Prominences.—The year 1939 has witnessed a further fall in prominence activity, very pronounced in the case of the profile areas, which showed an increase in 1938.

The mean daily areas and numbers of calcium prominences as derived from Kodaikanal photographs are as follows :—

	Areas		
	North	South	Total
1939 January to June	2·31	2·33	4·64 sq. mins.
July to December	2·76	2·66	5·42 ,,

Numbers

	North	South	Total
1939 January to June	6·35	6·20	12·55
July to December	7·62	7·04	14·66

There has been a decrease of 39 per cent. in prominence areas and a decrease of 9 per cent. in prominence numbers from the values of the previous year. The activity in the two hemispheres north and south is nearly equal in respect of both areas and numbers. The distribution of areas in latitude showed the maximum activity confined to near latitude 30° in both the hemispheres. In the first half-year there was a peak of activity in the southern hemisphere near latitude 20°, which was obliterated by a greater increase of activity near 30° during the second half-year. The distribution of numbers is nearly uniform from the equator to latitude 50°.

There were 59 metallic prominences observed during 1939, as against 48 in the previous year. Of these, 22 were in the northern hemisphere and 37 in the southern, and all of them were observed from the equator to latitude 33°. Displacements of the hydrogen line in the chromosphere and prominences observed with the spectroscope numbered 451 as against 323 in 1938. Of these 238 were towards the red, 195 towards the violet and 18 both ways simultaneously. The largest displacement noticed was 9 A. to violet.

Bright reversals of the $H\alpha$ line on the Sun's disc observed with the spectroscope in the neighbourhood of sunspots numbered 963 as against 872 in the previous year. The displacements observed in the neighbourhood of sunspots numbered 64, while in 1938 they came to 65. Of these 34 were towards the red, 13 towards the violet and 17 both ways simultaneously. D_3 was observed as a dark line on 720 occasions as compared with 789 during the previous year.

The displacements observed in prominences with the spectrohelioscope numbered 282 as against 187 in the previous year. Of these 140 were in the northern hemisphere and 142 in the southern, and 136 were on the east limb and 146 on the west limb. Displacements to the red numbered 154 and those to the violet 127; there was also one displacement which was seen both to red and violet simultaneously. The largest displacement in prominences observed in 1939 was 4·8 A. to red.

Eruptive prominences on the limb were photographed on February 6, May 2 and 31, September 1 and December 16. The prominences of February 6 on the N.E. limb rose to a height of more than 10′. The prominence of September 1 on the S.E. limb showed the largest displacements of 9 A. to violet at top and 6 A. to red at base. It was connected with an active spot (Kodaikanal No. 7157). A prominence of very large extent was photographed on December 1. Its base extended from 36° N. to 38° S. on the west limb. Its height was only 80″, but the area it covered was nearly 10 square minutes. Other important phenomena noted during the period are the breaking up of $H\alpha$ dark markings. Instances of breaking up of markings were observed on August 26 and September 2 and 12. The last

of these was remarkable inasmuch as a big marking which was observed for a number of days completely disappeared with great suddenness, leaving a bright marking in its place.

The mean daily areas of prominences projected on the disc as hydrogen absorption markings were 9735 millionths of the Sun's visible hemisphere, as against 10161 in 1938. This means a 4 per cent. decrease from the previous year. Their distribution in latitude is nearly similar to that of prominences at the limb, with the peaks very much pronounced. But in the second half of the year the peak near 20°, unlike the prominences, has not subsided but has moved towards the equator by 5°.

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