THE

# ASTRONOMICAL JOURNAL.

## No. 146.

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## LIST OF NEBULAS OBSERVED AT THE LEANDER McCORMICK OBSERVATORY, AND SUPPOSED TO BE NEW

| No. | R.A. 1890.0 | Decl. 1890.0 | Mag. | Size | Form | Condensation | No. of Obs. | Obsv'r | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 1 | 0 10 | —22 3 | 14.0 | pS | iR, lE 120° | gbM | 1 | S | |
| 2 | 0 10 | 14 7 | 14.0 | 0′.7 | R | | 1 | L | |
| 3 | 0 19 | 14 35 | 15.5 | 0.2 | R | | 1 | L | |
| 4 | 0 20 | 5 46 | pF | vS | R | lbM | 1 | L | |
| 5 | 0 25 | 13 58 | 14.5 | 0.4 | R | | 1 | L | |
| 6 | 0 28 | 11 22 | 13.0 | S | R | bsp | 1 | M | *12 P 90° Δ 3′.2 |
| 7 | 0 32 | 14 47 | F | S | mE 0° | bM | 1 | S | Faint wing sp |
| 8 | 0 33 | 15 16 | F | S | mE 150° | bM | 1 | S | |
| 9 | 0 34 | 14 51 | eF | eS | E 60° | gbsbMN | 1 | S | |
| 10 | 0 35 | —19 14 | 12.0 | vS | R | glsmbMN | 2 | L | |
| 11 | 0 35 | —14 24 | 15.5 | 0.8 | pE 0° | lbMN | 1 | L | G.C. 107? |
| 12 | 0 39 | 4 23 | pF | pS | E 20° | bMN | 1 | L | *8, f $20^s$ |
| 13 | 0 43 | 13 44 | 16.0 | 0.2 | lE 30° | | 1 | L | |
| 14 | 0 47 | 13 46 | 16.0 | 0.5 | R | | 1 | L | 1st of 4 |
| 15 | 0 47 | 13 46 | 16.0 | 0.5 | R | | 1 | L | 2nd of 4 |
| 16 | 0 47 | 13 46 | 16.0 | 0.5 | R | | 1 | L | 3d of 4 |
| 17 | 0 47 | 13 44 | 16.0 | 0.5 | R | | 1 | L | 4th of 4 |
| 18 | 0 50 | 11 16 | 15.5 | S | iR | gbM | 1 | M | *8, p $30^s$ |
| 19 | 0 50 | 11 15 | 16.0 | vS | | | 1 | M | Neb? f (18), P 75° Δ 1′.0 |
| 20 | 0 50 | —17 16 | 16.0 | vS | | | 1 | L | F*, p $40^s$ |
| 21 | 0 54 | —18 52 | 14.0 | pS | pE | bnpN | 2 | L | |
| 22 | 0 54 | 19 1 | 14.0 | vS | R | sbMN | 1 | L | |
| 23 | 0 59 | 17 9 | 16.0 | eS | R | | 1 | L | |
| 24 | 1 0 | 18 24 | vF | vS | R | gbM | 1 | L | |
| 25 | 1 1 | 20 38 | 14.0 | vS | vE | sbMN | 1 | L | |
| 26 | 1 5 | 20 36 | 13.0 | eS | R | sbMN | 1 | L | Neb? |
| 27 | 1 16 | 16 57 | 15.0 | vS | R | | 1 | L | |
| 28 | 1 20 | 18 46 | 13.2 | vS | R | | 2 | L | |
| 29 | 1 20 | 20 32 | 13.0 | vS | R | sbMN | 1 | L | |
| 30 | 1 22 | —18 46 | 14.0 | pS | lE 0° | bMN | 2 | L | sev F st f in line n and s |
| 31 | 1 23± | —10 51 | 15.0 | vS | R | | 1 | L | |
| 32 | 1 27 | 17 7 | 12.5 | pS | E 225° | glbM | 1 | L | |
| 33 | 1 33 | 20 30 | eF | vS | R | | 1 | L | |
| 34 | 1 35 | 18 25 | vF | vS | vlE | sbMN | 1 | L | |
| 35 | 1 36 | 13 36 | 15.5 | 0.1 | | gbMN | 1 | S | |
| 36 | 1 44 | 27 58 | 14.0 | 1.3 | R | gbM | 1 | S | |
| 37 | 1 44 | 17 17 | 14.0 | vS | R | lbMN | 1 | L | |
| 38 | 1 47 | 13 22 | 16.0 | 0.4 | | gbMN | 1 | S | |
| 39 | 1 49 | 17 5 | vF | vS | R | | 1 | L | |
| 40 | 1 49 | —11 21 | 14.5 | pL | iR | | 1 | M | *9, P 90° Δ 3′.6 |

