THE SOLAR FLARE OF 16 SEPTEMBER 1977 IN THE K LINE OF Ca II

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The flare that occurred on 16 September 1977 in Boulder Region 889 was in the sunspot group, Type E with an R value of 55 as estimated at Manila Observatory on 15 September. The weather over Luzon, or the northern part of the Philippines, was full of scattered clouds and haze from the 13th to the 18th of the month, so that observations were available only through random openings in the clouds.

On 13 September a good photograph of the sunspot group was obtained through a broadband red filter on an ortho sensitive film with the 10 centimeter refractor at Baguio, the mountain station of Manila Observatory to the north. The light bridge across the largest leading spot is present in this photograph, Figure I, and it persisted until the flare that followed three days later. This photograph of the sunspots is the only one obtained during the period.

On the 16th of September the flare was observed in the early morning of the 17th in Manila and was photographed through haze with the spectroheliograph in the K line of ionized calcium. Figure II shows the flare as it enveloped the sunspot group No. 889 or plage area N o. 14943 (McMath) or No. 322 (Manila Observatory). The flare was in process as it was observed visually with the H - alpha filter at 16:23:00 U. T. and was photographed with the spectroheliograph at 16:23:20 U. T. The end occurred at 17:00:15 U. T.

The position is W21N08. Importance given by our observers was 2B for an area of 850 millionths, reduced to 9.6 square degrees. The telescopes had been in operation at 16:22:44 U. T. Clouds covered the sun from 16:23:44 to 17:00:00 U. T. and again from 17:00:29 to 17:01:30 U. T. The sun was not bright enough for the 35 mm camera on the 30 cm monochromator with the Halle filter to take pictures. At 17:05:25 until 17:06:10 U. T. the sky cleared again but the intervals between passing clouds were too short for a scan in hydrogen.

In all the telescopes were kept running for 7.5 hours but the intermittent clearings of the sun amounted to about 2.2 hours for the entire period.

The calcium II scan of this flare seems unusual in its involvement with the spots in the group, showing filamentary ties with only those spots that have north magnetic poles. (cf. Solar Phenomena-Osservatorio Astronomico di Roma, N. 233, p. 12)