

CHAPTER VI. DIURNAL AND OTHER VARIATIONS OF
THE FREQUENCY OF THE ASAMA-YAMA
DISTURBANCES.

20. Diurnal frequency variations of volcanic disturbances.

Tables XVII and XVIII give the diurnal distribution respectively of the non-eruptive volcanic earthquakes and of the eruptive disturbances of the Asama-yama registered at Yuno-taira during the 6 years 1911 to 1916.

Eruptive disturbances in 1913. The recent eruptive activity of the Asama-yama has culminated in 1913, when, in the course of the 6 months May to October, 39 strong explosions and 7087 micro-outbursts have distinctly been registered. Their diurnal distribution (fig. 23) indicates the greatest frequency of 650 at 11–12 p.m., and the least frequency of 58 at 3–4 p.m.; the latter time interval approximately coinciding with that of the maximum quantity of the ordinary smoke emission from the Asama-yama crater. If we, however, count as a single number each of the series of the small eruptions occurring at close successive intervals, say under 5 minutes, we get the hourly distribution shown in the last column of Table XVIII. As will be seen from fig. 23 the diurnal frequency variation of these eruption groups is roughly opposite to that of the separate cases taken together. This seems to indicate that an eruption group is in a way equivalent to a single strong explosion, whose time relation ought in several respects to be opposite to that of the small outbursts.

The diurnal variation of all the eruptions in 1913 is almost entirely different from that previously given for 1911 and 1912, (fig. 1, in the Bulletin, Vol. VI, No. 3), which indicates some

coincidence with the case of the eruption groups (fig. 23) in the occurrence of the minimum frequency. This is probably due to the predominance of the extremely minute outbursts in the first named year.

Earthquake disturbances in 1911-1916. In the diurnal distribution for the 6 years, 1911-1916, the seismic frequency indicates maxima at 8-9 a.m. and 8-9 p.m., and also at 3-4 a.m. and 1-2 p.m., namely, approximately at the hours of the barometric maximum and minimum. The opposite tendency in the diurnal variation of the eruptive disturbances is not so distinctly shown, due probably to the abundance of the extremely small outbursts occurring in close succession. (Compare Pl. XL, the Bulletin, Vol. VI.) The times of occurrence of the maximum seismic frequency are, however, much similar to those of the stronger eruptions; this being in conformity with the previously given results, illustrated in Pl. X, the Bulletin, Vol. VI, where the Asama-yama explosions in 1908-1911 indicated maximum and minimum frequencies approximately at the same hours as the ordinary earthquakes in Tokyo and the *jinari*, or earth-sounds, at Arima.

Fig. 23. Diurnal Variation of the Asama-yama Explosions.



x = Time, in hours.

y_1 = Hourly Distribution of the Explosions during the 6 years, 1911-1916

y_2 = Hourly Distribution of the Explosion Groups in 1913.

21. Variation in daily frequency of volcanic disturbances.

Table XIX to XXI give the daily frequency of the eruptions and that of the non-eruptive volcanic earthquakes registered at Yunotaira during the four years 1913 to 1916, while in Table XXIII are given for the sake of reference the daily mean barometric pressure observed at the same place during the time interval in question.

Eruptions in 1913. The maximum daily eruption frequencies of 1205 ; 825 ; 535 ; and 505 occurred respectively on Aug. 4th, July 6th, Aug. 28th, and Sept. 2nd, when the barometric pressure was not minimum. It is, however, to be noticed that the maximum frequency on Aug. 28th followed closely the barometric fall of 14 mm. on Aug. 26th-27th, while a small but distinct maximum frequency on June 21st was preceded by the barometric fall of $7\frac{1}{2}$ mm on the 16th-17th of the same month. Similar instances are also indicated in the case of the eruptions in 1911. (See fig. 5, in the Bulletin, Vol. VI, No. 3.) Again, three of the four marked maxima of the eruption frequency in 1913 mentioned above, namely, those on July 6th, Aug. 4th, and Sept. 2nd, coincided very closely with the dates of the new moon, which took place on July 5th, Aug. 3rd, and on Sept. 1st successively. Thus, in 1913, the maximum frequency of the outbursts was apparently connected with the position of the moon, or followed pronounced barometric falls.

TABLE XVII. DIURNAL DISTRIBUTION OF THE ASAMA-YAMA NON-ERUPTIVE EARTHQUAKES, 1911—1916, REGISTERED AT YUNO-TAIRA.

| Year. Hour. | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | Sum. |
|----------------|------------|------------|-----------|-----------|------------|------------|-------------|
| 0-1 a.m. | 9 | 6 | 2 | 2 | 1 | 10 | 30 |
| 1-2 | 8 | 28 | 1 | — | 4 | 5 | 46 |
| 2-3 | 25 | 33 | — | 2 | 5 | 6 | 71 |
| 3-4 | 22 | 74 | 2 | 4 | 5 | 5 | 112 |
| 4-5 | 15 | 46 | 4 | 3 | 2 | 4 | 74 |
| 5-6 | 23 | 33 | — | — | 5 | 4 | 65 |
| 6-7 | 23 | 13 | 1 | 4 | — | 62 | 103 |
| 7-8 | 16 | 38 | — | 4 | 2 | 16 | 76 |
| 8-9 | 23 | 88 | 2 | 2 | 4 | 6 | 125 |
| 9-10 | 20 | 69 | 1 | 1 | 13 | 11 | 115 |
| 10-11 | 18 | 26 | 2 | — | 5 | 9 | 60 |
| 11-12 | 7 | 20 | 4 | — | 5 | 5 | 41 |
| 0-1 p.m. | 22 | 18 | 1 | 3 | 5 | 8 | 57 |
| 1-2 | 45 | 22 | — | 1 | 1 | 10 | 79 |
| 2-3 | 13 | 9 | 1 | 4 | 12 | 3 | 42 |
| 3-4 | 13 | 15 | — | 2 | 1 | 10 | 41 |
| 4-5 | 14 | 8 | — | 2 | 4 | 4 | 32 |
| 5-6 | 13 | 9 | 1 | — | 5 | 22 | 50 |
| 6-7 | 13 | 8 | 1 | — | 3 | 3 | 24 |
| 7-8 | 9 | 30 | 2 | 2 | 4 | 6 | 53 |
| 8-9 | 6 | 57 | 4 | 5 | 5 | 6 | 83 |
| 9-10 | 8 | 12 | 3 | 4 | 2 | 6 | 35 |
| 10-11 | 10 | 20 | 1 | — | 9 | 6 | 46 |
| 11-12 | 3 | 9 | 1 | 3 | 7 | 2 | 25 |
| Sum. | 378 | 687 | 34 | 48 | 109 | 229 | 1485 |