| No. | R. A. 1890 | Decl. 1890 | Mag. | Size | Form | Condensation | No. of Obs. | Obsv'r | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 41 | 1 50 | —17 34 | 14.0 | vS | R | bMN | 2 | L | *11, p 11$^s$ |
| 42 | 1 51 | 17 16 | 12.0 | vS | R | bMN | 2 | L | env 14.0 |
| 43 | 1 51 | 9 27 | 11.5 | 0.4 | | gbMN | 1 | S | |
| 44 | 1 52 | 9 31 | 13.0 | 1.6×0.4 | E 65° | gbMN | 1 | S | |
| 45 | 1 52 | 16 34 | 16.0 | 0.2 | iR | gbM | 1 | S | |
| 46 | 1 54 | 9 26 | 14.0 | 0.2 | R | gbMN | 1 | S | |
| 47 | 2 1 | 16 17 | 14.8 | 0.3 | R | gbM | 1 | S | |
| 48 | 2 1 | 16 21 | 15.8 | 0.1 | R | gbM | 1 | S | |
| 49 | 2 6 | 10 51 | 15.5 | eS | E 325° | gbM | 1 | S | *10, n 1′.0 |
| 50 | 2 11 | —18 19 | vF | pS | vE 0° | gvlbM | 3 | L | sev vF st inv ; n end b? |
| 51 | 2 17 | —17 12 | 15.5 | vS | R? | | 2 | L | |
| 52 | 2 20 | 16 20 | 15.0 | 0.4 | R | gbM | 1 | S | |
| 53 | 2 23 | 11 19 | 13.0 | | R | | 1 | M | } neb** ? |
| 54 | 2 23 | 11 18 | 13.5 | | R | | 1 | M | } |
| 55 | 2 23 | 15 1 | 15.0 | 0.4 | vE 0° | sbN like a ** | 1 | L | |
| 56 | 2 23 | 10 59 | 15.0 | 0.7 | R | gbM | 1 | S | |
| 57 | 2 24 | 11 31 | 15.0 | 0.4 | | gbM | 1 | S | |
| 58 | 2 27 | 19 8 | 14.5 | S | | gbM | 1 | S | |
| 59 | 2 28 | 11 27 | 15.0 | 0.4 | | gbM | 1 | S | |
| 60 | 2 30 | —17 0 | 13.0 | vS | R | bMN | 3 | L | |
| 61 | 2 34 | —11 30 | 15.0 | 0.4 | | | 1 | S | neb? in same field with G.C. 5262 and 5263 |
| 62 | 2 34 | 16 17 | 13.5 | vS | lE 0°? | lbM | 2 | L | 2 B st, p 20$^s$ |
| 63 | 2 38 | 16 46 | 15.5 | vS | R | | 1 | L | |
| 64 | 2 38 | 16 41 | 14.0 | vS | | bMN | 1 | L | |
| 65 | 2 41 | 18 1 | 13.0 | vS | R | sbMN | 1 | L | |
| 66 | 2 41 | 18 1 | 13.5 | vS | R | sbMN | 1 | L | |
| 67 | 2 42 | 18 9 | 12.0 | vS | R | glsbMN | 1 | L | 1st of 3 |
| 68 | 2 42 | 18 11 | 13.0 | pS | lE 0° | slbMN | 1 | L | 2nd of 3 |
| 69 | 2 42 | 18 10 | 12.5 | vS | lE 30° | sbMN | 1 | L | 3d of 3 |
