A126 to A129. The related data below are for use with the diagrams:

MOONLIGHT INTERFERENCE DIAGRAM, 2020



PLANET / STAR CONFUSION TABLE, 2020

Star	Planet	Approximate dates
<i>Nunki</i>	Saturn	January 1 – January 6
<i>Nunki</i>	Jupiter	January 1 – March 15
<i>Antares</i>	Mars	January 6 – January 31
<i>Nunki</i>	Mars	February 22 – March 19
<i>Hamal</i>	Venus	March 8 – March 18
<i>Aldebaran</i>	Venus	April 14 – April 16
<i>Aldebaran</i>	Venus	May 30 – July 26
<i>Nunki</i>	Jupiter	July 16 – November 8
<i>Pollux</i>	Venus	August 28 – September 5
<i>Regulus</i>	Venus	September 25 – October 11
<i>Spica</i>	Venus	November 10 – November 24
<i>Antares</i>	Venus	December 18 – December 30