TABLE XVIII. DIURNAL DISTRIBUTION OF THE ASAMA-YAMA EXPLOSIONS, 1911-1916, REGISTERED AT YUNO-TAIRA.

| Hour. | Year. | | | | | | Sum. | Eruption Groups, 1913. |
|----------|------------|-------------|-------------|-----------|------|----------|-------------|------------------------|
| | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | | |
| 0-1 a.m. | 16 | 27 | 414 | 6 | — | — | 463 | 15 |
| 1-2 | 38 | 34 | 433 | 2 | — | — | 507 | 17 |
| 2-3 | 19 | 33 | 533 | 1 | — | — | 586 | 13 |
| 3-4 | 15 | 28 | 480 | — | — | — | 523 | 24 |
| 4-5 | 15 | 92 | 372 | — | — | — | 479 | 25 |
| 5-6 | 17 | 100 | 359 | 2 | — | — | 478 | 21 |
| 6-7 | 32 | 43 | 272 | — | — | 1 | 348 | 22 |
| 7-8 | 18 | 31 | 263 | 1 | — | — | 313 | 19 |
| 8-9 | 8 | 17 | 271 | 2 | — | — | 298 | 18 |
| 9-10 | 27 | 46 | 321 | — | — | — | 394 | 21 |
| 10-11 | 38 | 44 | 209 | — | — | — | 291 | 20 |
| 11-12 | 26 | 53 | 185 | 5 | — | — | 269 | 20 |
| 0-1 p.m. | 34 | 142 | 166 | 2 | — | — | 344 | 22 |
| 1-2 | 24 | 41 | 132 | — | — | 1 | 198 | 28 |
| 2-3 | 23 | 28 | 112 | — | — | — | 163 | 17 |
| 3-4 | 28 | 69 | 58 | — | — | — | 155 | 25 |
| 4-5 | 35 | 72 | 129 | — | — | — | 236 | 27 |
| 5-6 | 48 | 40 | 207 | 2 | — | — | 297 | 32 |
| 6-7 | 12 | 37 | 158 | 3 | — | — | 210 | 31 |
| 7-8 | 18 | 39 | 135 | 4 | — | — | 196 | 41 |
| 8-9 | 13 | 25 | 273 | — | — | — | 311 | 13 |
| 9-10 | 17 | 12 | 483 | 1 | — | — | 513 | 15 |
| 10-11 | 40 | 28 | 511 | — | — | — | 579 | 17 |
| 11-12 | 16 | 30 | 650 | — | — | — | 696 | 19 |
| Sum. | 577 | 1111 | 7126 | 31 | — | 2 | 8847 | 523 |

TABLE XIX. DAILY NUMBER OF THE EXPLOSIONS IN 1913, REGISTERED AT YUNO-TAIRA, ASAMA-YAMA.

The figures enclosed in brackets are the numbers of the A-type earthquakes.

| Month. Day. | V | VI | VII | VIII | IX | X | Sum. |
|----------------|----------|-----------|------|-----------|----------|----------|------------|
| 1 | | | 12 | (1) | 255 | | |
| 2 | | 3 | 3 | (1) | 505 | | |
| 3 | | | | 269 | 3 | | |
| 4 | 1 | | | 1205 | 1 | | |
| 5 | | (1) | 475 | 247 | | | |
| 6 | | | 825 | 260 | | | |
| 7 | (1) | (4) | 41 | 5 | (1) | 1 | |
| 8 | 1 | | 22 | 32 | | | |
| 9 | (1) | | | 2 | | 1 | |
| 10 | | | 6 | 17 | | | |
| 11 | 1; (1) | | 1 | 24 | | | |
| 12 | (2) | | 9 | 158 | | (1) | |
| 13 | 9; (3) | 1; (2) | 4 | 217 | (1) | | |
| 14 | (1) | 1 | | 194 | | | |
| 15 | | | | 171; (1) | | 693 | |
| 16 | 1 | (1) | | 10 | | 1 | |
| 17 | | 1 | | 58 | | 1 | |
| 18 | (2) | 1 | 5 | 3 | | 1; (1) | |
| 19 | | | 2 | 5 | | | |
| 20 | 1; (1) | 1 | | 4 | | 1 | |
| 21 | (1) | 168 | | 23 | 1; (1) | | |
| 22 | | 38 | | 6 | | 1 | |
| 23 | | 218 | | 5 | | | |
| 24 | | 13 | | 5; (2) | | | |
| 25 | 2 | | | 8 | | | |
| 26 | | 2; (1) | 7 | 6 | | | |
| 27 | 1 | | 16 | 269 | (1) | | |
| 28 | 1 | (1) | | 535 | | | |
| 29 | 1 | 3 | | 1 | | | |
| 30 | 1 | | | 4 | | | |
| 31 | | | | 20 | | | |
| Sum. | 20; (13) | 450; (10) | 1428 | 3763; (5) | 765; (4) | 700; (2) | 7126; (34) |

TABLE XX. DAILY NUMBER OF THE ASAMA-YAMA DISTURBANCES IN 1914, REGISTERED AT YUÑO-TAIRA.

