

THE GREAT FIRES OF OCTOBER 1871

As the Summer of 2000 closes across the United States, it will be remembered as the *Summer of Fire* in many areas of the country, particularly in the West and Southwest. At the time of writing (mid-September) 77,893 wildfires have burned 6,762,838 acres (2,736,920 hectares). While the United States is no stranger to major fires raging across its vast acreage of forests and grasslands, the current year to date number of fires and acreage burned ranks as the second most fiery year since 1988, behind 1996.

Many US wildfires have not only burned large acreage of forest and grasslands but several have also taken many human lives. From September 4 to 6, 1881, fires in the Thumb area of the Lower Peninsula of Michigan burned approximately 1 million acres (400,000 hectares) of forest and caused 282 fatalities. In Hinkley, Minnesota on September 1, 1894, a forest fire destroyed 160,000 acres (65,000 hectares) and totaled 418 fatalities. Killer fires again struck Minnesota on October 12, 1918 with 1.2 million acres (485,000 hectares) burned and the community of Cloquet suffering 400 fatalities.



Forest Fires. Photo Courtesy of
US National Interagency Fire Center

Fires burning in Idaho and Montana this past summer rivaled those that ravaged the area during the *Big Blow-Up of 1910*. In August 1910, fires of biblical proportions stormed across Idaho, Montana and Washington. Three million acres (1.2 million hectares) in the Bitterroot Mountains in Montana exploded in flames. Whole towns were incinerated and eighty-five people died, most firefighters. Smoke, drifting across the country, so darkened the skies in Watertown, New York that street lights remained on all day.

The Great Yellowstone Fire of 1988 though not a great killer of human life, burned more than 1.6 million acres (650,000 hectares) in America's flagship national park, Yellowstone National Park, and surrounding forests from June

23 to September 11. The fire finally burned out when the snows of November covered the last smoldering land.

But for sheer destructiveness and loss of life, the great fires raging on the weekend of October 8- 9, 1871 will go down in US history as its greatest fire disaster. On October 8, major fires broke out almost simultaneously in Michigan, Wisconsin and Illinois. When the fires were finally extinguished, over 1,700 people had died and millions of acres of forest land reduced to charcoal.

Autumn 1871 was marked by extraordinary conflagrations in widely separated regions of the United States. On the same day that the Michigan, Wisconsin and Chicago fires flared up, regions of Iowa, Minnesota, Illinois and Indiana were severely devastated by prairie-fires while forest fires raged on the flanks of the Alleghenies, the Sierras and the Rocky Mountains, as well as along the Red River of the North.



The fires around Lake Michigan were to be the worst. In Michigan's Lower Peninsula from the central Lake Michigan coast northeastward to the Lake Huron shore, fires sweeping from Holland and Manistee to Tawas City totaled 200 fatalities and over 1.2 million acres (485,000 hectares) burned. The Michigan fires, however, received little publicity, for on the same day, fire struck the City of Chicago with calamitous consequences. The *Great Chicago Fire* killed 250 persons, burned

17,450 structures; and caused \$196 million in property loss, destroying much of the central business district.

And almost to the minute that the fabled Chicago Fire broke out, a more deadly fire exploded to life 240 miles (390 km) to the north along the shores of Green Bay. Within hours, the Wisconsin town of Peshtigo was leveled. The great killer firestorm raced throughout the Peshtigo area forests then jumped Green Bay to the Door Peninsula. The fires extended over parts of several counties -- including Marinette, Oconto, Kewaunee and Door in Wisconsin and Menominee in Michigan. The firestorm killed 1,182 and destroyed over 1.25 million acres (500,000 hectares) of timberland. To this day, the *Great Peshtigo Fire* ranks as the deadliest fire in US history, natural or otherwise.