| 70 | 2 42 | —16 35 | | | | | 1 | L | same as (64) ? |
| 71 | 2 43 | —16 10 | 14.5 | vS | R | | 1 | L | |
| 72 | 2 45 | 18 29 | 12.0 | eS | R | | 1 | L | *? |
| 73 | 2 45 | 14 55 | 14.0 | 0.5 | R | gbsbMN | 1 | L | env 14.5 |
| 74 | 2 46 | 26 10 | 16.0 | eeS | iR | gbM | 1 | S | *9, nf 1′.0 |
| 75 | 2 49 | 14 58 | 14.0 | 0.3 | R | gbMN | 1 | L | env 15.0 |
| 76 | 2 52 | 15 29 | 14.0 | 0.4 | R | sbMN | 1 | L | env 15.0 |
| 77 | 2 52 | 15 27 | 16.0 | 0.4 | R | | 1 | L | neb? in same field with (76) |
| 78 | 2 53 | 15 34 | 15.0 | 0.7 | E 0° | sbMN | 1 | L | env 16.0 |
| 79 | 2 53 | 14 49 | 15.0 | 0.4 | R | sbMN | 1 | L | env 15.5 |
| 80 | 2 54 | —17 37 | vF | pS | vE 75° | bnp | 1 | L | spindle shaped |
| 81 | 2 57 | —19 20 | 15.5 | pS | | gbM | 1 | S | *12 f 1′.0 |
| 82 | 2 57 | 15 27 | 15.0 | vS | R | bMN | 1 | L | env 16.0 |
| 83 | 2 57 | 15 29 | 15.0 | vS | R | bMN | 1 | L | env 16.0 |
| 84 | 2 57 | 10 6 | 15.5 | 0.7×0.3 | E 120° | | 1 | S | *10, P 240° Δ 2′.5 |
| 85 | 3 0 | 14 48 | 14.0 | 0.3 | R | bMN | 1 | L | neb? env 14.5 |
| 86 | 3 0 | 12 46 | 15.5 | | E 45° | | 1 | L | B* and sev F st inv in neb, r |
| 87 | 3 0 | 10 7 | 14.0 | 0.7×0.3 | E 25° | | 1 | S | *9.5, P 240° Δ 3.′0 |
| 88 | 3 1 | 26 10 | 15.0 | vS | iR, E 340°? | gbMN | 1 | S | |
| 89 | 3 1 | 15 56 | 15.0 | vS | R | | 1 | L | |
| 90 | 3 1 | —16 2 | 15.5 | vS | R | | 1 | L | 1st of 5 |
| 91 | 3 1 | —16 5 | 15.5 | vS | R | | 1 | L | 2nd of 5 |
| 92 | 3 1 | 16 7 | 15.5 | vS | R | | 1 | L | 3d of 5 |
| 93 | 3 1 | 16 6 | 15.5 | vS | R | | 1 | L | 4th of 5, 5th is G.C. 648 |
| 94 | 3 2 | 9 58 | 14.0 | 0.7×0.2 | E 60° | | 1 | S | 48s = f G.C. 647 same decl. stell N in cen of vF neb; 1st of 3; *10, P 15° Δ 3′.0. |
| 95 | 3 2 | 10 3 | 15.5 | 0.4 | | dif | 1 | S | 2nd of 3 |
| 96 | 3 2 | 10 2 | 14.5 | 0.2 | | stell | 1 | S | 3d of 3 |
| 97 | 3 5± | —16 0 | 16.0 | pL | E like fan | | 1 | L | neb? |

