

OUTSTANDING IOWA STORMS

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Iowa's weather is well known for its invigorating qualities, for stimulating agriculture and its people. It is well known also for its extremes which sometimes reach disastrous proportions, particularly in storms. Each year, mostly during the warm season, some 40 or 50 days are with thunderstorm. On occasion the thunderstorms are accompanied by hail, high wind, excessive rainfalls or even tornado. In most years hail losses exceed tornado losses. But never has Iowa lost a human life to hail while losing some 731 lives to tornadoes. The tornado is a dramatically terrifying storm that demolishes a path through the countryside. Many people live in fear of the tornado because it strikes so suddenly and ferociously, with forces never equalled by any other storm.

Iowa's outstanding winter storm is the blizzard which combines the wintry elements of cold, wind and snow into one storm that likewise has brought death and extensive suffering. Outstanding blizzards long remain in the memories of Iowans which have become a part of our recorded history. The accounts are found in newspapers, histories, journals and logs extending through Iowa's settlement history since the 1830s. Accounts contained in daily recorded weather history by the U. S. Weather Service date back 150 years to the first army fort establishment in Iowa at Council Bluffs on Oct. 22, 1819. The organized Federal Weather Services are completing their

hundredth year of operation in February 1970. Prior to the 1870s interested weather observers, beginning with Prof. Theodore Parvin (Muscatine and Iowa City) in 1838, kept the few continuous records of daily weather, but almost everyone who kept a log or journal recorded the outstanding events, particularly tornadoes and blizzards. This account is primarily concerned with the 16 famous blizzards and 25 outstanding tornadoes in Iowa.

Winter Storms

Iowa's winter storms are sometimes rain, sometimes with snow and on occasion sleet or freezing rain; the latter treacherous occasions occur a few days each winter.

The most dramatic of all the winter storms, though, is the blizzard—with its combination of snow, wind and sharply falling temperatures into the subzero range. It is the blizzard that creates the greatest hazard to the highway traveler, the cattlemen's herds and the poultrymen's flocks. Blizzards combine all the dangers of the wintry cold with shrieking winds laden with blinding snow. The Great Plains are visited with some regularity year after year. Iowa is located in the heart of the blizzard-belt and experiences blizzards almost every winter.

It was in the *Estherville (Iowa) Vindicator* that the word "blizzard" was first used in print to describe the March 14, 1870 storm which swept across the Dakotas through Iowa. The origin of the name is attributed to the early German settlers, who called the storms blizartig (lightning-like) to describe the sudden fury of the storms.

The lightning like fury of these most destructive and perilous winter storms are chronicled throughout Iowa history. Some of the greatest blizzard disasters have followed unusual winter mildness when people were away from their homes without sufficient clothing. The blizzard is fed by the abundance of moisture in the air and the sharp temperature contrast between the advancing cold air and the unseasonably warm air it displaces.

A blizzard, to be so classed, must have winds 35 miles per hour or stronger with falling or blowing snow and temperatures 20 degrees F. or lower for an extended period. A severe

blizzard has winds 45 miles per hour or higher and the temperatures are 10 degrees F. or colder. Many outstanding snowstorms escape the blizzard classification for lack of wind or temperature. For example, heavy snows drifted roof high in northwest Iowa in February 1962, yet lacked winds above 35 miles per hour to place the storm in blizzard classification. Truly outstanding, this storm will long remain in the memories of the natives.

Early record indicates 1848 was a snowy year. The *History of Polk County, Iowa* (1888) says, "the winter of 1848 will never be forgotten by the early settlers. The snow commenced early in November (1847) before the ground was frozen and continued until the unprecedented snowfall on December 21. . . which was the most fearful one in the country." The snow continued over three feet deep into February 1848 with pioneers completely snowbound. At Muscatine, a record-breaking 20.5 inches of new snow fell on Dec. 21, 1847; a record which stands to this date.