(A)....A-type Earthquakes. (B)....Explosions.

| Day. | Month. Type. | V | | VI | | VII | | VIII | | IX | | X | |
|------|-----------------|---|---|----|----|-----|---|------|---|----|---|----|---|
| | | A | B | A | B | A | B | A | B | A | B | A | B |
| 1 | | | | | | | | | | | | 1 | |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | 5 | | | | | | | | | | |
| 6 | | | | | | 2 | | 2 | | | | | |
| 7 | | | | 1 | | | | | | 1 | | | |
| 8 | | | | | | | | | | | | 3 | 1 |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | 1 | | | | | | | |
| 11 | | | | | | 1 | | | | | | | |
| 12 | | | | | | | | 1 | | | | | |
| 13 | | | | | | | | | | 1 | | | |
| 14 | | | 2 | 1 | | 2 | | | | | | 2 | |
| 15 | | 1 | | 1 | | | | | | | | | |
| 16 | | | | | | | | | | 1 | | 2 | |
| 17 | | | | | | 1 | | | | | | | |
| 18 | | 1 | | | | | | | | | | | |
| 19 | | 1 | | | | | | | | | | | |
| 20 | | | | 1 | | | | 1 | | | 1 | | |
| 21 | | | | | 12 | | | | | 3 | | | |
| 22 | | | | | | | | | | 2 | | | 1 |
| 23 | | | | 1 | | | | | | | | | |
| 24 | | 2 | | | | | | | | | | | |
| 25 | | | | 1 | | | 1 | 2 | | | | | |
| 26 | | | | | | | | 2 | | | | 1 | |
| 27 | | | | | | | | | | | | | |
| 28 | | | | | | | | 1 | | | | | |
| 29 | | | | 1 | | | | 2 | | 1 | | 1 | 2 |
| 30 | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | 5 |
| Sum. | | 5 | 7 | 7 | 12 | 7 | 1 | 11 | — | 8 | 2 | 10 | 9 |

TABLE XXI. DAILY NUMBER OF THE NON-ERUPTIVE VOLCANIC EARTHQUAKES IN 1915 AND 1916, REGISTERED AT YUNO-TAIRA, ASAMA-YAMA.

The figure within brackets is the number of the B-type small disturbances.

| Day. | Year Month | 1915. | | | | | 1916 | | | | | | | |
|-------|---------------|-------|----|-----|------|----|------|----|----|-----|------|----|----------|----|
| | | V | VI | VII | VIII | IX | X | V | VI | VII | VIII | IX | X | XI |
| 1 | | | | 1 | | 2 | | | | | | 9 | 1 | 1 |
| 2 | | | | | | 8 | 1 | | | | 2 | | 2; (2) | |
| 3 | | 1 | 3 | | | | | | | | 1 | 2 | | |
| 4 | | 1 | 2 | 1 | | | 2 | 1 | | 2 | | 24 | 1 | |
| 5 | | | | | | 2 | | | 1 | | 1 | | 93 | |
| 6 | | | 1 | | 1 | | | | | | | 3 | 1 | |
| 7 | | | | 1 | 1 | 1 | | | | | | | 1 | |
| 8 | | | | | | | | 1 | | | | 2 | 1 | |
| 9 | | | | 5 | 1 | | 1 | | | | | 1 | 1 | |
| 10 | | 1 | | | | | 2 | | | 2 | 1 | | | |
| 11 | | 3 | | | | 4 | | | | | | | 1 | |
| 12 | | | | | | | 1 | | | | | | | |
| 13 | | | 1 | | | | | | 1 | | | 2 | 1 | |
| 14 | | | | 3 | | | | | | | | 1 | | |
| 15 | | 1 | | 1 | | | | | 3 | 5 | 1 | 1 | 1 | |
| 16 | | | 3 | 1 | | | | 3 | | | | | 3 | |
| 17 | | 1 | | 2 | | 2 | 3 | | | | 3 | 1 | | |
| 18 | | | 1 | 3 | | 2 | 3 | 1 | | | | | | |
| 19 | | | | 1 | 3 | 7 | | | | | | | | |
| 20 | | | 1 | | | 1 | | 1 | 1 | 1 | | | | |
| 21 | | | | | 2 | | | | | 1 | 1 | 3 | | |
| 22 | | 2 | | | | | | | 1 | | | 1 | | |
| 23 | | | | | | | 2 | 1 | | | | | | |
| 24 | | | 2 | 1 | 1 | | | | 2 | | 1 | | | |
| 25 | | | | | 1 | | 3 | 1 | | | 1 | 2 | | |
| 26 | | | | | 1 | | 1 | 2 | | 1 | | 1 | | |
| 27 | | 1 | | | | | | | | 9 | | 1 | | |
| 28 | | | | | 1 | | | | | 1 | | 1 | | |
| 29 | | 1 | | 1 | | | 1 | 1 | | | | | 1 | |
| 30 | | | 2 | | | | | 2 | | | 2 | | | |
| 31 | | | | | 2 | | | | | | 7 | | | |
| Sumi. | | 12 | 16 | 21 | 14 | 29 | 17 | 14 | 5 | 21 | 25 | 55 | 108; (2) | 1 |

TABLE XXII. HOURLY NUMBER OF THE EXPLOSIONS IN MAY TO OCTOBER, 1913, REGISTERED AT YUNO-TAIRA, ASAMA-YAMA.