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|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 98 | 3 8 | —26 10 | 15.5 | 4.1×2.0 | E 315° | vgbsbMN | 1 | S | |
| 99 | 3 10 | 16 18 | 15.0 | pS | iR | sbMN | 1 | L | env 15.5 |
| 100 | 3 10 | —15 31 | 14.0 | 0.7 | lE 0° | sbM | 1 | L | env 16.0 |
| 101 | 3 13 | —14 23 | 15.8 | 0.1 | | | 1 | S | near (102) |
| 102 | 3 14 | 14 24 | 15.0 | 0.2 | | gbMN | 1 | S | *10, P 75° Δ 3′.0 |
| 103 | 3 15 | 18 57 | 13.0 | | iF, vmE 135° | | 1 | S | |
| 104 | 3 16 | 25 56 | 14.8 | vS | | gbM | 1 | S | no N, * 10.5, f 4′.0 |
| 105 | 3 20 | 26 4 | 16.3 | vS | | | 1 | S | neb? |
| 106 | 3 30 | 25 18 | 13.0 | | | | 1 | S | *9, nf 5′.0 |
| 107 | 3 30 | 16 4 | 14.0 | vS | R | lbM | 1 | L | |
| 108 | 3 31 | 16 16 | 14.0 | vS | R | glbM | 1 | L | |
| 109 | 3 33 | 16 17 | 14.5 | vS | R | lbM | 1 | L | |
| 110 | 3 35 | —15 53 | 16.0 | pL | vE 150° | glbM | 1 | L | sev vF st inv |
| 111 | 3 36 | —15 57 | 15.0 | vS | R | lbM | 1 | L | |
| 112 | 3 40 | 23 21 | 15.0 | | vmE 60° | N | 1 | S | *10, f 1′.0 |
| 113 | 3 40 | 9 33 | 16.0 | 0.8 | | stell N | 1 | S | D, P 310° Δ 0′.4 |
| 114 | 3 40 | 9 33 | 16.0 | 0.8 | | stell N | 1 | S | |
| 115 | 3 42 | 25 52 | 15.0 | pS | | gbM | 1 | S | |
| 116 | 3 48 | 15 44 | 14.5 | vS | pE 45° | | 1 | L | |
| 117 | 3 48 | 8 54 | 14.0 | 0.1 | | stell N | 1 | S | 1st of 3 |
| 118 | 3 49 | 8 54 | 15.0 | 0.2 | | | 1 | S | 2nd of 3 |
| 119 | 3 49 | 8 52 | 15.0 | 0.2 | | | 1 | S | 3d of 3 |
| 120 | 3 57 | — 9 38 | 16.0 | 0.2 | R | gbM | 1 | S | |
| 121 | 3 57 | — 9 37 | 15.3 | 0.3 | R | gbM | 1 | S | |
| 122 | 3 59 | 11 28 | 14.0 | 0.1 | R | gbM | 2 | S | |
| 123 | 4 5 | 9 5 | 16.0 | 0.7 | R | gbMN | 1 | S | D, P 340° Δ 0′.5 |
| 124 | 4 5 | 9 5 | 16.0 | 0.7 | R | gbMN | 1 | S | |
| 125 | 4 10 | 13 31 | 16.0 | 0.1 | R | gbM | 1 | S | |
| 126 | 4 13 | 18 9 | pF | pS | iR | | 1 | L | cl? or neb with sev vF st and one * 11.5 n of cen inv |
| 127 | 4 18 | 16 7 | 14.0 | vS | lE 170° | glbM | 1 | L | *8, p 6$^s$ |
| 128 | 4 18 | 16 2 | 14.5 | eS | R | glbM | 1 | L | |
| 129 | 4 18 | 16 0 | 15.5 | vS | R | lbM | 1 | L | D |
| 130 | 4 18 | —16 0 | 15.0 | vS | R | lbM | 1 | L | |
| 131 | 4 18 | —16 2 | 16.0 | pS | lE | | 1 | L | |
| 132 | 4 24 | 17 52 | 12.5 | vS | R | sbMN | 1 | L | env 13.0 |
| 133 | 4 24 | 17 47 | 12.5 | eS | R | sbMN | 1 | L | env 14.0 |
| 134 | 4 26 | 11 31 | 15.5 | 0.2 | R | gbM | 2 | S | |
| 135 | 4 31 | 13 46 | 15.8 | 0.2 | R | gbM | 1 | S | |
| 136 | 4 36 | 20 38 | 14.0 | 0.4 | E 40° | gbMN | 1 | S | |
| 137 | 4 40 | 16 6 | 13.0 | pS | E 0° | glsmbMN | 1 | L | env 14.0 |
| 138 | 4 47 | 15 32 | 15.5 | vS | vE 30° | | 1 | L | |
| 139 | 4 49 | 20 44 | 15.0 | 0.2 | R | | 1 | S | |
| 140 | 4 53 | —15 28 | 13.0 | vS | R | glsbMN | 2 | L | env 13.5 |
| 141 | 4 55 | —16 0 | 12.0 | vS | | sbMN | 2 | L | D, P 110° Δ 10″ |
| 142 | 4 55 | 16 0 | 12.0 | vS | | | 2 | L | |
| 143 | 4 56 | 18 19 | 14.0 | 0.4 | E 45° | | 1 | S | |
| 144 | 4 56 | 18 19 | 15.0 | 0.2 | E? 90° | | 1 | S | in same field with (143) |
| 145 | 5 0 | 19 36 | 15.0 | 0.1 | | gbM | 1 | S | |
| 146 | 5 2 | 18 19 | 14.5 | 0.1 | | gbM | 1 | S | |
| 147 | 5 6 | 15 15 | 14.0 | vS | lE 140° | | 1 | L | |
| 148 | 5 20 | 16 4 | 15.0 | pS | pE 0° | glbM | 1 | L | |
| 149 | 5 28 | 14 12 | 15.0 | pS | R | bMN | 1 | L | env 15.5 |
| 150 | 6 14 | —18 29 | 14.0 | pS | E 45° | glsbMN | 1 | L | |
| 151 | 6 14 | —18 29 | 15.5 | vS | R | | 1 | L | in same field with (150) |
| 152 | 8 43 | 13 53 | 16.0 | 0.4 | | | 1 | S | neb? |
| 153 | 8 49 | — 4 34 | 15.8 | 0.2 | | stell | 1 | S | |