Outstanding Iowa blizzards total 16; they are described in Table 1. The first outstanding blizzard in our record triggered the famous winter of 1856-57 on Dec. 2-3. The *Dubuque Express and Herald* wrote: ". . . the weather was unusually severe. Snow which commenced to fall on the evening previous continued throughout the entire night and day, and was swept through the streets by an angry wind with blinding velocity. The amount of snow which fell must be in the neighborhood of 16 or 18 inches . . . The wind, too, was exceedingly chilly . . ." Ten days later another severe storm piled more snow over Iowa. In the Dec. 21, 1856 issue of the *Dubuque Express and Herald* the later report was: "Travel has been most difficult [due to deep snow] and several persons froze to death on the prairie during the late severe weather." Pioneers had already begun to suffer through one of the most severe and extended winters in Iowa history, which it is claimed, contributed to the Spirit Lake Massacre in northwest Iowa in the spring of 1857. The long winter had made game exceedingly scarce. Further, the winter was intensely cold. At Dubuque, December and January have never been so continuously and prolongedly cold since 1856-57. At Muscatine,

the thermometer plunged to -30 degrees F. February and March were somewhat cold, followed by Iowa's coldest April of record accentuated with heavy snowfalls. The winter of 1856-57 lasted through April and was one of the most severe, if not the worst, in Iowa's whole recorded history.

The blizzard of Dec. 15-16, 1863 was notable in Des Moines where the howling winds damaged a few homes. Fifteen days later the blizzard, which C. D. Reed (U. S. Weather Bureau Section Director, Iowa, 1918-1944) classified as the worst blizzard in eastern Iowa, struck with moderate snowfalls and a severe cold wave. Cattle froze to death and suffering was considerable.

The fourth one of Iowa's noteworthy blizzards was observed on Jan. 7-9, 1873. It was described by the *Iowa State Register* (Des Moines) in the Jan. 8, 1873 issue thusly: "One of the severest storms that has been known in this section for years, came swooping down on the city and adjacent country yesterday afternoon, about 4 o'clock. The wind blew a regular hurricane, and the air was filled with fine snow that blinded travelers and almost shut out eye sight . . . Trains were stalled and roofs were blown from one or two small houses on Capitol Hill." Snow was a foot or two deep and greatly drifted.

The March 2-4, 1881 blizzard was described as very severe. It extended from Iowa into Michigan with much suffering due to shortages of food and fuel. Dr. Gustavus Hinrichs, Director of the Iowa Weather Service, said that high winds caused immense snow drifts which "completely blocked even the oldest and best east and west railroads for a day or two and stopping all traffic on other lines for a much longer time." He further states that continuous snow cover "till the latter half of the closing decade of March gave us over one hundred days of good sleighing, but also much anxiety in regard to the final breakup." Little damage resulted from snow melt.

To the blizzard of Jan. 7-8, 1886 is attributed the greatest loss of life in Iowa during any blizzard. Twenty Iowans were overcome by the storm. An account in the *State Register* on January 15 describes the storm and some of the casualties. A young man became lost but found a haystack in which he tried, unsuccessfully, to burrow for shelter. He unhitched his

team of horses which returned home alone. The horses' ears were frozen stiff close to their necks, and it took over an hour and a half to get the bits out of their mouths.

The blizzard of Jan. 12, 1888 was probably the worst of history over north and west Iowa and in the upper Great Plains. Numerous people were lost and frozen in the storm as it swept across Montana, the Dakotas and Nebraska. It reached Iowa in the afternoon late enough so that most Iowans had reached shelter and few casualties were reported. Dr. Geo. Chappel, U. S. Signal Service in Omaha, Nebraska compared the storm intensity to that of 1864. The following period of cold was likewise comparable. Dr. Hinrichs in the Iowa Weather Report described the 10 days following as the coldest 10-day period known over Iowa and even exceeding the coldness of the Jan. 1-10, 1864 period.

The blizzard of Nov. 21, 1898 was characterized by high winds, sharply falling temperatures and considerable snow. Official observer, David Hadden at Alta described the storm thus: "a norther raged all day of the 21st, the high northwest gales continuing until evening of the 22nd. Snow drifted greatly and in places was five or six feet deep. It was one of the severest blizzards in this section for many years. A cold wave followed which continued nearly all week." Much of the corn was not yet harvested when the blizzard struck Iowa.

The blizzard on Dec. 26-28, 1904 was characterized as the worst in that area since 1873 by the Cresco newspaper. Little mention was made of livestock losses in most parts of the State.

The noteworthy blizzard on Jan. 28-30, 1909 was widespread over much of Iowa with numerous livestock and property losses reported. Fred B. Hanson, Official Weather Observer at Inwood, described this blizzard as the worst in 21 years and if there had been more snow it would have equalled the storm of Jan. 12, 1888. The Official Weather Observer at Hopeful, M. T. Ashley, reported many windmills blown down in this blizzard and that some livestock perished.

