

ception along the interface between these masses, were unusually frequent. Others moved intact across the ocean from the region west of the 180th meridian, but followed a more southerly path than normal. The processes involved in the formation of these cyclones were not changed but the place of origin was and this was an important factor in the cause of heavy rains in the Pacific Northwest. By virtue of their development in lower latitudes these depressions had easier access to a larger supply of warmer, moister air and their forward portions were heavily laden with water vapor. The Pacific Northwest was usually within the path of the heavily

moisture-laden sectors of cyclones and too, the rainfall was increased by the effect of forced ascent of the strong, moist, southerly winds by the mountains. At the close of the month one of these disturbances moved south-eastward with the result that large amounts of warm, moist air were transported to southern California and the area around and immediately to the north and west of Los Angeles received record-breaking rains. Again, the forced ascent of the moist winds by the sharp increase in elevation of that area back from the coast intensified what otherwise might have been unusual rains but not quite so heavy as occurred.

## AN UNUSUAL SOLAR HALO AT PORTLAND, OREG., FEBRUARY 15, 1934

By W. H. WOODWARD

[Weather Bureau office, Portland, Oreg., February 1934]

An unusually brilliant display of solar halos was observed at Portland, Oreg., between 7:50 a.m. and 8:55 a.m. February 15, 1934, on which date the sunrise was at 7:14 a.m. These refraction phenomena were of unusual interest for two reasons. First, the circumzenithal arc remained of nearly constant form and brilliancy from the time it was first witnessed at 8:20 a.m. until it vanished at 8:50 a.m. This period of 30 minutes during which this phenomenon was visible is quite unusual. W. J. Humphreys in "Physics of the Air", and Louis Besson in "The Different Forms of Halos and Their Observation", mention that this phenomenon does not long remain visible, 5 minutes on the average. This circumzenithal arc, approximately 60° long, was very brilliantly colored and like an exceptionally bright rainbow. Second, during the time of the year when there are cirrus clouds at Portland, the witnessing of solar halos usually is impossible on account of the prevailing lower clouds.

The other refraction phenomena witnessed during this time were: A quarter arc of the great halo of 46°; two short arcs of the halo of 22°, which at times were bright and of such width as to be in juxtaposition with the ordinary parhelia of 22°; and, the upper tangent arc of the halo of 22°. At 7:50 a.m. a bright halo of 22° formed in juxtaposition with the ordinary parhelia of 22°, and simultaneously a brilliant upper tangent arc developed. These halos were clear in color—red toward the sun to violet, inclusive—and remained visible with changeable hue until about 8:45 a.m. At 8:20 a.m. the lower portion of the great halo of 46° and the circumzenithal arc were observed to appear at approximately the same time. Fifteen minutes later, the arc of the great halo of 46° extended from the level of the sun to the circumzenithal arc, to which it was tangent. This great halo arc remained of constant form, brilliantly colored, resembling a secondary rainbow in depth of color, and did not fade until 8:50 a.m.

## TORNADOES IN LAUDERDALE COUNTY, MISS., SUNDAY, FEBRUARY 25, 1934

By E. E. UNGER

[Weather Bureau office, Meridian, Miss., Mar. 8, 1934]

The weather map of Sunday morning, February 25, 1934, showed a crescent low extending from Utah south-eastward through Texas and thence northeastward to the lower Ohio Valley with separate centers over western Colorado, extreme southern Texas, and southwestern Arkansas, while a large area of high barometric pressure, crested over Alberta and Saskatchewan, was pushing its way southward over the Plains States attended by a cold wave and fresh to strong winds as far south as the Texas Panhandle and Oklahoma. The temperatures that morning were as low as 14° at Amarillo, Tex., while temperatures of 60° or more prevailed over southern and eastern Texas, Louisiana, and central and southern Mississippi. Every indication pointed to a rapid northeastward movement of the low and an equally rapid southward movement of the high with its attendant cold wave. Thus the stage was set for a stormy Sunday over eastern Mississippi with rain, hail, thunderstorms, squall winds, and a generally turbulent condition.

The weather conditions prevailing through Sunday, February 25, in Lauderdale County, Miss., of which Meridian is the county seat, were cloudy and somewhat unsettled with mild temperatures at 7 a.m., followed by a slight breaking away of the clouds and a little sunshine in mid-forenoon, after which time the clouds became thicker. From about noon to nightfall the cloud blanket

was so heavy, with clouds moving rapidly from the southwest, that the use of lights indoors was necessary if one wished to read or write. The first rain began at Meridian at 10:55 a.m. and the first thunder was heard at 11:55 a.m. Intermittent showers prevailed at Meridian to 3 p.m., heavy rain from 3 p.m. to 4:45 p.m., followed by moderate and then light rain to 8:15 p.m. Light hail, stones about the size of large sized peas, accompanied the heavy rain from 3:09 p.m. to 3:17 p.m. The wind, more or less variable with increasing gustiness, was generally from the southwest from 7 a.m. to 3:20 p.m. after which it shifted through west to north at 3:50 p.m., then to northeast between 5 and 6 p.m., then more or less variable but generally southeast till after 10 p.m., when the prevailing direction became northwest or west and the temperatures of the incoming cold wave first became noticeable. During the period of heavy rainfall, the winds were more of less squally, with a maximum velocity (true) of 28 miles per hour from the SW at 3:12 p.m. and an extreme of 37 miles per hour at 3:14 p.m. Although the data given in this paragraph are taken from the records of the Weather Bureau office at Meridian, yet from information obtained from interviews with a number of persons, the weather conditions prevailing throughout this and surrounding counties on Sunday, February 25, were very similar as to cloudiness, rain,