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|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 154 | 9 22 | −14 3 | 15.0 | 0.3 | R | bMN | 1 | L | env 15.5 |
| 155 | 9 26± | +31 36± | | | | | 1 | S | found while looking for Winnecke's comet |
| 156 | 9 33 | −11 56 | 15.0 | 1.1 | iR | gbM | 1 | L | |
| 157 | 9 37 | 16 9 | eeF | S | R | gbM | 1 | S | |
| 158 | 9 43 | 5 59 | eF | vS | R | | 1 | L | |
| 159 | 9 50 | 11 57 | 15.5 | 1.2 | D or bi N | | 1 | L | tri N? |
| 160 | 9 51 | −25 11 | 14.5 | 2.7×0.8 | E 120° | | 1 | S | 16.5 vgb 16.0 vsb MN |
| 161 | 9 51 | − 5 51 | 16.0 | vS | E 45° | | 1 | L | |
| 162 | 9 54 | 5 54 | | | | | 1 | L | same as (161)? |
| 163 | 9 59 | 20 15 | 15.0 | 0.1 | R | | 1 | S | neb? |
| 164 | 10 2 | 15 36 | 16.0 | 1.6×0.7 | vE 45° | | 1 | L | |
| 165 | 10 2 | 15 36 | 16.0 | 1.3×0.7 | vE 170° | lbN | 1 | L | |
| 166 | 10 4 | 16 6 | 15.5 | 0.5 | R | sbMN | 1 | L | |
| 167 | 10 4 | 16 6 | 16.0 | 0.3 | R | | 1 | L | |
| 168 | 10 6 | 20 20 | 15.0 | 0.4 | R | gbM | 1 | S | |
| 169 | 10 9 | 20 5 | 15.5 | 0.4 | R | gbM | 1 | S | |
| 170 | 10 10 | −18 29 | 16.0 | 0.8 | iR | | 1 | S | neb? |
| 171 | 10 14 | −25 16 | 15.8 | 1.6 | iR | gbM | 1 | S | |
| 172 | 10 18 | 21 42 | 16.0 | 1.6 | spiral? | stell N | 1 | S | N 0′.1, env 16.0 |
| 173 | 10 30 | 12 5 | 15.0 | 1.6 | | | 1 | L | D neb or sev st inv in neb |
| 174 | 10 30 | 12 9 | 15.0 | 0.7 | R | gpmbM | 1 | L | |
| 175 | 10 30 | 12 7 | 15.5 | 0.5 | iR | gbMN | 1 | L | |
| 176 | 10 32 | 24 45 | 15.5 | 0.1 | R | gbM | 1 | S | *15, n 3″.0 |
| 177 | 10 41 | 24 40 | 16.0 | 0.2 | R | | 1 | S | |
| 178 | 10 50 | 20 30 | 15.0 | 1.3×0.4 | E 125° | | 1 | S | |
| 179 | 10 52 | 19 3 | 15.5 | 0.4 | R | gbM | 1 | S | |
| 180 | 10 53 | −14 22 | 15.5 | 0.6 | E 90° | gbMN | 2 | S | |
| 181 | 10 57 | −14 22 | 16.0 | 1.2 | iR | glbM | 1 | L | |
| 182 | 10 59 | 5 58 | 15.0 | 0.1 | lE 110° | | 1 | S | in same field with neb disc by Stephan |
| 183 | 11 1 | 18 52 | 12.0 | 0.8 | | gbMN | 1 | S | |
| 184 | 11 4 | 17 41 | 14.0 | 2.5×0.4 | E 95° | gbsbgbM | 1 | S | G.C. 2330? |
| 185 | 11 5± | 19 27 | vF | vS | R | gbMN | 1 | S | 1st of 2 |
| 186 | 11 5± | 19 27 | eeF | eS | R | gbM | 1 | S | 2nd of 2 |
| 187 | 11 24 | 8 1 | 15.0 | 0.2 | | gbMN | 1 | S | |
| 188 | 11 25 | 2 37 | 14.5 | 0.3 | R | gbM | 1 | S | |
| 189 | 11 25 | 2 39 | 16.0 | 0.1 | | | 1 | S | |
| 190 | 11 33 | − 2 48 | 15.0 | 0.2 | | gbM | 1 | S | |
| 191 | 11 33 | −11 57 | 15.0 | 0.8 | iR | glbM | 1 | L | S * or neb f |
| 192 | 11 44 | 9 7 | 15.5 | 1.8 | iR | gbM | 1 | S | |
| 193 | 12 8 | 11 58 | 15.8 | 0.8 | | | 1 | S | |
| 194 | 12 54 | 13 32 | 16.0 | 0.3 | R | | 1 | L | |
| 195 | 12 54 | 13 27 | 15.5 | 0.3 | vE 45° | sbMN | 1 | L | |
| 196 | 13 8 | 18 58 | 14.0 | 1.6×0.2 | E 30° | gbM | 1 | S | 8′ f G.C. 3448 P 110° |
| 197 | 13 13 | 9 38 | 15.0 | 0.2 | | | 1 | S | |
| 198 | 13 19 | 9 37 | 14.0 | 0.2 | | gbM | 1 | S | |
| 199 | 13 53 | 13 37 | 12.0 | S | R | vgbM | 1 | M | |
| 200 | 13 57 | −14 4 | F | pS | vE | gbp | 1 | L | a little curved, shades off gradually like a comet's tail; no N seen |
| 201 | 14 8 | −17 27 | 14.0 | 0.4 | R | gbM | 1 | S | *13 in field |
| 202 | 14 14 | 18 37 | 14.0 | 0.7 | iR | gbMN | 1 | S | |
| 203 | 14 27 | 16 6 | 16.0 | 0.2 | R | glbM | 1 | L | |
| 204 | 14 27 | 14 6 | pF | S | E | gbM | 1 | L | |
| 205 | 14 36 | 17 58 | 12.8 | 0.3 | R | gbM | 2 | S | *10.5, np 2′.7 |
| 206 | 14 38 | 20 25 | vF | S | lE | glbM | 1 | L | |
| 207 | 14 39 | 11 28 | 14.0 | vS | R | sbMN | 1 | L | |
| 208 | 14 39 | 11 22 | 12.0 | pS | pmE | gbMN | 1 | L | env 15.0 |
| 209 | 14 39 | 20 25 | F | S | vE | smbMN | 1 | L | |
| 210 | 14 39 | −18 1 | 15.5 | 0.2 | | | 1 | S | neb? |