The blizzard on March 18, 1923 completed one of the snowiest weeks of record in Iowa. Some central Iowa stations reported 25-30 inches snowfall during this week. The loss of young

lamb and pig was estimated at a million. The coal and food supplies were exhausted and suffering was reported during the intensely cold weather following.

During the intensely cold winter of 1936 an outstanding blizzard added to the already heavy snow cover. Again fuel and food came into short supply.

The next of the noteworthy blizzards and probably the most destructive of record was reported on Nov. 11, 1940. Due to the late mild autumn, the blizzard destroyed most of Iowa's apple orchards, froze millions of turkeys, other fowl and livestock. Seven Iowans lost their lives in this storm.

On Jan. 1, 1942, the heaviest snowfall of record in Des Moines, 19.8 inches, fell in this noteworthy blizzard; the whole area was totally paralyzed. In many places over an area from Page to Black Hawk Counties the total snow depth was increased to more than 2 feet by this storm. The suffering from this storm was intensified by the extreme cold following.

Not until Feb. 9-10, 1960, was another noteworthy blizzard documented. It claimed six lives, stranded travelers and closed schools and businesses. February will further be remembered for the unusually heavy snowfalls over the State. But two years later in 1962, February snowfalls far surpassed most records set in the February of 1960. Many of Iowa's heavy snowfall records came in the numerous heavy snows of February 1962. Rock Rapids, from Feb. 17-21, 1962, reported 31 inches new snow, and a 20th Century record snowfall for any Iowa snow storm.

The last of Iowa's noteworthy blizzards was reported on March 17-18, 1965, in which thousands of travelers were stranded, one person died and four were hospitalized from exposure. This was at the midpoint of one of Iowa's snowiest Marches of record.

The relationships between Iowa's notable storms and temperature trends are most particularly well defined: most noteworthy blizzards occurred during cold winters. Some of Iowa's outstandingly cold winters were associated with intense blizzards. No particular relationships of tornadoes with summer temperatures in Iowa appear evident.

Iowa Tornadoes

Iowa tornadoes, like those elsewhere, are amongst nature's most spectacular storms. The tornado is recognized by its tuba-shaped rotating column of condensed moisture, dust and debris. The average Iowa tornado is a few hundred yards in diameter with internal wind speeds varying from 100 to 500 miles per hour. Its life span is usually but a few minutes, as it travels a path of a few miles. The forward speed is usually 30 to 35 miles per hour. During the average season about 30 tornadoes and over 100 funnel clouds aloft are reported occurring mostly during April through July over the State. Iowa is located along the northeast side of the world's greatest tornado belt.

Since 1803 a total of 1,169 tornadoes were reported in Iowa; no doubt hundreds more never found their way into the record, particularly during the earlier decades of Iowa settlement. Of these 1,169 a total of 25 are classified as outstanding tornadoes (see Table 2). Those 25 tornadoes dramatically brought extensive destruction, death and suffering to Iowans. Undoubtedly many more were potentially as dangerous but passed over the open plains or through the uninhabited woodlands.

It was the Lewis and Clark Expedition moving up the Missouri River along southwestern Iowa, who observed the first tornado of Iowa record. Clark's entry on July 29, 1804 described the tornado thusly:

On the S. S. passed much falling timber appearantly the ravages of a Dreddful horican, which had passed oblequely across the river from N. W. to S. E. about twelve months Sinc, many trees were broken off near the ground, the trunks of which were sound and four feet in diameter.*

With the settlement of Iowa, tornadoes were observed but few are to be found in the records prior to the 1870s. By 1870 only 19 tornadoes, four of which took human lives, had been reported. The second Iowa tornado of record was observed in Henry County on June 1, 1837.

The first of Iowa's outstanding tornadoes moved southeastward passing south of Iowa City on the afternoon of May 24, 1859. Five sketches and a vivid account by J. A. Wetherby

*Original spelling retained.

of Iowa City made front page news in the nationally distributed *Leslie's Illustrated Newspaper* on June 18, 1859. The force of the tornado is described by Wetherby in the newspaper:

During the progress of the tornado, two giant oaks, one measuring at least three feet in diameter, standing near together were uprooted, one thrown to the westward, the other east. Another, probably two feet through was snapped like a pipe stem close to the ground . . . Wherever the tornado passed, the houses are leveled with the ground, fences are stripped of their boards, posts taken bodily out of the ground, the prairie in every direction was covered with bits of timber and shingles, and everything in the field was stripped of its leaves, flattened into the earth or torn up by the roots.

