## KODAIKANAL SOLAR AND GEOMAGNETIC DATA, JANUARY-MARCH 1952

Curves showing (a) Kodaikanal daily relative sunspot numbers, (b) daily areas of calcium prominences and (c) daily areas of H-alpha dark markings are given on page 223. Tables 1 to 4 below summarise the data on solar and geomagnetic phenomena.

**TABLE 1**

**Prominent sunspot groups**

| Kodaikanal Serial No. of group | Mean latitude | Date of central meridian passage | Total area (millionths of the Sun's visible hemisphere) at central meridian passage |
|---|---|---|---|
| 9825 | 6°N | January 15 | 390 |
| 9839 | 11°S | February 18 | 380 |

**TABLE 2**

**Solar Flares**

| Date | Time in GMT | | | Co-ordinates | | Estimated maximum intensity | Maximum width of H-alpha line observed |
|---|---|---|---|---|---|---|---|
| | Beg. *h m* | Max. *h m* | End. *h m* | Mean latitude | Mean longitude | | Å |
| January 12 | 05 50 | 06 21 | 06 45 | 10°N | 50°E | 2 | 1·9 |
| January 26 | 04 15 | — | 04 30 | 10°S | 32°E | 1 | 1·6 |
| March 14 | 03 25 | — | 03 30 | 12°S | 30°E | 1 | 1·0 |
| March 15 | 02 00 | — | 02 25 | 11°S | 16°E | 1 | 1·7 |

TABLE 3

Sudden disappearance of prominences and H-alpha dark markings

| Nature of phenomenon | Date and time (GMT) of phenomenon when last seen | Co-ordinates of phenomenon | | Remarks |
|---|---|---|---|---|
| | | Mean latitude | Mean longitude | |
| H-alpha dark marking | January 12 0530 | 12°N | 55°E | — |
| Prominence | January 22 0901 | 35°S | 90°E | Disappeared by 24th |
| Prominence | February 1 | 28°N | 90°E | — |
| H-alpha dark marking | February 16 0843 | 28°N | Central meridian | Disappeared by next day |
| H-alpha dark marking | February 19 0216 | 7°S | 57°E | Do. |

TABLE 4

Principal magnetic storms

| Greenwich date 1952 | Storm-time | | | | Sudden commencement | | | | Degree of activity [4] | Maximal activity Greenwich day | Ranges | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GMT of begin. | | GMT of ending [1] | | Type [2] | Amplitude [3] | | | | | | | |
| | | | | | | *D* | *H* | *Z* | | | *D* | *H* | *Z* |
| | *h* | *m* | *d* | *h* | | ′ | γ | γ | | | ′ | γ | γ |
| January 27 | 04 | 14 | 28 | 18 | ... | ... | ... | ... | ms | 27 | 1 | 272 | 55 |
| January 29 | 06 | 24 | 30 | 15 | ... | ... | ... | ... | m | 29 | 2 | 174 | 42 |
| February 1 | 06 | 00 | 1 | 21 | ... | ... | ... | ... | m | 1 | 1 | 186 | 55 |
| February 5 | 23 | 30 | 14 | 21 | ... | ... | ... | ... | m | 6 | 2 | 192 | 56 |
| February 16 | 00 | 30 | 17 | 03 | . . | ... | ... | ... | m | 16 | 2 | 242 | 63 |
| February 23 | 21 | 22 | 24 | 19 | s.c. | —1 | +24 | +12 | m | 24 | 3 | 173 | 52 |
| February 26 | 01 | 50 | 27 | 21 | ... | ... | ... | ... | m | 26 | 3 | 212 | 60 |
| March 3 | 07 | 26 | 10 | 09 | s.c. | | +20 | +9 | m | 3 | 3 | 194 | 60 |
| March 21 | 03 | 30 | 22 | 09 | ... | ... | ... | ... | ms | 21 | 2 | 260 | 71 |

The following symbols and conventions have been used according to recognised practice—

1. Approximate time of ending of storm construed as the time of cessation of reasonably marked disturbance movements in the traces
2. s.c. = Sudden commencement ... = Gradual commencement
3. Signs of amplitudes of *D* and *Z* taken algebraically;
   (*D*— reckoned negative being westerly)
   (*Z*—reckoned positive being vertically downwards)
4. Storm described by three degrees of activity:
   m—for moderate (when range is between 150 γ and 250 γ);
   ms—for moderately severe (when range is between 251 γ and 400 γ);
   s—for severe (when range is above 400 γ).