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|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 211 | 14 43 | −19 49 | 14.5 | 0.3 | R | glbMN | 1 | L | |
| 212 | 14 46 | 20 55 | eF | 1.0 | R | gbM | 1 | S | |
| 213 | 14 53 | 16 14 | 15.4 | 0.8×0.3 | lE 135° | bMN | 2 | L | |
| 214 | 14 53 | 16 10 | 12.8 | 0.8 | | gbsmbMN | 2 | L | N almost stell |
| 215 | 14 54 | 13 25 | vF | vS | | sbM | 1 | L | 1st of 3 |
| 216 | 14 54 | 13 26 | vF | vS | | sbM | 1 | L | 2nd of 3 brightest and most nebulous of the three |
| 217 | 14 54 | 13 24 | vF | vS | | sbM | 1 | L | 3d of 3 |
| 218 | 14 55 | 17 25 | eF | vS | lE 230° | | 1 | S | bet 2 vFst |
| 219 | 14 56 | 16 23 | 15.0 | 0.8 | E 10° | | 1 | L | F*$_*$? inv in neb<br>*$_*$ on p side of neb |
| 220 | 14 56 | −15 42 | 11.0 | 0.8 | | gbMN | 1 | S | stell |
| 221 | 14 56 | −15 46 | 14.0 | 0.8 | | | 1 | S | sev F st in field |
| 222 | 15 1 | 14 8 | | | | | 1 | L | * 13.0 inv in vF neb<br>3st, p 1$^s$.0; *8.0 f 10$^s$.0 15′.0 s |
| 223 | 15 4 | 18 0 | | S | R | gbMN | 1 | S | *12 in eF neb |
| 224 | 15 8 | 14 8 | 15.2 | 0.2 | R | lbsbMN | 2 | L | in field with Harv. 331 |
| 225 | 15 10 | 17 9 | vF | vS | E 235° | | 1 | S | |
| 226 | 15 10 | 11 7 | 13.0 | pS | lE | gbM | 1 | L | *11, f |
| 227 | 15 10 | 14 35 | 16.0 | 2.5 | | gbM | 1 | S | |
| 228 | 15 31 | 16 13 | 14.5 | pS | vlE? | glsbMN | 2 | S | |
| 229 | 15 36 | 12 52 | eF | vS | | sbMN | 1 | L | in a group of st |
| 230 | 18 2 | −29 34 | vF | vS | R | | 1 | L | rr |
| 231 | 20 26 | −25 51 | 13.2 | pS | R | sbMN | 2 | L | *, n 1′.0, neb * in field?; env 14.0 |
| 232 | 20 28 | 11 46 | 15.0 | 0.6×0.2 | E 120° | gbM | 1 | L | divided into 2 parts? |
| 233 | 20 30 | 25 40 | 13.8 | vS | R | slbMN | 2 | L | env 14.0 |
| 234 | 20 50 | 11 30 | 16.0 | 0.2 | iR | | 1 | L | |
| 235 | 20 50 | 19 0 | 14.0 | vS | R | glbMN | 2 | L | |
| 236 | 20 53 | 26 7 | 14.0 | vS | R | sbMN | 1 | L | env 15.0 |