The Iowa City tornado claimed five lives, injured six persons seriously and a dozen or more were less seriously hurt.

In the next year, Iowa's greatest killer of record swept away most of Camanche on the evening of June 3, 1860. The tornado was said to have begun in central Iowa west of Cedar Rapids and to have ended in Michigan. Its toll along its path in Iowa totaled 134 dead, 81 injured and 2,500 persons homeless—mostly at Camanche, which was nearly obliterated. Its path was described as erratic; its speed varied, it skipped and sometimes appeared as two or more funnels. Perhaps the Camanche tornado was really a whole family of tornadoes stretching into Michigan.

Following the Camanche tornado, which was known nationally as the Great Tornado, Iowans were spared death by tornado until May 22, 1873 on which date eight lives were snuffed out by an afternoon strike in Keokuk and Washington Counties.

The twin twisters on Easter Sunday (April 21) 1878 were the outstandingly violent tornadoes during the 1870s. The two tornadoes moved northeastward up the Maple and Boyer Rivers almost simultaneously through a sparsely settled portion of Iowa killing 28 persons and injuring another 57. Iowa's first reported waterspout was observed as the Maple River tornado passed across Storm Lake whirling the lake waters

into a spout of water which "caused immense waves to beat against the shore." Charles Bond's account in the *Iowa Weather Report* (1878) stated that as the funnel passed over the lake "the waters seemed to lift themselves up to meet it. . . narrowly our town (Storm Lake) escaped the tornado." Another observer watched the tornado pick up seven houses and whirl them away. At one house it took up a man, wife and three children, and carried them out on the prairie, but killed none of them.

The Grinnell tornado during the evening of June 17, 1882 was Iowa's first million dollar tornado. Loss of life was placed at 100 and injuries were borne by about 300 persons. The heaviest losses were sustained at Grinnell and Malcom. The tornado was reputed to have originated in Greene County near Jefferson, passing south of Ogden. It traveled about 57 miles an hour to reach Grinnell near 8:45 p.m. In Grinnell 60 persons were killed, 150 were injured and property losses totaled \$600,000. Another half million in losses, 40 deaths and 150 injuries were reported elsewhere along the path which included Malcom, Brooklyn and Mount Pleasant. Dr. Hinrichs reports in the *Iowa Weather Report* (1882) that several tornadoes were observed that evening. "The most intense of these tornadoes was remarkable for the high electric tension, evidenced in many ways, but especially by exceeding frequent ball-lightnings, a form of lightning ordinarily very rare." The tornado demolished the northwest part of Grinnell. Nearly all the buildings were crushed to splinters and the streets were flooded to the depth of one foot of water. The damage was inflicted in less than five minutes. The storm turned southeast and completely wrecked the one-building Iowa College. The northern part of the city of Malcom, 8 miles east of Grinnell, was demolished with seven persons killed and several injured.

A decade passed between the 1882 tornado at Grinnell and the next great tornado, which struck around 5:00 p. m. on July 6, 1893 in Cherokee County. It moved east-southeast reaching Pomeroy around 6:30 to 7:00 p.m. and ended four miles east of that town. This tornado also passed over Storm Lake, becoming a waterspout while passing over the lake. The Iowa Weather Service contains Prof. David Hadden's account

which states that Storm Lake waters were raised to a height of 100 feet. Hadden further relates that "Mr. H. J. Wadsworth was injured about the face, as if by fire; he thinks he was enveloped in a 'stream of electricity,' it seems difficult to account for the character of his injuries otherwise." C. W. Garberson, living north of the tornado track, observed many hundred balls of fire in his yard, coincident with a blinding flash of lightning which struck a telegraph pole near his house. The tornado passed over Henry Tutt's farm in Buena Vista County. Afterward chickens were found alive and completely stripped of all feathers. J. R. Sage and Dr. George Chappel, Director and Assistant Director Iowa Weather Service, observed the damage. They noted that many persons at Pomeroy saved their lives by taking shelter in storm cellars or basements.