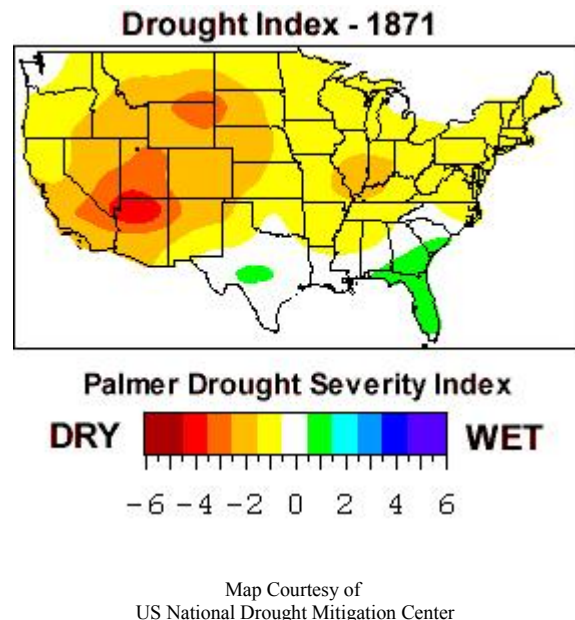
Looking for a Cause

What actually caused each of the great fires that broke out on the evening of the 8th, we will never truly know. Legend has it that Chicago's fire was set by Mrs. O'Leary's cow kicking over a lantern. A recent hypothesis suggests that the simultaneous major fire outbreaks occurring in Chicago, Peshtigo and Manistee, Michigan were sparked by heavenly fireballs bombarding the Earth, the remnants of Comet Biela. The most plausible cause was the sudden rise in the wind speed ahead of a slowly approaching cold front, which fanned and then spread the flames of fires already burning in each location. In some areas, the runaway flames may initially have been deliberately set to clear land and logger's slash. Whatever the cause, the flames raced across the region, burning all in their path.

No matter what the cause of the individual fires that fateful day, the weather of 1871 played a major role in the great devastation from these fires. The summer weather across the Great Lakes region the Midwest and large areas of the West was very dry. According to the US Weather Service office in Chicago, where "leaves had started dropping as early as July;" only 5.27 inches (134 mm) of rain had fallen on the city from July 1st to October 1st, rather than the normal 9-plus inches (>230 mm). Lansing, Michigan recorded 70% of normal precipitation during these months; Thunder Bay, Michigan reported only 64% of normal. According to Professor Increase Allan Lapham of the Weather Service, one of America's pioneer weather forecasters: "Unusual dryness has prevailed [sic] the atmosphere during the past two months; the amount of rain-fall has been very considerably less than the average and the amount of evaporation considerably more."

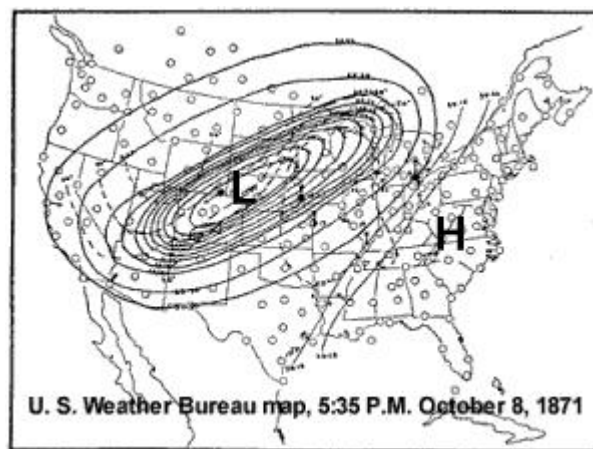
In the Peshtigo forest region along the western shores of Green Bay, only a trace of precipitation fell between July and October. Sturgeon Bay, on the Door Peninsula on the eastern shore of Green Bay measured only 4.75 inches (120 mm) of rain during July, August and September rather than the normal three-month total of around 12 inches (300 mm).

As the first week of October passed, the weather conditions were ideal for fire and the forests tinder dry. Indeed, fires were already being reported across Minnesota, Wisconsin and Michigan forests and grasslands, and several fires burned within the Chicago city limits. On October 3, Professor Cleveland Abbe, one of the US Signal Service forecasting meteorologists



scribbled the following comment on the edge of his weather map: "Unparalleled fire in northeast Minnesota-- great fire in northwest Minnesota." At the time, a prairie fire swept along a 100-mile (160 km) front from Breckenridge, Minnesota to the *Big Woods*.

A dry, high pressure cell slide southeastward across the Midwest US on Thursday and Friday, October 5-6, its ridge settling along a line from Ohio to Mississippi. Under the cell, critical fire- weather conditions gripped the Midwest. On the morning of October 8, a weak weather system formed a wave around the joint borders of Nebraska, Iowa and South Dakota, putting Illinois, Wisconsin and southern Michigan in its warm sector between the cold front and the High, now centered over West Virginia. The pressure gradient tightened between the two systems causing a strong southwesterly flow of dry air from Kansas through Michigan.



Weather Map for 8 October 1871.
Illustration Courtesy of
US National Weather Service

Fire weather experts Donald Haines and Earl Kuehnast have suggested that the advance of a moist tongue of air advancing slowly across Wisconsin ahead of the cold front on the 8th could have been associated with a low-level jet of very dry air ahead of it. Thus, dry, warm winds of 25 mph (40 km/h) or more blew across northern Illinois and up the Lake Michigan shore to Green Bay. The jet combined with the extremely dry fuel in the forests across the region produced critical fire conditions, leaving a situation ripe for disaster.