*Kodaikanal*
*1 May 1952*

A. K. DAS
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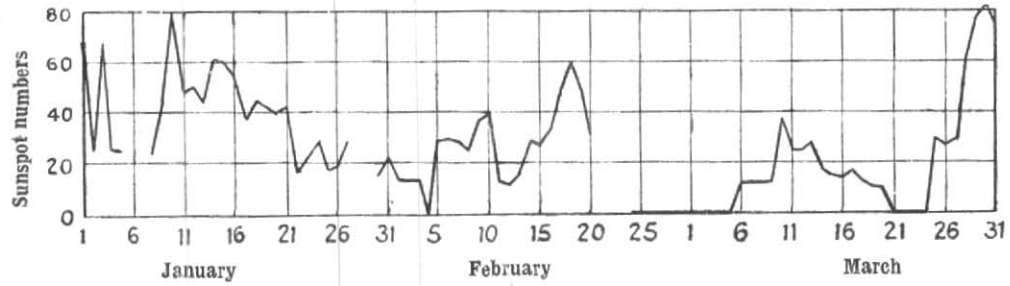


Fig. 1 (a) Kodaikanal daily relative sunspot numbers

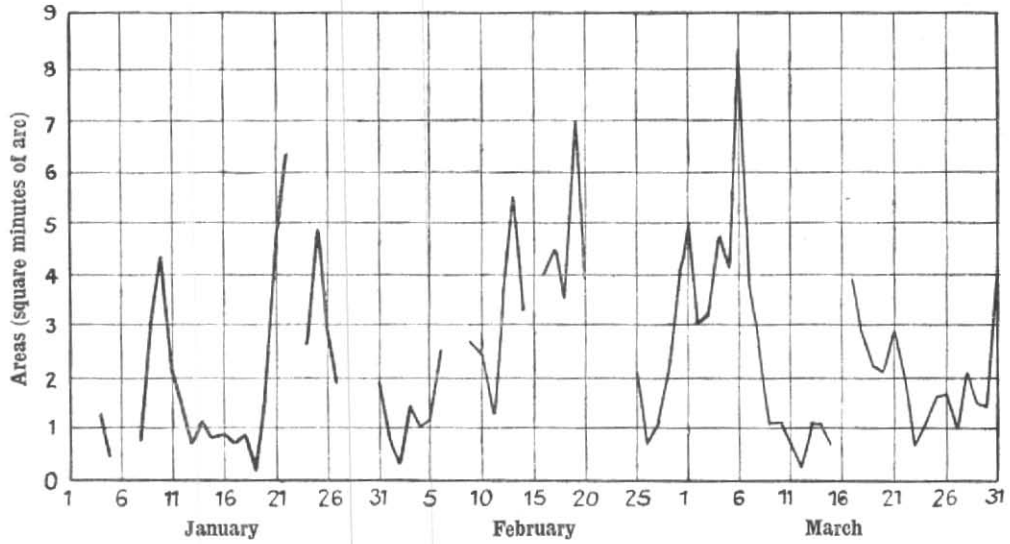


Fig. 1 (b) Daily areas of calcium prominences

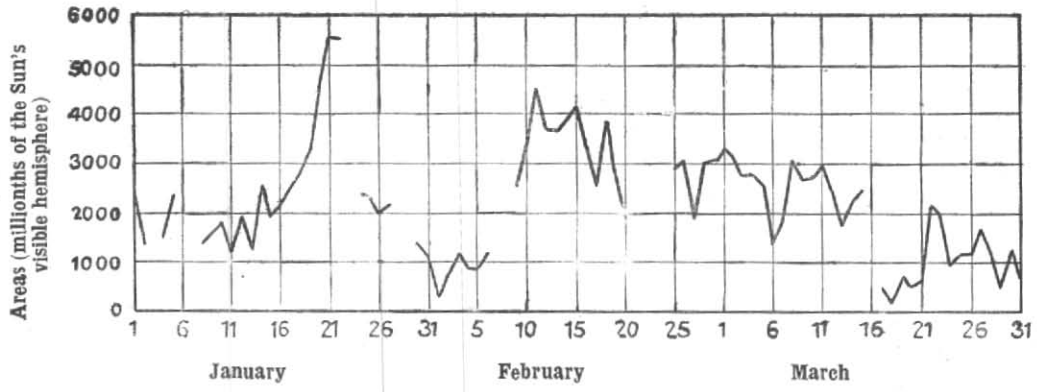


Fig. 1 (c) Daily areas of H-alpha dark markings

Note : Breaks in the graphs are due to lack of observations

## MAGNETIC OBSERVATORY, ALIBAG (BOMBAY)

### Three-hourly indices of Geomagnetic Activity

(Scale values of variometers in γ mm·
K9 = 300γ) D = 11·3 ; H = 4·4 ; Z = 2·5)