The 1890s produced a total of six outstanding tornadoes, nearly a quarter of all the outstanding tornadoes spaced over the past dozen decades. The loss of life is likewise phenomenal, totaling 221, approximately 30 per cent of all those killed by tornado action in Iowa and quite exceeding all the tornado related deaths in the 20th century (see Table 3).

In the 20th Century only nine outstanding tornadoes have been reported; three of those came in the 1960s. The first tragedy producing tornado of the 20th century was reported Easter Sunday evening, March 23, 1913. A swarm of tornadoes moved out of Nebraska into Iowa. Seventeen persons were killed in the Council Bluffs vicinity and 16 others in nearby areas. L. A. Welch, Local Forecaster at Omaha, Neb., said that the tornado "was undoubtably the most destructive to life and property that ever occurred in the Missouri Valley and probably one of the most destructive in the history of the county . . . The total number of people killed in Omaha was 94 . . . the estimated property damage is about three and one half million dollars". Prof. A. E. Schmidt, Creighton University at Omaha, viewed the tornado at some distance. He said, "It was rather dark immediately in front of the funnel, but surprisingly light outside the path. Immediately behind the storm the sky was clear up to the cirrus sheet. Above the funnel the cumulonimbus was banked mountain high, much higher than I have ever seen it after a severe thunderstorm." The Iowa Weather and Crop Service Report for March

1913 noted that five tornadoes moved into Iowa from Nebraska; the most destructive of which was the Omaha tornado. It was the Omaha tornado that traveled into the Council Bluffs area.

May 1918 received a third of the 20th century's outstanding tornadoes; one on May 9 and two on May 21. The May 21 tornadoes were quite damaging. The first extended from near Denison in Crawford County, with scattered losses along the route. The second tornado of that date killed nine persons and injured 55 in the city of Boone. During the tornado in Boone there was reported continuous brilliant lightning in the cloud and that shortly before and during its passage there was an intense hot wave a few blocks from the tornado.

On Sept. 28, 1923 Council Bluffs recorded its second major tornado—just a decade after its first major encounter with tornado. Six persons were killed in this event. The tornado was overshadowed by a million dollar flood from heavy rains the same date.

A quarter of a century passed until an afternoon tornado took five lives on April 23, 1948 at Ionia in Chickasaw County. The tornado originated near Nashua, causing farm destruction to Ionia, where it passed through the center of town with considerable damage, and then moved to near Cresco in Howard County.

The 1950s escaped major killer tornadoes; however, half a dozen very damaging tornadoes caused over a million dollars damage each.

During the decade of the 1960s, three major tornadoes ruthlessly leveled large segments of Belmond (Oct. 14, 1966), Charles City (May 15, 1968) and Oelwein and Maynard (May 15, 1968).

The Belmond tornado was described at that time as "Iowa's greatest tornado disaster in nearly half a century;" it was also the most destructive late season tornado day in the State's history. On Oct. 14, 1966 a dozen tornadoes swarmed across Iowa during the afternoon and evening. It was the second in this series that struck Belmond at 1:55 p. m. (CST) leaving in its wake six persons dead, 172 injured and \$12.5 million of property demolished. The other 11 tornadoes, scattered

from southwest to northeast Iowa, left another half million dollars of property strewn over the countryside.

The May 15, 1968 date toppled all damage records by tornadoes. The tornado passing through Charles City killed 13, injured 450 persons and cost some \$30 million in damage along its 65 mile path from Hansel in Franklin County through downtown Charles City to its ultimate end in Howard County near the Minnesota border. This tornado approached Charles City appearing as twin funnels which merged before entering the town at 4:47 p. m. (CDT). One family hid behind their sofa and lost consciousness as the tornado passed near,—perhaps because of the rapid atmospheric pressure reduction. They regained consciousness safely to see a demolished path, a block or two in width through the city. Four miles northeast of the city the tornado hurled debris into the ground and left a series of corn stalk debris in whorls. C. E. Lamoureux, Meteorologist in Charge (Des Moines Weather Bureau Office), and the author measured the diameters of the nearly circular debris and estimated wind speeds in the tornado approximated some 400 miles per hour. The house immediately in its path was completely demolished, all else badly damaged. Today Charles City stands, yet disfigured, a testimony to the awesome fury of nature's most terrifying storm.