As the center of low pressure tracked from eastern Nebraska across Lake Superior into Northern Ontario from the morning of the 9th to the afternoon of the 10th, a cold front swept across the burning region. It passed Chicago and Peshtigo during the early hours of October 10th and Michigan by mid-afternoon. The frontal system dropped substantial rain ahead of it west of

the fire regions but only brought light rain to the fire-stricken areas. Peshtigo reported rainfall of 0.3 to 0.5 inches (8 to 13 mm) on the 9th. The Chicago area received only 0.1 inches. Western Michigan reported less than 0.25 inches (6 mm). But the fires were checked, not by the fall of rain, but for want of combustible material in the direction toward which the flames were driven by the wind.

The Great Chicago Fire

The night before the *Great Fire*, a raging fire burned out a four-block area of the West Side of Chicago that required the services of almost half of the city's firefighters. That fire was to be a harbinger of the disaster that would strike on Sunday evening, October 8, 1871.

The air over the city was almost entirely destitute of moisture, and the wind blew a gale from the southwest when fire broke out about eleven o'clock on Sunday evening, October 8th. About midnight, the fire had increased considerably in area and intensity, whipped by winds of 30 mph (50 km/h) or more. The wind-blown ash, Bessie Bradwell Helmer would recall, "was like a snowstorm only the flakes were red instead of white." Men, women and children rushing frantically about to save their lives, but many were trapped. "Telegraph posts are transfigured into burned and branchless trees," reported James T. Sheahan and George T. Upton of the *Chicago Tribune*.

Professor Increase Allan Lapham wrote of the situation in the city:

"Masses of flames were blown forward, and are described as 'balls of fire that were observed to fall like meteors in different parts of the town, igniting whatever they came in contact with.' Another account says 'that the fire came from the air above, more than from the earth.' It swept along in detached clouds borne with a tornado-like fury. The clouds of fire would be swept along in waving masses of different sizes. A man describes one of these clouds as of 40 feet [12 m] in size each way. Whatever he saw it touch, the object, tree or house, wilted directly down. These clouds of fire usually touched the tops of the tallest houses first, when the building would burn down as if saturated with kerosene. It seems as if the air was charged with clouds of fire."



Chicago Fire 8 October 1871.
Illustration by Ths. Kelly (1871)

Horace White, editor-in-chief of the *Chicago Tribune*, described the scene:

"The dogs of hell were upon the housetops of La Salle and Wells streets, just south of Adams, bounding from one to another. The fire was moving northward like ocean surf on a sand beach. It had already traveled an eighth of a mile [200 m] and was far beyond control. A column of flame would shoot up from a burning building, catch the force of the wind, and strike the next one, which in turn would perform the same direful office for its neighbor. It was simply indescribable in its terrible grandeur."



The Chicago Fire
Burning of
the Crosby Opera House
Harper's Weekly

The Chicago fire raged for two days and nights, burning until it reached the Lake Michigan shoreline. On the morning of October 10, 1871, light rains began to fall and the main fire, lacking any more material to burn, finally died out, leaving complete devastation in the heart of the city. The fire covered over 2,100 acres (850 hectares), caused 250 deaths, destroyed 17,450 buildings and left 70,000 homeless (out of a population of 324,000). The entire central business district of Chicago was leveled. Much of the city, however, did not burn. Most of Chicago's heavy industries, including the stockyards, were located out of harm's way, west or south of the burnt district. Although the downtown railroad depots were leveled, the far more critical rail infrastructure received much less damage.

Wisconsin: The Great Peshtigo Fire

While Chicago burned to the south, the forests around the western shore of Green Bay exploded into flames. The communities of Peshtigo and Sugar Bush were consumed in a firestorm. The fire quickly jumped across Green Bay to the Door Peninsula, similarly devastating the village of Williamsonville, Wisconsin. When the infernos finally died, over 1,182 persons had perished, almost five times the Chicago fatality total.



Forest Fire Photo Courtesy of
US National Interagency Fire Center

The whole village of Peshtigo was wiped out in a few hours as a series of fiery whirlwinds showered cinders and sparks in every conceivable direction. "The illumination soon became intensified into a fierce lurid glare, the roar deepened into a howl, as if all the demons from the infernal pit had been let loose, when the advance gusts of wind from the main body of the tornado struck...The fire came upon them so suddenly that it was not in the reach of mortal power to stay its fury. Peshtigo is burnt clean as a prairie," reported the *Marinette and Peshtigo Eagle*.

