

The Great Blizzard of '66 on the Northern Great Plains

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THE hardy plainsmen of the northern Great Plains expect unusual and severe weather and are seldom disappointed in their expectation. Summertime brings dreaded, destructive tornadoes and violent thunderstorms accompanied by heavy hail sometimes larger than a baseball, or the kind of hail that, in minutes, wipes out a farmer's nearly realized dream of a wonderful bumper crop.

And winter, which comes early and stays late in the Big Country, brings the fearsome, angry, howling "white death"—the hazardous prairie blizzard with 60-mile-per-hour, bonechilling winds, overladen with snow so fine, so strongly driven, that no crack or crevice is too small to admit what in time becomes an amazing mass. North Dakota averages several blizzards a year, but only three or four severe, widespread blizzards occur during each decade.

Sometimes spring comes early, if only for a few days, with warm balmy chinook winds, rapidly melting snow, with a peek at solid earth again for the first time in months. Such was the promise at the close of February and the first day of March 1966, nature's hint that winter wouldn't last forever.

But the reprieve was short-lived. Bv midmorning of March 1st clouds began to gather and shut out the welcome sun. Α preliminary warning, issued by the Weather Bureau on 28 February, of possible snow and high winds was confirmed when on March 2d a severe weather bulletin was broadcast by radio and television stations warning of The bulletin was an approaching storm. received with an exasperated sigh, prompted by an already too-long winter, and the people resigned themselves to a day, or possibly two, of battened-down hatches. Cattle and other farm animals were brought in close to farmhouses, into large barns or corrals. Plans for trips of more than a few hours duration were either cancelled or rescheduled to avoid the all-too-well-known dangers of exposure in a blizzard.

What prompted the early warning was a small and relatively insignificant low pressure system centered in southwestern Montana at midnight, CST, on 1 March. During the next 24 hours, however, the low steadily deepened and moved rapidly south-southeastward until it was centered over Pueblo, Colorado, at midnight on March 2d. At the same time



Surface Maps

an arctic air mass with temperatures in the teens was slowly advancing southward into northern Montana and North Dakota.

Snowfall early on the 2d had become general over most of Montana, Wyoming, and Nevada and by noon had moved into and spread over much of South Dakota and southern North Dakota.

Twelve hours later the low, now moving on a northeastward course, had advanced into central South Dakota with continued deepening. There it stalled. By 0600, 3 March, it had reached a central pressure of 983mb/ 29.03". Temperatures in the Dakotas had reached the mid-teens, winds had increased to 20-30 miles per hour, and the snow had already begun to mount into drifts deep enough to stall traffic. Rain or snow were by now falling over most of Minnesota.

The stalling and deepening of the low in South Dakota and its slow eastward movement into western Minnesota prolonged and increased the severity of the storm in the Dakotas. As the center became more intense, increasing winds, now occasionally gusting to 70-80 miles per hour and driving icy snow crystals, reduced visibilities to zero over much of the northern Plains. Typical of widespread conditions was Bismarck: the visibility remained at zero for 11 hours on 3 March from 0200 until 1300. For the next 19 hours, until 1900 on 4 March, the visibility varied from zero to not more than $\frac{1}{2}$ mile. A continuous period of as long as nineteen hours of $\frac{1}{8}$ mile, or less, visibility is without known precedent in North Dakota weather history.

By midnight of 4 March, the low center, now in eastern Minnesota, began to fill slowly as it moved eastward and the snowfall had become intermittent in northern North



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Dakota. High winds, however, continued to stir up and carry considerable snow, keeping visibilities restricted much of March 5th, particularly in eastern and southeastern North Dakota.

Bitter cold arctic air, pouring into the Dakotas following the prolonged blizzard, dropped temperatures well below zero by Sunday morning, March 6th, a morning which dawned clear and crisp to present a fantastically beautiful fairy world of tremendous grey and white streaked, marble cake snow drifts that occasionally nearly covered some two-story buildings. Streets and farmyards were completely blocked by solid packed drifts offering stubborn resistance to all but the heaviest types of snow plows to penetrate them.

Although snow depths in North Dakota, where drifts were the deepest, reached a height of 30 to 40 feet, the actual amount of snowfall, impossible to measure accurately, conceivably did not much exceed 30 inches for the storm. The accompanying map shows the total depth of snow which fell between 2-5 March 1966, inclusive, as measured at official observing stations. The northwestern corner of North Dakota received no snow and experienced only some dust storms.

During the storm violent churning winds swept bare some areas, while only a few yards away towering drifts built up downstream from what were sometimes only minor



Inches of snowfall in blizzard area.

obstructions. Loose wind-borne dirt, mixed with snow, resulted in a greyish mass of snow-dirt, aptly dubbed "snirt."

In some respects, this 1966 blizzard must be considered one of the most severe in the history of North Dakota, where its major violence and impact were felt. The legendary Blizzard of 1888 on January 12th lasted only 14 hours, but left at least 112 dead and wiped out cattle herds wholesale. The unusually severe blizzard of 15 March 1941, with 70 mph winds, raced across North Dakota from northwest to southeast in only Travelers, trapped in their seven hours. cars, accounted for most of the 39 deaths occurring in eastern North Dakota where the storm was most severe. Estimates of the



Location and pressure of center, 1-5 March, indicated by circles at 0000 CST and squares at 1200 CST. Lowest pressure: 984mb = 29.06".

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loss of life chargeable to the 1941 storm ranged from 76 to 90.

The 1966 storm, with up to 80 mph winds occasionally gusting to 100 mph, continued unabated for as long as four days in some areas. For the first time in the history of many towns, schools were closed, all business was suspended, newspapers failed to publish, and all forms of traffic came to a complete halt. Some roads were not cleared for two weeks.