The figures within brackets are the numbers of the A-type earthquakes.

| Day. Hour. | May, 1913. | | | | | | | | | | | |
|---------------|------------|-----|---|-----|--------|-----|--------|-----|----|-----|--------|-----|
| | 4 | 7 | 8 | 9 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 21 |
| 0-1 a.m. | | | | (1) | | | | | | | | |
| 1-2 | | | | | | | | | | | 1 | |
| 2-3 | | | | | | | | | | | | |
| 3-4 | | | 1 | | | | (1) | | | | | (1) |
| 4-5 | | | | | 1 | (2) | | | | | | |
| 5-6 | | | | | | | | | | | | |
| 6-7 | | | | | | | | | | | | |
| 7-8 | | | | | | | | | | | | |
| 8-9 | | | | | | | | | | | | |
| 9-10 | | | | | | | 1 | | | | | |
| 10-11 | | | | | | | 6; (1) | | | | | |
| 11-12 | | | | | | | 1 | | | | | |
| 0-1 p.m. | | | | | (1) | | | | | | | |
| 1-2 | | | | | | | 1 | | | | | |
| 2-3 | | | | | | | | | | (1) | | |
| 3-4 | | | | | | | | | | | | |
| 4-5 | | | | | | | | | 1 | | | |
| 5-6 | | | | | | | | (1) | | | | |
| 6-7 | | (1) | | | | | | | | | | |
| 7-8 | | | | | | | | | | | | |
| 8-9 | | | | | | | | | | (1) | (1) | |
| 9-10 | | | | | | | | | | | | |
| 10-11 | | | | | | | (1) | | | | | |
| 11-12 | 1 | | | | | | | | | | | |
| Sum. | 1 | (1) | 1 | (1) | 1; (1) | (2) | 9; (3) | (1) | 1 | (2) | 1; (1) | (1) |

| Day. Hour. | May, 1913. | | | | | June, 1913. | | | | | | |
|---------------|------------|----|----|----|----|-------------|-----|-----|--------|----|-----|----|
| | 25 | 27 | 28 | 29 | 30 | 2 | 5 | 7 | 13 | 14 | 16 | 17 |
| 0-1 a.m. | | | | | | 3 | | | | | | |
| 1-2 | | | | | | | | | | | | |
| 2-3 | | | | | | | | | | | | |
| 3-4 | | | | | | | | | | | | |
| 4-5 | | | | | | | (1) | | | 1 | | |
| 5-6 | | 1 | | | | | | | | | | |
| 6-7 | | | | | | | | | | | | |
| 7-8 | | | | | | | | | | | | |
| 8-9 | | | | | | | | | | | | |
| 9-10 | | | | | | | | | | | | |
| 10-11 | | | | 1 | | | | | (1) | | | |
| 11-12 | | | | | | | | (4) | | | | |
| 0-1 p.m. | | | | | | | | | | | | |
| 1-2 | | | | | | | | | | | | |
| 2-3 | | | | | | | | | | | | |
| 3-4 | 2 | | | | | | | | | | | |
| 4-5 | | | | | | | | | | | | |
| 5-6 | | | | | | | | | | | | |
| 6-7 | | | | | 1 | | | | | | | |
| 7-8 | | | | | | | | | (1) | | | |
| 8-9 | | | 1 | | | | | | | | (1) | 1 |
| 9-10 | | | | | | | | | | | | |
| 10-11 | | | | | | | | | | | | |
| 11-12 | | | | | | | | | 1 | | | |
| Sum. | 2 | 1 | 1 | 1 | 1 | 3 | (1) | (4) | 1; (2) | 1 | (1) | 1 |

| Day. Hour. | June, 1913. | | | | | | | | | July, 1913. | | |
|---------------|-------------|----|-----|----|-----|----|--------|-----|----|-------------|---|-----|
| | 18 | 20 | 21 | 22 | 23 | 24 | 26 | 28 | 29 | 1 | 2 | 5 |
| 0-1 a.m. | | | | 22 | | 4 | | | | | | |
| 1-2 | | | | 7 | | 3 | | | | | | |
| 2-3 | | | | 4 | | | | | | | | |
| 3-4 | | | | 4 | | 1 | | | | | | |
| 4-5 | | 1 | | 1 | | | | | | | | |
| 5-6 | | | | | | | | | | | | |
| 6-7 | 1 | | | | | | | (1) | | | | |
| 7-8 | | | | | | | | | | | | |
| 8-9 | | | | | | | 1 | | | | | |
| 9-10 | | | | | | | | | | | | |
| 10-11 | | | | | | | | | 1 | | | |
| 11-12 | | | | | | 3 | | | | | | |
| 0-1 p.m. | | | | | 1 | | | | | 10 | | |
| 1-2 | | | | | 9 | | | | | 2 | | |
| 2-3 | | | 6 | | 5 | | | | | | | |
| 3-4 | | | 3 | | 2 | | | | | | | 7 |
| 4-5 | | | 11 | | 12 | | | | | | | 20 |
| 5-6 | | | 7 | | 24 | | | | 1 | | | 17 |
| 6-7 | | | 4 | | 19 | | | | | | | 19 |
| 7-8 | | | 10 | | 16 | | | | | | 2 | 31 |
| 8-9 | | | 31 | | 39 | | | | | | 1 | 69 |
| 9-10 | | | 34 | | 39 | | | | 1 | | | 138 |
| 10-11 | | | 28 | | 40 | | | | | | | 90 |
| 11-12 | | | 34 | | 12 | 2 | 1; (1) | | | | | 84 |
| Sum. | 1 | 1 | 163 | 38 | 218 | 13 | 2; (1) | (1) | 3 | 12 | 3 | 475 |