| 237 | 21 1 | 25 56 | 14.0 | eS | R | bMN | 2 | L | 1st of 3 |
| 238 | 21 1 | 25 56 | 15.0 | vS | R | bMN | 2 | L | 2nd of 3 |
| 239 | 21 1 | 25 54 | vF | vS | vlE | glbM | 2 | L | 3d and b of 3 |
| 240 | 21 1± | −24 51 | 15.0 | vS | | sbMN | 1 | L | |
| 241 | 21 4 | −20 57 | 14.0 | vS | iR | sbnMN | 1 | L | |
| 242 | 21 35± | 10 50 | 11.0 | vS | E 310°? | smbMN | 1 | L | *n, P 310° |
| 243 | 21 38 | 25 52 | vF | pS | vE 90° | | 3 | L | like comet with tail; 2 st inv |
| 244 | 21 50 | 25 54 | 14.0 | vS | R | sbMN | 1 | L | B*$_*$, p 8$^s$; env 16.0 |
| 245 | 21 55 | 5 59 | 13.0 | pS | iR | bMN | 2 | L | *$_*$p 36$^s$ |
| 246 | 21 57 | 33 19 | pF | pS | R | lbM | 1 | L | |
| 247 | 21 57 | 20 52 | eF | pS | E | lbM | 1 | L | |
| 248 | 22 12 | 24 17 | pF | vS | R | gvlbM | 1 | L | B*$_*$ p 13$^s$, F*$_*$, f 5$^s$ |
| 249 | 22 16 | 16 7 | 16.0 | 2.5×0.5 | vE 30° | sbMN | 1 | L | |
| 250 | 22 19 | −13 46 | eF | pS | R | glbM | 1 | L | |
| 251 | 22 24 | −25 59 | vF | vS | R | | 1 | L | |
| 252 | 22 26 | 18 9 | vF | pS | lE 0° | lbM | 1 | L | |
| 253 | 22 28 | 13 33 | pB | vS | R | | 1 | L | no * in field |
| 254 | 22 29± | 23 5 | 15.0 | pS | R | bMN | 1 | L | |
| 255 | 22 33± | 23 16 | pF | pS | E | lbM | 1 | L | |
| 256 | 22 38 | 24 17 | pF | vS | pmE | bMN | 1 | L | |
| 257 | 22 39 | 20 32 | 14.5 | eS | R | gbMN | 2 | L | *11, nf 4′.0; neb * |
| 258 | 22 43 | 20 20 | eF | vS | R | gbM | 1 | L | |
| 259 | 22 51 | 11 32 | 15.5 | | lE? 90° | | 1 | M | *10, P 260° Δ 4′.0 |
| 260 | 22 54 | − 7 38? | 14.0 | 0.8 | iR | | 1 | S | *10, p |
| 261 | 23 0 | −20 32 | 14.0 | vS | R | gbM | 1 | S | |
| 262 | 23 13± | 7 31 | 13.5 | pS | lE 180° | lbMN | 1 | L | |
| 263 | 23 20 | 19 41 | vF | vS | R | bMN | 1 | L | |
| 264 | 23 33 | 23 36 | eF | vS | R | | 1 | L | |
| 265 | 23 37 | 20 4 | 15.0 | eS | | gbM | 1 | S | bet 2 st 12 |
| 266 | 23 42 | 17 14 | 16.0 | vS | | | 1 | L | |
| 267 | 23 43 | −17 10 | 14.0 | vS | R | | 1 | L | |