Minimum temperatures during the blizzard did not, in general, fall below the teens. Fortunately, below-zero temperatures were not reported until Saturday or Sunday, after the blizzard had passed. The absence of bitterly cold temperatures of well below zero, which frequently accompany severe North Dakota blizzards, undoubtedly was largely responsible for the fact that relatively few persons lost their lives as a direct result of the Timely and effective dissemination storm. of warnings at least a day in advance of the storm, and modern communications contributed to minimize the impact of the storm and to keep the loss of life at a minimum. No deaths in this storm could be ascribed to any lack of warnings or forecasts, the cause of so many deaths in earlier days, when fastmoving blizzards caught many persons totally unwarned and unprepared.

Before it blew itself out, the Great Blizzard of '66 had claimed the lives of 18 persons. Two women, one in Nebraska and another in Minnesota, froze to death while walking from stalled automobiles. Three men in South Dakota died from exposure, two from heart attacks, one by asphyxiation. In Minnesota, heart attacks, attributed to exertion while shoveling snow, claimed two lives.

Five persons in North Dakota died as a result of a related effect of the storm. A sixyear-old Strasburg girl, fully clothed for the outdoors, became separated from her two brothers when the children went from their home to a barn 60 feet away. She was found two days later only a quarter of a mile from home, frozen to death.

Another girl, age 12, of Woodworth, slipped out of the house to close a chicken-coop door. She was never again seen alive after she started back to the house which was only 100 feet away. Her frozen body was found the next day, half-a-mile from home. Three elderly men died as a result of heart attacks, probably brought on by overexertion. One was a 60-year old man of Linton who died in his car after vainly trying to extricate it from a ditch after a skid. A janitor was found inside a school where he had collapsed after shoveling snow from the walks. The third man, age 73, a farmer of Driscoll, was found frozen to death in his farmyard, only a few yards from home. Many injuries, directly related to the storm, occurred but none proved fatal.

Deaths during northern Great Plains blizzards are partly due to the occasional lapse of several years between severe blizzards. As a result, people forget the hazards of such storms. Through a false sense of security, they do not take proper precautions. Many persons did remain in their stalled cars through several days of the '66 blizzard, but lived to tell harrowing tales of how close they came to death. The loss of livestock in Nebraska and the Dakotas was appalling, with estimates including 74,500 head of cattle, 54,000 sheep, and 2,400 hogs. On one farm alone in eastern North Dakota, 7,000 turkeys perished. Many cattle suffocated when barns became completely covered and sealed-in by huge snowdrifts. Large barns, into which stock were herded before the storm struck, collapsed, resulting in many dead and injured animals. The total loss of livestock in these three states was estimated at over \$12 million. Many thousands of upland birds—grouse, pheasants, and partridge—were killed by the storm.

The continual high winds piled snow in corrals and feed lots. Cattle, as a result of milling around in corrals, tramped down and compacted the snow as it fell until the level of the snow became higher than the fence. Then they wandered off and perished in open fields or against fencelines.

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The Red River of the North floods North Dakota boundary area with Oslo, Minnesota, in foreground on 31 March 1966 as blizzard drifts melt. N. D. State Highway Dept. photo.

do not need irrigation, but most of the crops are of the type which do not require high temperatures nor long periods of sunshine.

On the east side of the crest of the Cascades, the vegetation changes rather abruptly to the various types of pine trees and rather sparse undergrowth. Further down the east slope, the trees are limited to those that are cultivated; and open fields are mostly cheat grass and sagebrush, typical of low rainfall and maximum sunshine. In the portions of the Columbia Basin which are irrigated, there is a high rate of production of fruit, alfalfa, and cultivated field crops.

As the elevation increases on the east side of the Columbia Basin, the precipitation increases enough to permit extensive areas of dry-land grains in the plateau area. Still further east along the eastern edge of the state, the vegetation changes again to the evergreen and undergrowth species which can withstand temperatures that are more extreme than those in western Washington.

The meteorological processes illustrated are well known to all who work in meteorology and to many others as well. These processes influence the weather in nearly all areas of the world; however, they are more pronounced and apparent in the State of Washington.

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All transportation had come to a standstill by the second day of the storm. Three transcontinental trains, trapped in railway cuts, became nearly covered in a short time with rock-hard packed snow, defeating all efforts to free the trains until well after the storm had ended. Five hundred passengers were trapped for a time without heat or food. Automobile travel, even early in the storm, was stopped by huge drifts and near-zero visibility.

Power and telephone service were interrupted up to several days in many areas by the high winds and driven snow. Several aircraft hangars collapsed, damaging and destroying a number of airplanes. Many store windows were blown in. Snow, driven into the attics during the storm, melted later with distressing consequences. Chimney vents froze up, causing a number of cases of gas poisoning in homes.

Many all-time records for monthly snowfall, for snowfall during one storm, and for 24-hour snowfall were broken. The duration of the blizzard, particularly in the southern half of North Dakota and in northern South Dakota, set many records as did the severely restricted visibilities.

One serious, delayed result of the Great Blizzard of '66 was the spring flood of the River of the North and its tributaries. This near-record flood, which extended through March, April, and May, would have been only minor and local in its effect had there been no early March storm. The total cost of the flood was set at \$7.9 million, of which \$2.2 million was spent for diking and other protection. The damage to roads and bridges exceeded \$2 million.

In the Big Country there have been higher winds, colder temperatures, and snowfall has been greater. But it is doubtful if any previous storm, at least in the past nearly 100 years of weather history in North Dakota, hit so big an area, for so long a time, with such sustained speeds, piling up so many gigantic drifts. The Blizzard of '66 will long be remembered on the northern Great Plains, particularly for its sustained severity, low visibilities, and total snowfall over a great expanse.