| Day. Hour. | July, 1913. | | | | | | | | | | | Aug. 1913. |
|---------------|-------------|----|----|----|----|----|----|----|----|----|----|---------------|
| | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 18 | 19 | 26 | 27 | 1 |
| 0-1 a.m. | 40 | 4 | | | | | | | | | | |
| 1-2 | 62 | | | | | | | | | | | |
| 2-3 | 85 | | | | | | | 4 | | | | |
| 3-4 | 51 | | | | | | | | | | | |
| 4-5 | 80* | 3 | | | | | | | 1 | | | (1) |
| 5-6 | 66 | 25 | 4 | | | | | | | | | |
| 6-7 | 61 | 3 | 4 | | | | | | | | | |
| 7-8 | 48 | 2 | | | | | 1 | | | | | |
| 8-9 | 73 | | 11 | | | | | | | 1 | | |
| 9-10 | 56 | | | 1 | 1 | | | 1 | | 5 | | |
| 10-11 | 50 | | | | | | | | | | | |
| 11-12 | 79 | | | | | | | | | | | |
| 0-1 p.m. | 41 | | | | | | | | 1 | | 1 | |
| 1-2 | 11 | | | | | 5 | | | | | 11 | |
| 2-3 | 5 | | | | | | | | | | | |
| 3-4 | 4 | | | | | | | | | | 1 | |
| 4-5 | 8 | | | | | 1 | 3 | | | 1 | 1 | |
| 5-6 | 3 | | 1 | 2 | | 3 | | | | | | |
| 6-7 | 1 | 1 | 2 | | | | | | | * | | |
| 7-8 | | | | 3 | | | | | | | | |
| 8-9 | | 2 | | | | | | | | | | |
| 9-10 | | 1 | | | | | | | | | | |
| 10-11 | 1 | | | | | | | | | | 1 | |
| 11-12 | | | | | | | | | | | 1 | |
| Sum. | 825 | 41 | 22 | 6 | 1 | 9 | 4 | 5 | 2 | 7 | 16 | (1) |

| Day. Hour. | August, 1913. | | | | | | | | | | | |
|---------------|---------------|-----|------|-----|-----|---|----|---|----|----|-----|-----|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 0-1 a.m. | | | 89 | 37 | 82 | | | | | | | 1 |
| 1-2 | | | 76 | 32 | 59 | | | | 1 | | | |
| 2-3 | | | 119 | 19 | 87 | | | | | | | |
| 3-4 | | | 114 | | 25 | | 1 | | | | | |
| 4-5 | | | 85 | | 2 | | | | | | | 1 |
| 5-6 | | | 87 | | 3 | | 1 | | | 4 | 12 | |
| 6-7 | | | 60 | 2 | | | 1 | | | | | |
| 7-8 | | | 61 | 7 | | 2 | | | | | | |
| 8-9 | (1) | | 82 | 3 | | | 6 | 1 | | | | |
| 9-10 | | | 67 | 1 | | | | 1 | | | | 49 |
| 10-11 | | | 40 | 13 | 1 | | | | | | | |
| 11-12 | | | 3 | 1 | | | | | | | 3 | |
| 0-1 p.m. | | | 1 | 1 | | | | | | 14 | 1 | 8 |
| 1-2 | | | | | | | | | 16 | | 37 | 8 |
| 2-3 | | | 51 | 4 | | 2 | | | | | | |
| 3-4 | | | 10 | 8 | | | | | | | | |
| 4-5 | | | | 2 | | | 2 | | | | 1 | |
| 5-6 | | | | 5 | | | | | | | | 49 |
| 6-7 | | | | | | | 15 | | | 2 | | 78 |
| 7-8 | | 10 | 4 | | | | 5 | | | 1 | 5 | 1 |
| 8-9 | | 56 | | | | | 1 | | | 1 | | |
| 9-10 | | 20 | 70 | | 1 | | | | | | | 5 |
| 10-11 | | 80 | 91 | 16 | | | | | | 2 | | 6 |
| 11-12 | | 103 | 92 | 96 | | 1 | | | | | 97 | 13 |
| Sum. | (1) | 269 | 1205 | 247 | 260 | 5 | 32 | 2 | 17 | 24 | 158 | 217 |

| Day. Hour. | August, 1913. | | | | | | | | | | | |
|---------------|---------------|----------|----|----|----|----|----|----|----|----|--------|----|
| | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 0-1 a.m. | 2 | | | | | | | | | | | |
| 1-2 | | | | 1 | 1 | | | | | | | 1 |
| 2-3 | 2 | | | 2 | 1 | | | | | | | 1 |
| 3-4 | 6 | | | 1 | | 1 | 1 | 1 | | | | 1 |
| 4-5 | 5 | | 1 | 3 | | 1 | 1 | | | | | |
| 5-6 | 6 | | 1 | 3 | | | 1 | | | | | 1 |
| 6-7 | 13 | | 5 | 7 | | | | | | | | |
| 7-8 | 59 | 1 | | 2 | | | | | | | | |
| 8-9 | 1 | 2 | | 12 | | 2 | | | | | | |
| 9-10 | 3 | 16; (1) | | 12 | | | | | | | 4 | 1 |
| 10-11 | | 9 | | 1 | | | | | 1 | | | |
| 11-12 | 17 | 1 | | 1 | | 1 | | | 1 | 1 | | 1 |
| 0-1 p.m. | 12 | 1 | | 3 | | | | | | | | |
| 1-2 | 3 | | | | | | | 3 | | | | |
| 2-3 | 37 | 2 | | | | | | | | | | |
| 3-4 | 1 | 12 | | 1 | 1 | | | | | | | |
| 4-5 | | 51 | | 1 | | | | 12 | 2 | | | |
| 5-6 | 19 | 59 | | 1 | | | | 7 | 1 | | | |
| 6-7 | | 7 | | 1 | | | 1 | | | | | 1 |
| 7-8 | 8 | 10 | | 1 | | | | | | | | 1 |
| 8-9 | | | | 1 | | | | | | | 2; (2) | |
| 9-10 | | | | 1 | | | | | 1 | | | |
| 10-11 | | | 1 | 1 | | | | | | | | 1 |
| 11-12 | | | 2 | 2 | | | | | | | | 1 |
| Sum. | 194 | 171; (1) | 10 | 58 | 3 | 5 | 4 | 23 | 6 | 5 | 5; (2) | 8 |