| Greenwich Day | JANUARY 1952 | | | | FEBRUARY 1952 | | | | MARCH 1952 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | K-indices | | Sum | Character of the day* | K-indices | | Sum | Character of the day* | K-indices | | Sum | Character of the day* |
| 1 | 2222 | 1231 | 15 | S | 2236 | 5543 | 30 | Ma | 2222 | 3321 | 17 | S |
| 2 | 0111 | 2232 | 12 | Ca | 2222 | 2221 | 15 | S | 1112 | 1111 | 9 | Ca |
| 3 | 2221 | 2143 | 17 | S | 1211 | 2121 | 11 | Ca | 1132 | 6465 | 28 | G |
| 4 | 2113 | 3334 | 20 | Sa | 2111 | 1121 | 10 | Ca | 4345 | 4552 | 32 | Ma |
| 5 | 4544 | 3423 | 29 | Sa | 1121 | 2112 | 11 | Ca | 2445 | 5655 | 36 | M |
| 6 | 2322 | 3532 | 22 | Sa | 2435 | 4656 | 35 | Ma | 5444 | 4344 | 32 | M |
| 7 | 2221 | 5533 | 23 | Sa | 2344 | 4444 | 29 | M | 2325 | 5545 | 31 | M |
| 8 | 1213 | 2311 | 14 | S | 2242 | 4452 | 25 | M | 3324 | 4554 | 30 | M |
| 9 | 0342 | 2443 | 21 | Sa | 2212 | 4542 | 22 | Sa | 4243 | 3544 | 29 | Sa |
| 10 | 2343 | 2443 | 25 | Sa | 1222 | 2454 | 22 | M | 2332 | 4532 | 24 | Sa |
| 11 | 3324 | 5432 | 26 | Sa | 4224 | 4343 | 26 | M | 2223 | 4442 | 23 | Sa |
| 12 | 3333 | 4544 | 29 | Sa | 2324 | 4443 | 26 | Sa | 2222 | 4242 | 20 | Sa |
| 13 | 2325 | 5453 | 29 | M | 3212 | 3444 | 23 | Sa | 2112 | 2213 | 14 | Ca |
| 14 | 2232 | 3443 | 23 | Sa | 2222 | 3332 | 19 | Sa | 1212 | 1101 | 9 | Ca |
| 15 | 2122 | 4533 | 22 | M | 1122 | 1111 | 10 | Ca | 1211 | 3443 | 19 | Sa |
| 16 | 2222 | 2233 | 18 | Sa | 3465 | 5444 | 35 | Ma | 2343 | 2222 | 20 | Sa |
| 17 | 1111 | 1122 | 10 | Ca | 3123 | 3221 | 17 | Sa | 2222 | 4522 | 21 | Sa |
| 18 | 1111 | 1111 | 8 | Ca | 2212 | 3233 | 18 | S | 2232 | 3211 | 16 | S |
| 19 | 1111 | 2231 | 12 | Ca | 3233 | 3353 | 25 | Sa | 1111 | 1321 | 11 | Ca |
| 20 | 0112 | 1132 | 11 | Ca | 1211 | 2211 | 11 | Ca | 0111 | 1112 | 8 | Ca |
| 21 | 1112 | 2221 | 12 | Ca | 1111 | 2221 | 11 | Ca | 3563 | 5444 | 34 | Ma |
| 22 | 1211 | 1223 | 13 | Ca | 1111 | 1131 | 10 | Ca | 4222 | 1332 | 19 | S |
| 23 | 2222 | 4334 | 22 | S | 1111 | 1115 | 12 | Ma | 3233 | 2454 | 26 | M |
| 24 | 2212 | 4322 | 18 | S | 6335 | 5553 | 35 | Ma | 4434 | 3333 | 27 | M |
| 25 | 2223 | 4331 | 20 | S | 2211 | 4111 | 13 | Sa | 2243 | 3332 | 22 | Sa |
| 26 | 1122 | 3322 | 16 | S | 3333 | 2443 | 25 | Ma | 2211 | 2342 | 17 | Sa |
| 27 | 2355 | 6543 | 33 | G | 2443 | 2344 | 26 | M | 1333 | 3312 | 19 | S |
| 28 | 2432 | 3422 | 22 | Sa | 2344 | 4241 | 24 | Sa | 1211 | 1111 | 9 | Ca |
| 29 | 1123 | 4663 | 26 | Ma | 1323 | 4422 | 21 | Sa | 1113 | 2222 | 14 | S |
| 30 | 2222 | 2132 | 16 | S | | | | | 2322 | 5644 | 28 | Ma |
| 31 | 1122 | 4422 | 18 | Sa | | | | | 5353 | 3553 | 32 | M |

* At Bombay, since 1883, a day is classed as (1) a quiet day, or a day of (2) small, (3) moderate, (4) great or (5) very great disturbance, the letters for distinguishing the respective classes being C, S, M, G and VG. For representing intermediate conditions of activity of the smaller period movements, sub-classifications Ca, Sa and Ma are used. Roughly speaking a storm having a range over 225 γ in the variations of the horizontal force during the first twentyfour hours after its commencement is classed as "Very Great". It is "Great" if the range is between 150γ and 225 γ, "Moderate" if the range is between 65 γ and 150 γ and "Small" if the range is less than 65γ. The range is however not the only criterion used in assigning the character of a storm. The oscillations in the magnetograms are duly taken into account in determining the class to which a particular storm should belong.

The corresponding international character figures can be determined from the following—

| Bombay character | International character | Bombay character | International character |
|---|---|---|---|
| C, Ca | 0 | M, Ma | 2 |
| S, Sa | 1 | G, VG | 2 |

*Colaba, Bombay*
*22 May 1952*

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