| No. | R.A. 1890 | Decl. 1890 | Mag. | Size | Form | Condensation | No. of Obs. | Obsv'r | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | h m | ° ′ | | | | | | | |
| 268 | 23 44 | −14 0 | 13.0 | vS | R | gbM | 1 | S | * 10, p 8′.0 |
| 269 | 23 45 | 17 13 | 15.0 | vS | R | | 1 | L | F * f |
| 270 | 23 47 | −14 0± | 15.0 | vS | lE 315° | gbM | 1 | S | near (268) |
| 271 | 23 56 | −19 23 | 16.0 | pS | iF E 90°? | | 1 | S | |
| 272 | 23 56 | 11 21 | 15.0 | vS | R | stell N | 1 | M | * 8.5, P 240° Δ 3′.6 |
| 273 | 23 59 | −17 6 | 14.0 | pS | iF E 125° | glbM | 2 | S | |

S = Ormond Stone; L = F. P. Leavenworth; M = Frank Muller; env = envelope; P = position angle; Δ = distance; other abbreviations as in *Herschel's general catalogue*.

In the earlier observations *Herschel's abbreviations* were used to designate brightness and size. Afterwards numerical magnitudes were employed to indicate brightness, assuming that the faintest nebula visible in the 66$^{cm}$ refractor, with power 167, is 16.3, that being the theoretical limit for stars. The magnitudes given refer to the nucleus, or, in case there is no nucleus, to the brightest part. Still later the custom was instituted of estimating the diameters of the nebulas observed in fractions of the diameter of the field, and from these deducing their dimensions in minutes of arc.

Sketches have been made of the larger portion of the nebulas contained in this list.

ORMOND STONE.

*University of Virginia*, 1886 *October* 12,

# LATITUDE OF THE SAYRE OBSERVATORY.

By Prof. C. L. DOOLITTLE.

During the years 1876–77 I made a somewhat extended series of observations with the Zenith-Telescope for determining the latitude of our observatory. A few observations were also made in the spring of 1878; the mean date of the series being 1877.17.

Sixty pairs of stars were employed; the number of observations was 459, an average of 7.65 per pair.

Sixty-two of the stars were taken from Boss's Catalogue of 500 stars, the remaining 58 were reduced by myself, nearly all the data to be found in the library of the U. S. Naval Observatory being employed. Boss's systematic corrections were applied in order to make the entire series of declinations homogeneous. The results of this work were published in the *Astronomische Nachrichten*, No. 2260.

In September, 1885, I began a series of observations for redetermining the latitude, and the observations were finished August, 1886. The mean date was 1886.12. The stars employed were the same as in the previous determination, with the exception of three pairs, which for different reasons were not available. This series comprised 288 observations of 57 pairs, an average of 5.1 per pair.

The observations were all made by myself, the same instrument being used throughout. The level-tube was twice refilled during the interval between the two series; otherwise nothing was done by way of change or repair. As the instrument was used more or less every year by the students of the University, there must have been some wear of the parts. The precision of the observations comprising the latter series was however a little greater than of the former, therefore no great deterioration could have taken place.

Taking the results of the earlier series, and using only those stars which were employed in the latter, 57 equations were written, of the form

$$\Delta\varphi - \tfrac{1}{2}(M - M')\,\Delta R = \varphi - \varphi'$$

each pair of stars giving one equation.

$\Delta\varphi$ is the correction to the assumed latitude $\varphi'$.

$\Delta R$, the correction to the assumed value of the micrometer-screw.

The results were as follows:

$$\varphi_1' = 40^\circ\ 36'\ 23''.887$$
$$\Delta\varphi_1 = \quad +.018 \pm .037$$
$$\varphi_1 = 40\ 36\ 23.905 \pm .037.$$

In the same manner the second series gave the following results:

$$\varphi_2' = 40^\circ\ 36'\ 23''.530$$
$$\Delta\varphi_2 = \quad -.018 \pm .051$$
$$\varphi_2 = 40\ 36\ 23.512 \pm .051.$$

Therefore $\varphi_1 - \varphi_2 = 0''.393 \pm 0.063$.

If we regard only those parts of the probable errors of $\varphi_1$ and $\varphi_2$ which are independent of the declinations of the stars employed, we find for the probable error of the difference, viz: $(\varphi_1 - \varphi_2)$, $r = .045$.

The following tabular statement exhibits the values of the latitude, as given by each pair of stars employed. If we