| Day. Hour. | August, 1913. | | | | | | September, 1913. | | | | | |
|---------------|---------------|-----|-----|----|----|----|------------------|-----|---|---|-----|-----|
| | 26 | 27 | 28 | 29 | 30 | 31 | 1 | 2 | 3 | 4 | 7 | 13 |
| 0-1 a.m. | | | 41 | | | | 1 | 88 | | | | |
| 1-2 | | | 87 | | | | | 100 | | | | |
| 2-3 | | | 123 | | | | | 85 | | | | |
| 3-4 | | | 158 | | | 1 | | 98 | | | | |
| 4-5 | | | 90 | | | 2 | | 19 | | | | |
| 5-6 | | | 31 | | | | | 41 | | | | |
| 6-7 | | | 2 | | | | | 49 | | | 1 | |
| 7-8 | 1 | | | | | | | 21 | | | | |
| 8-9 | | | | | | | 1 | | 3 | | | |
| 9-10 | | | | | | | 5 | | | | | |
| 10-11 | 1 | | | | | | | 2 | | | | |
| 11-12 | | | | | | | | 2 | | | | |
| 0-1 p.m. | 2 | | 1 | | | | | | | | | |
| 1-2 | | | | | | | | | | | | |
| 2-3 | | | | | | | | | | | | |
| 3-4 | | | | | 1 | | 4 | | | | | |
| 4-5 | | | | | | | | | | | | |
| 5-6 | | 1 | | | | | 7 | | | | | |
| 6-7 | | 2 | 1 | | | | 2 | | | | | |
| 7-8 | 1 | 25 | | | | 1 | | | | | (1) | |
| 8-9 | | 65 | 1 | | | | 3 | | | | | |
| 9-10 | | 89 | | | | | 82 | | | | | (1) |
| 10-11 | | 54 | | | | | 1 | 96 | | | | |
| 11-12 | 1 | 33 | | | | | 73 | | | | | |
| Sum. | 6 | 269 | 535 | 1 | 4 | 20 | 255 | 505 | 3 | 1 | (1) | (1) |

| Day. Hour. | Sept., 1913 | | October, 1913. | | | | | | | | |
|---------------|-------------|-----|----------------|---|-----|-----|----|----|--------|----|----|
| | 21 | 27 | 7 | 9 | 12 | 15 | 16 | 17 | 18 | 20 | 22 |
| 0-1 a.m. | | | | | | | | | (1) | | |
| 1-2 | (1) | | | 1 | | | | 1 | | | |
| 2-3 | | | | | | 1 | | | | | |
| 3-4 | | | | | | 14 | | | | | 1 |
| 4-5 | | | | | | 70 | | | 1 | | |
| 5-6 | | | | | | 72 | | | | | |
| 6-7 | | | | | | 63 | | | | | |
| 7-8 | | | | | | 53 | | | | | |
| 8-9 | | | | | | 72 | | | | | |
| 9-10 | | | | | (1) | 97 | | | | | |
| 10-11 | | | | | | 82 | | | | 1 | |
| 11-12 | | | 1 | | | 69 | | | | | |
| 0-1 p.m. | | | | | | 68 | | | | | |
| 1-2 | 1 | | | | | 25 | | | | | |
| 2-3 | | | | | | | | | | | |
| 3-4 | | | | | | | | 1 | | | |
| 4-5 | | | | | | | | | | | |
| 5-6 | | | | | | | | | | | |
| 6-7 | | | | | | 1 | | | | | |
| 7-8 | | | | | | | | | | | |
| 8-9 | | | | | | | | | | | |
| 9-10 | | (1) | | | | | | | | | |
| 10-11 | | | | | | 1 | | | | | |
| 11-12 | | | | | | | | | | | |
| Sum. | 1; (1) | (1) | 1 | 1 | (1) | 693 | 1 | 1 | 1; (1) | 1 | 1 |

TABLE XXIII. DAILY MEAN BAROMETRIC PRESSURE AT YUNO-TAIRA (ASAMA-YAMA). Reduced to 0°C.

