

tral and northern Great Plains, and the far Southwest, the relative humidity was as a rule above the seasonal average, while generally elsewhere there was relatively less moisture in the atmosphere than is usual for January, although in many instances excesses occurred. This was notably the case in portions of the central and upper Mississippi Valley and the Lake region, where despite the small amount of rainfall the relative humidity averaged above the normal.

SEVERE STORMS.

The most important storm of the month, in fact probably the only one causing material property damage on account of high winds, occurred over the immediate coast districts of Oregon and Washington on the afternoon of the 29th. This storm occurred in connection with a low pressure area that appears to have been approaching the northwest coast of Washington from the adjacent ocean.

At the morning observation of the 29th, pressure was low and falling, as indicated by the few reports received from that section, but the rate of fall did not suggest unusual conditions, as this is a region of great storm activity during the winter months and high winds are of frequent occurrence, particularly near the coast. The pressure continued to fall after the morning observation, and by early afternoon it was quite low along the entire coast from the mouth of the Columbia River northward to British Columbia.

At the North Head station located on the Washington side, at the mouth of the Columbia River, the lowest pressure was reached at about 3:30 p. m. Prior to about 3:20 p. m. the wind had not attained a velocity greater than 40 miles per hour, but within a few minutes, the wind suddenly increased greatly in force and by 3:32 p. m. had reached a velocity of 126 miles per hour based upon a five-minute record, with an extreme velocity for a single minute at the rate of 150 miles per hour.

A further description of the storm can best be expressed in the words of the Weather Bureau observer at that station, which are extracted from his official report.

At 8 a. m. on January 29, 1921, small craft warnings were displayed as ordered by the district forecaster. At 11:40 a. m., local time, a special observation was taken and sent to the district forecaster. At this observation the sea-level pressure was 29.43 inches. The two-hour pressure change was -0.16 inch. Wind east 24 miles per hour. The barometer continued to fall rapidly until about 2 p. m. when it seemed that the center of the low had been reached and fell very slowly. Near 2:30 p. m., as no orders had been received to change the warnings and the barometer had almost stopped falling, I concluded that the storm was similar to the one of January 16 and 17. We were in need of some supplies and the mail from Ilwaco. By using the car it requires about one hour to make the trip to the post office and return. At 2:40 p. m., Mrs. Hill and I left the office. After getting the mail from the post office and a few articles from the stores in Ilwaco we started for home, but the extreme low air pressure probably affected the motor of the machine and a short delay from this cause probably saved our lives.

The road from Ilwaco to North Head is through a heavy forest of spruce and hemlock timber for some distance. On the return trip shortly before reaching the heavy timber, the wind came with quite a heavy gust. We saw the top of a rotted tree break off and fall out of sight in the brush. About this time (near 3:20 p. m.) we were overtaken by a young man from the naval radio station at North Head who was driving a car. It is dangerous driving over this road under favorable conditions. We proceeded very slowly and with great care, passing over some large limbs that had fallen and through showers of spruce and hemlock twigs and small limbs blown from the trees. We soon came to a telephone pole across the roadway and brought our car to a stop, for a short distance beyond the pole an immense spruce tree lay across the road. We left the machines and started to run down the road toward a space in the forest where the timber was lighter. Just after leaving the car, I chanced to look up and saw a limb sailing through the air toward us; I caught Mrs. Hill by the hand and we ran;

an instant later the limb, which was about 12 inches in diameter, crashed where we had stood. In three or four minutes we had climbed over two immense tree trunks and reached the place in which I thought was our only chance to escape serious injury or possibly death. The southeast wind roared through the forest, the falling trees crashed to the ground in every direction from where we stood. Many were broken off where their diameter was as much as 4 feet. A giant spruce fell across the roadway burying itself through the planks within 10 feet of where we stood. Tree tops broke off and sailed through the air, some of the trees fell with a crash, others toppled over slowly as their roots were torn from the earth. In a few minutes there were but two trees left standing that were dangerous to us and we watched every movement of their large trunks and comparatively small tops.

Between 3:45 p. m. and 3:50 p. m. the wind shifted to the south and the velocity decreased to probably 100 miles or it may have been as low as 90 miles per hour. Shortly after 3:50 p. m. we started toward North Head. We climbed over some of the fallen trunks, crawled under others, and pushed our way through tangled masses of tops that lined the roadway. We supposed that all the houses at North Head had been leveled and the wireless station demolished for we knew that the storm was the most severe that had occurred in the vicinity of the mouth of the Columbia within the last 200 years. Mr. Seui, the young man from the radio station who was with us, hastened through the obstructions, and Mrs. Hill and I proceeded more slowly. About one-fourth of a mile from the station we were met by one of the men from the radio station, who had come to assist us had it been necessary. At 4:40 p. m. we arrived at the assistant lightkeeper's home where all the families of the Head had gathered for safety.

Such reports as are at hand indicate that while the low-pressure area was advancing from the Northwest, the high easterly or southeasterly winds attending the approach of the storm to the Washington coast moved northward along the coast, as a vessel report from off the Oregon coast, a considerable distance south of the North Head station, indicates that the lowest pressure and highest winds occurred several hours earlier than at the North Head station, in fact, at Point Reyes Light on the middle California coast, high winds occurred early in the forenoon.

At Tatoosh Island about 150 miles north of the mouth of the Columbia River, the lowest pressure and maximum wind velocity, 110 miles per hour, occurred about 7 p. m., several hours later than at North Head.

The recorded wind velocities at the North Head and Tatoosh Island stations were the highest ever observed at the respective stations, and judging from the damage to the forests of that region, are probably the highest that have occurred in the period covered by the growth of the oldest trees.

While the extent of the storm at the present time is uncertain, it appears that the entire coast district, probably from central Oregon to the Straits of Juan de Fuca, a distance of 200 miles or more, was swept by winds of hurricane velocity. How far inland these destructive winds extended is unknown at the present, but it seems probable they were limited to the western slopes of the mountains that follow the coast line a comparatively short distance therefrom.

Reports from Forest Service officials, who are in touch with conditions in the national forests in that locality, indicate that the damage to standing timber is the greatest ever experienced in the country. Billions of feet of the finest timber in the United States were uprooted or otherwise thrown down, much of which will be a total loss as it lies in regions not readily accessible for salvage.

Despite the severity of the winds, few lives are known to have been lost, and damage to property consisted mainly in the loss of timber.

Later reports, particularly from the cooperative observers of the bureau, located in the territory covered by the storm, will probably more fully outline its extent and comparative severity. Important facts covering these items will appear in a later REVIEW.