Ten minutes after the tornado roared into Charles City another demolished Oelwein and then moved on to damage Maynard. In Table 2 the time is listed as 3:57 p. m., since all times are entered in CST. The tornado path was not so long as the Charles City tornado but, before ending, it had claimed five lives and 156 injuries. Property losses approximated \$21 million. May 15, 1968 far exceeds the dollar loss of any previous tornado date in Iowa.

Although Iowa has one of the best kept tornado records in the nation, it is nevertheless incomplete. During the past decade, which is assumed to be a fairly representative period, the summary tornado data are tabulated year by year. It appears that tornadoes actually occur at a rate of about 30 per year on 14 days per season within Iowa. The dollar damages are naturally reflections of the continuing inflationary trends. The relatively low death rate and high injury rates

are probably a result of better tornado education and more hospitals. Improved hospital facilities and record keeping during these past few decades have given a more accurate count of all those persons with minor injuries, shock—in addition to the usually-counted serious injuries.

Because tornado counts have varied according to population, agencies and persons involved, communications, and public response it appears that a count of outstanding tornadoes may be a better indicator of the trends than tornado numbers. Since the establishment of the Federal and State weather services in the 1870s it would appear that even with some fluctuations that the real number of tornadoes does not vary greatly from decade to decade. The relatively high 19th century count in the decade of the 1880s reflected the energetic efforts of Lt. J. P. Finley of the U. S. Signal Corps in organizing a tornado reporting network. Finley's official efforts came to a close at the transfer of the U. S. Weather Bureau from the Army Signal Corps to the Department of Agriculture. The tornado program was immediately de-emphasized, even though the 1890s was also an outstanding decade of tornado activity.

Although tornadoes are the most spectacular of Iowa's storms the fact remains that in most recent years more people are killed by lightning than by tornado, and greater crop losses are suffered from hail or destructive winds than by tornado. With a density of 30 tornadoes per year, an Iowan's chances are only about one in five hundred (one half of one percent) that he will actually be in the path of a tornado. Many people during a lifetime in Iowa will never see a tornado.

TABLE 1. Some noteworthy Iowa blizzards.

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| 1856 | Dec. 2-3. At Dubuque "snow swept by an angry wind with blinding velocity." Sixteen to 18 inches new snow. |
| 1863 | Dec. 15-16. Eight or ten inches new snow at Des Moines with wind damage to a few homes. |
| 1863-64 | Dec. 31-Jan. 1. One of most severe over eastern Iowa. Moderate snow with severe cold wave. Cattle froze to death. Roads blocked. Two wolves came into Muscatine. |

- 1873** Jan. 7. One of most severe in years. Winds filled the air with fine snow that blinded travelers.
- 1881** Mar. 2-4. Very severe. Extended from Iowa to Michigan. Much suffering due to shortage of food and fuel.
- 1886** Jan. 7-8. Twenty lives lost in Iowa and heavy cattle losses reported.
- 1888** Jan. 12. Probably worst of history over north and west Iowa.
- 1898** Nov. 21-22. One of worst blizzards in years, winds 60 miles per hour. At Sidney, temperature dropped 64 degrees F. in 28 hours.
- 1904** Dec. 26-28. Worst blizzard in years, winds to 57 miles per hour.
- 1909** Jan. 28-30. Severe blizzard, intense cold and drifting snow, winds 65 miles per hour. Much livestock loss and property damage.
- 1923** Mar. 18. One of worst blizzards in years. Traffic stalled. High winds, temperatures near zero. Birds and animals froze.
- 1936** Feb. 8-10. Blinding blizzard; worst in many years. Two deaths from exposure, transportation paralyzed and towns isolated.
- 1940** Nov. 11. One of most destructive blizzards of record over north and west Iowa. Seven persons died. One and a half million dollars damage to orchards and millions of dollars losses to livestock and fowl. Subzero temperatures with high winds reduced visibility to zero at times.
- 1942** Jan. 1. Gale winds fanned heavy snow into deep drifts. Severe cold wave. A record 24-hour snowfall of 19.8 inches at Des Moines.
- 1960** Feb. 9-10. Worst blizzard in several years over southern two-thirds Iowa. Six to 16 inches new snow. Winds 45-55 miles per hour. Six storm related deaths.
- 1965** Mar. 17-18. Worst blizzard in years over much of northern Iowa. Four to 12 inches new snow. Winds to 60 mph, gusts to 70 mph. Thousands of travelers isolated, one person dead and 4 hospitalized from exposure.