| Month. Day. | 1913. | | | | | | 1914. | | | | | | |
|----------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| | V | VI | VII | VIII | IX | X | V | VI | VII | VIII | IX | X | |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | |
| 1 | | 606.8 | 602.5 | 604.4 | | 649.2 | 605.8 | 606.2 | 607.7 | 603.3 | 610.0 | 597.5 | |
| 2 | | | 604.4 | 605.8 | 604.3 | | 648.1 | 602.2 | 605.3 | 606.7 | 601.9 | 609.9 | 605.0 |
| 3 | 602.8 | 600.4 | 605.2 | 603.0 | | 640.9 | 603.1 | 601.1 | 605.8 | 601.0 | 609.7 | 605.7 | |
| 4 | 605.0 | 598.4 | 598.2 | 603.2 | | 613.8 | 606.4 | 600.1 | 603.2 | 601.8 | 609.6 | 605.6 | |
| 5 | 605.7 | 600.4 | 599.0 | 602.8 | | 650.4 | 604.0 | 600.3 | 601.2 | 604.7 | 609.6 | 605.9 | |
| 6 | 603.3 | 599.7 | 601.0 | 602.8 | | 652.8 | 604.0 | 600.9 | 599.5 | 608.7 | 609.3 | 606.0 | |
| 7 | 601.4 | 600.8 | 602.8 | 603.6 | | 651.7 | 601.8 | 602.1 | 602.1 | 610.4 | 608.5 | 605.5 | |
| 8 | 599.2 | 604.9 | 603.3 | 603.7 | | 647.9 | 602.4 | 599.1 | 604.0 | 609.8 | 608.5 | 600.6 | |
| 9 | 598.2 | 607.0 | 602.9 | 603.7 | | 646.2 | 603.7 | 596.2 | 603.4 | 609.8 | 608.6 | 600.6 | |
| 10 | 594.3 | 605.6 | 603.5 | 603.5 | | 649.1 | 604.0 | 599.7 | 603.1 | 609.9 | 609.1 | 600.2 | |
| 11 | 600.7 | 604.4 | 604.8 | 602.9 | 647.7* | 650.6 | 603.4 | 601.5 | 604.3 | 608.9 | 608.5 | 600.4 | |
| 12 | 601.1 | 603.1 | 607.2 | 601.5 | 646.3 | 649.0 | 600.1 | 599.4 | 605.0 | 606.3 | 606.6 | 601.7 | |
| 13 | 591.8 | 603.0 | 608.3 | 600.3 | 646.1 | 647.1 | 603.5 | 601.8 | 604.5 | 594.5 | 607.1 | 605.2 | |
| 14 | 594.3 | 602.6 | 606.1 | 599.0 | 645.6 | 646.0 | 601.8 | 605.0 | 603.7 | 603.0 | 603.7 | 605.6 | |
| 15 | 596.7 | 599.1 | 604.7 | 602.6 | — | 641.0 | 600.5 | 606.2 | 604.1 | 604.2 | 602.6 | 606.0 | |
| 16 | 594.9 | 598.9 | 606.1 | 607.0 | 645.8 | 637.1 | 601.3 | 603.8 | 604.1 | 605.0 | 603.5 | 609.1 | |
| 17 | 597.8 | 592.9 | 607.7 | 606.9 | 646.2 | 632.9 | 604.3 | 601.1 | 603.8 | 606.7 | 602.8 | 610.9 | |
| 18 | 600.9 | 598.7 | 607.7 | 601.8 | 647.4 | 637.6 | 608.7 | 601.5 | 601.9 | 607.2 | 605.2 | 608.1 | |
| 19 | 603.2 | 599.1 | 605.5 | 601.1 | 647.6 | 643.5 | 607.0 | 602.8 | 601.8 | 606.8 | 609.4 | 606.0 | |
| 20 | 600.5 | 598.0 | 603.6 | 602.2 | 643.0 | 648.1 | 599.6 | 601.2 | 604.5 | 606.2 | 609.2 | 600.6 | |
| 21 | 599.1 | 598.5 | 603.0 | 602.3 | — | | 599.5 | 605.2 | 606.4 | 606.3 | 608.4 | 601.7 | |
| 22 | 605.1 | 597.5 | 602.6 | 601.6 | 642.8 | | 606.4 | 606.6 | 605.6 | 606.2 | 605.9 | 606.0 | |
| 23 | 604.7 | 601.3 | 602.6 | 603.7 | 643.8 | | 606.0 | 605.8 | 605.8 | 605.5 | 606.1 | 606.6 | |
| 24 | 602.0 | 602.7 | 603.1 | 604.6 | 647.2 | | 601.8 | 602.9 | 606.8 | 603.3 | 607.2 | 608.0 | |
| 25 | 605.5 | 601.9 | 603.8 | 604.7 | 649.9 | | 608.1 | 602.0 | 605.6 | 604.3 | 606.6 | 605.7 | |
| 26 | 605.2 | 604.0 | 603.9 | 603.3 | 649.7 | | 610.7 | 602.6 | 603.3 | 604.0 | 603.6 | 605.5 | |
| 27 | 600.6 | 605.8 | 604.1 | 592.2 | 643.1 | | 603.2 | 603.3 | 603.8 | 606.8 | 603.3 | 606.7 | |
| 28 | 601.0 | 603.0 | 604.9 | 602.9 | 647.9 | | 606.7 | 604.1 | 604.4 | 607.9 | 606.1 | 606.9 | |
| 29 | 603.6 | 600.8 | 604.0 | 605.9 | 646.4 | | 605.7 | 603.4 | 603.6 | 602.3 | 605.7 | 603.7 | |
| 30 | 598.9 | 600.9 | 603.0 | 604.3 | 648.2 | | 603.8 | 607.5 | 604.2 | 604.5 | 602.9 | 605.7 | |
| 31 | 603.7 | — | 603.8 | 603.1 | — | | 603.5 | — | 601.2 | 605.9 | — | 603.3 | |
| Mean. | 600.7 | 601.5 | 604.0 | 602.9 | | | 604.2 | 602.8 | 604.1 | 605.4 | 606.9 | 604.9 | |

* Observed at Ashino-taira, (Asama-yama).

| Month. Day. | 1915. | | | | | | 1916. | | | | | |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | V | VI | VII | VIII | IX | X | V | VI | VII | VIII | IX | X |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1 | 600.4 | 602.6 | 599.4 | 603.7 | 604.7 | 609.5 | 602.0 | 600.8 | 601.9 | 606.1 | 606.9 | 606.1 |
| 2 | 598.8 | 604.6 | 599.8 | 602.2 | 601.5 | 606.7 | 601.7 | 603.0 | 600.1 | 605.9 | 606.0 | 604.7 |
| 3 | 597.1 | 606.9 | 599.6 | 603.1 | 602.1 | 605.9 | 602.5 | 605.5 | 603.7 | 605.0 | 605.7 | 603.3 |
| 4 | 600.3 | 604.5 | 599.2 | 602.6 | 606.6 | 606.3 | 605.4 | 607.3 | 604.3 | 604.2 | 606.5 | 605.2 |
| 5 | 605.8 | 602.7 | 599.1 | 600.2 | 608.1 | 606.2 | 609.6 | 608.1 | 602.7 | 603.8 | 608.3 | 607.7 |
| 6 | 608.2 | 601.0 | 599.3 | 600.4 | 607.5 | 606.4 | 607.7 | 607.2 | 604.3 | 601.2 | 609.2 | 606.4 |
| 7 | 608.4 | 603.3 | 601.1 | 601.0 | 604.9 | 602.7 | 594.1 | 606.9 | 604.0 | 601.0 | 608.0 | 605.8 |
| 8 | 607.8 | 604.3 | 602.1 | 600.3 | 600.7 | 597.3 | 593.3 | 607.4 | 603.2 | 601.6 | 607.8 | 608.2 |
| 9 | 606.4 | 602.2 | 600.3 | 599.5 | 601.5 | 599.2 | 601.6 | 607.9 | 603.7 | 600.5 | 606.8 | 608.3 |
| 10 | 602.7 | 604.4 | 601.4 | 599.6 | 603.8 | 604.3 | 599.4 | 606.3 | 605.0 | 600.3 | 604.8 | 605.8 |
| 11 | 590.7 | 603.4 | 601.9 | 599.7 | 603.7 | 608.0 | 603.2 | 603.9 | 604.3 | 602.7 | 602.4 | 606.1 |
| 12 | 589.8 | 604.5 | 601.2 | 600.4 | 604.3 | 601.3 | 601.4 | 602.2 | 605.1 | 604.5 | 605.5 | 606.8 |
| 13 | 594.7 | 606.3 | 602.9 | 601.6 | 604.3 | 600.2 | 603.3 | 602.6 | 603.5 | 603.8 | 607.3 | 602.2 |
| 14 | 600.5 | 607.2 | 606.1 | 601.7 | 605.6 | 603.0 | 603.5 | 604.6 | 602.8 | 603.5 | 606.5 | 605.0 |
| 15 | 605.2 | 608.6 | 609.9 | 602.6 | 606.4 | 606.5 | 606.2 | 604.0 | 604.1 | 606.0 | 608.6 | 604.4 |
| 16 | 603.2 | 608.5 | 610.8 | 603.8 | 608.5 | 610.1 | 608.7 | 602.0 | 605.7 | 605.3 | 610.5 | 601.2 |
| 17 | 595.1 | 606.6 | 610.1 | 603.8 | 609.4 | 606.7 | 605.9 | 601.0 | 606.9 | 603.8 | 609.8 | 604.7 |
| 18 | 600.7 | 606.6 | 608.1 | 604.9 | 609.9 | 600.1 | 601.6 | 604.4 | 607.6 | 602.1 | 608.2 | 606.9 |
| 19 | 596.7 | 606.0 | 607.6 | 605.6 | 608.6 | 603.0 | 599.8 | 607.0 | 607.2 | 599.0 | 607.5 | 605.8 |
| 20 | 596.8 | 606.6 | 608.2 | 606.1 | 607.0 | 607.9 | 600.3 | 604.9 | 607.1 | 600.5 | 608.3 | 604.0 |
| 21 | 603.8 | 607.3 | 609.4 | 606.8 | 604.4 | 607.6 | 602.8 | 604.4 | 607.1 | 601.0 | 608.0 | 608.0 |
| 22 | 602.6 | 607.1 | 608.1 | 606.3 | 605.5 | 604.7 | 603.0 | 605.8 | 606.2 | 605.0 | 606.7 | 609.5 |
| 23 | 599.9 | 603.8 | 606.8 | 605.4 | 606.5 | 605.5 | 604.8 | 605.0 | 606.8 | 605.9 | 607.3 | 607.1 |
| 24 | 600.2 | 602.7 | 606.4 | 605.2 | 606.5 | 606.4 | 605.3 | 602.2 | 607.5 | 606.6 | 609.5 | 605.7 |
| 25 | 603.7 | 599.1 | 607.1 | 605.7 | 604.6 | 607.4 | 599.0 | 601.5 | 607.1 | 606.9 | 608.5 | 605.3 |
| 26 | 601.8 | 599.7 | 606.5 | 602.4 | 603.7 | 605.5 | 602.9 | 598.6 | 604.5 | 606.7 | 607.5 | 608.4 |
| 27 | 597.6 | 603.2 | 607.0 | 598.7 | 604.7 | 603.6 | 600.5 | 599.4 | 602.7 | 606.0 | 604.4 | 610.5 |
| 28 | 599.7 | 602.9 | 606.0 | 599.3 | 610.1 | 603.8 | 601.3 | 600.7 | 602.2 | 605.8 | 599.5 | 611.0 |
| 29 | 602.7 | 596.5 | 606.1 | 601.6 | 611.8 | 610.1 | 602.6 | 603.7 | 600.5 | 605.9 | 602.2 | 608.0 |
| 30 | 602.4 | 598.4 | 605.8 | 604.9 | 609.4 | 607.1 | 603.3 | 604.5 | 600.6 | 606.6 | 606.1 | 601.6 |
| 31 | 600.5 | — | 604.9 | 604.5 | — | 602.1 | 599.8 | — | 605.0 | 607.2 | — | 603.6 |
| Mean. | 600.8 | 604.1 | 604.6 | 602.7 | 605.8 | 605.0 | 602.5 | 604.1 | 604.4 | 604.1 | 606.8 | 606.0 |