Table 2
OUTSTANDING IOWA TORNADOES (1803-1969)
In Which Human Lives Lost

No.	Location	Tornado		No. of People	
		Date	Time	Killed	Injured
1.	Iowa City, Johnson Co.	May 24, 1859	Aftn.	5	18
2.	Camanche, Clinton Co.	June 3, 1860	5:00 p.	134	81
3.	Keokuk and Washington Cos.	May 22, 1873	2:15 p.	8	15
4.	Monona Co. to Buena Vista Co.	Apr. 21, 1878	4:00 p.	10	28
5.	Crawford Co. to Pocahontas Co.	Apr. 21, 1878	4:30 p.	18	29
6.	Macedonia, Pottawattamie Co.	June 9, 1880	Aftn.	20	—
7.	Wheeler's Grove, Cass Co.	June 9, 1880	Aftn.	Many (20)	—
8.	Hancock Co. to Cerro Gordo Co.	June 11, 1881	4:00 p.	9	—
9.	Grinnell, Poweshiek Co.	June 17, 1882	4:00 p.	100	300
10.	Dunlap, Harrison Co.	Apr. 21, 1883	10:00 p.	Some (5)	—
11.	Pomeroy, Cherokee Co. to Calhoun Co.	July 6, 1893	5:00 p.	89	Many
12.	Clay County	Sept. 21, 1894	5:00 p.	53	—
13.	Sioux, Lyon & Osceola Cos.	May 3, 1895	3:20 p.	15	35
14.	Polk to Jasper Co.	May 24, 1896	9:30 p.	20	—
15.	Stanwood, Cedar Co.	May 18, 1898	3:00 p.	19	40
16.	Salix, Woodbury Co.	June 11, 1899	5:30 p.	5	—
17.	Pottawattamie Co. & East Harrison Co.	Mar. 23, 1913	6:00 p.	33	100
18.	Pearl Rock to Calmer, Butler Co.—Winneshiek Co.	May 9, 1918	4:00 p.	8	20
19.	Denison to Stanhope, Crawford Co.—Hamilton Co.	May 21, 1918	2:15 p.	6	35
20.	Berkley to Wellsburg, Boone Co.—Grundy Co.	May 21, 1918	3:45 p.	10	91
21.	Council Bluffs, Pottawattamie Co.	Sept. 28, 1923	7:50 p.	6	5
22.	Ionia, Chickasaw Co.	Apr. 23, 1948	3:25 p.	5	25
23.	Belmond, Wright Co.	Oct. 14, 1966	1:55 p.	6	172
24.	Charles City, Franklin Co.—Howard Co.	May 15, 1968	3:10 p.	13	450
25.	Oelwein-Maynard, Fayette Co.	May 15, 1968	3:57 p.	5	156

Table 3

DECADAL NUMBER OF REPORTED TORNADES, DEATHS,
INJURIES & TORNADES CAUSING DEATH &/OR INJURY

Decade	Total Number by Decade			Number Tornadoes Causing				
	Tornadoes	Deaths	Injuries	10 or +	Death 5 or +	1 or +	Injury 1 or +	Death or Injury
1800-09	1	0	0	0	0	0	0	0
1810-19	0	0	0	0	0	0	0	0
1820-29	0	0	0	0	0	0	0	0
1830-39	1	0	0	0	0	0	0	0
1840-49	6	1	1	0	0	1	1	1
1850-59	4	5	18	0	1	1	1	1
1860-69	7	134	81	1	1	1	1	1
1870-79	30	40	87	2	3	6	6	7
1880-89	109	167	349	3	5	8	8	10
1890-99	40	221	366	5	6	17	22	26
1900-09	11	6	18	0	0	3	3	5
1910-19	40	65	286	2	4	10	12	12
1920-29	147	32	166	0	1	18	32	41
1930-39	180	11	149	0	0	8	29	30
1940-49	148	11	148	0	1	6	33	33
1950-59	133	6	102	0	0	6	24	26
1960-69	312	32	991	1	3	10	38	39
Totals	1169	731	2762	14	25	95	210	232

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