Edward J. Hall of nearby Oconto recalled:

"Balls of fire were observed to fall like meteors in different parts of the town [Peshtigo], igniting whatever they came in contact with. By this time the whole population was thoroughly aroused and alarmed, panic-stricken....A brilliant and fearful glare grew suddenly into sight. Man and women snatched their children and ran for the river. Wave after wave of flame and masses of fire, with an awful roar, flew over them. Inhaling the burning air, hundreds dropped within sight of the river while many fell within a few feet of the river. Those who reached the river throw water and wet cloths on their heads, and even kept under water as much as they could, and yet were burned to death. Among the farmers, the fire and wind swept upon them with the same suddenness and fury. The forest around them was leveled. Amid the roar of the fire and wind and the crash of falling timber, men, women, children and animals -- even wild animals -- flew, they knew not whither [or] in most cases cared. A small stream, nearly dried up, ran through much of these settlements. Many who reached it and were in it burned to death. Some went into their cellars and perished miserably. Five bodies were taken from a well literally roasted."



Peshtigo Fire 8 October 1871.
At The River
Illustration from
Harper's Weekly November 25, 1871 edition

A firestorm, a fierce tornado of flame had descended on Peshtigo. Describing the Peshtigo holocaust as a tornado of flame is no exaggeration. Fire whirls were reported to precede the main blaze, towering high into the sky. While surface winds measured elsewhere in the region only blew at 15 to 40 miles/hour (25 to 65 km/h), the firestorm produced its own winds estimated to have been as high as 80 mph (130 km/h). The firestorm became a great convective, self-feeding monster increasing in intensity as it drew both oxygen and wood to fuel the conflagration into its maw. Its hurricane-force winds ripped the roofs of houses, blew over barns, uprooted trees, and tossed 1,000-lb (454-kg) wagons like tumbleweed.



Forest Fire Photo
Courtesy of
US National Interagency Fire Center

"The whole country is a scene of devastation and ruin that no language can paint or tongue describe. There is only one farm of any note in the entire [Sugar] Bush that has escaped. Nearly all the buildings of any value in Menekaune were consumed in spite of the most despairing efforts, and we are safe in saying that had we been visited by such a tornado of wind and flame as our neighbors at Peshtigo, nothing could have been left of our town," lamented the Marinette and Peshtigo *Eagle*.

"At Peshtigo and in the Sugar Bush all the cattle, sheep, swine and poultry are destroyed. Miles of country, where but a few days ago existed pleasant farms and an abundance of the necessities of life, now lie devastated with not a living thing left," they continued.

On the Door Peninsula, across the waters of Green Bay from the Peshtigo conflagration, the scene was as grim. The burned district commenced near the town of New Franken, Kewaunee County and extended as far as Little Sturgeon Bay in Door County, a swath of about sixty miles in length.



Williamsonville Fire 1871
Frank Leslie's Illustrated

The greatest concentration of death on the peninsula occurred at Williamsonville, a hamlet five or six miles (8-10 km) from Little Sturgeon Bay. Williamsonville was also struck by a fire tornado and 60 of its 77 of its inhabitants perished that fateful night. Its citizens ran for a clearing where the mill hands had run for safety when the Williamson Mill caught fire. There, surrounded by a blazing forest, they threw themselves to the ground trying to evade the flames and the smoke, but all were suffocated by the terrible heat and smoke.

Michigan Fires

Overshadowed by the Chicago and Peshtigo fires, major wildfires also swept across lower Michigan forests on these fateful days. (The Peshtigo fire also spread across the Wisconsin/Michigan border around Menominee.) The southern Michigan fires burning across a swath between the Lake Michigan shoreline from Holland to Manistee and Tawas City on Saginaw Bay, Lake Huron, received little publicity but were no less deadly. Two hundred people lost their lives, several hundred families were left homeless, and 1,200,000 acres (485,000 hectares) of forest were burned.



Forest Fire Photo Courtesy of
US National Interagency Fire Center

The devastation was most complete over a 40 square mile (104 sq km) area from Saginaw Bay to Lake Huron in which 50 died. The weather observer in Thunder Bay (Alpena), Michigan reported: "...smoke so dense and heavy from the fire in the woods on the mainland...that the house had to be lighted up the same as night. Could not see to read any newspapers...the chickens were to their roosts, a most dismal sight...."

Last Words

The fires gave Chicago lumber magnate William B. Ogden a double whammy, destroying not only his Chicago mansion and businesses but also his lumber mill in the Peshtigo firestorm.



Forest Fire Photo
Courtesy of
US National
Interagency Fire Center

There is also a final irony to the 1871 story. In 1881, a more severe forest fire hit the Thumb area of lower Michigan consuming over a million acres. This fire was fed by sloppy logging practices during the lumber bonanza that denuded large parts of the Lower Peninsula in the later 1870s. And where did most of that harvested white pine go? **To rebuild burned Chicago**, according to Professor Tom Jones of Eastern Michigan University and former director of the state's Historical Society.

Was the coincidental outbreak of fires separated by hundreds of miles extraterrestrial arson or chance weather events occurring under tinder-dry conditions -- an event waiting to happen? Or was the outbreak the final culmination of a long, dry season, punctuated by many smaller fires which blew up under strong, dry winds? Professor I.A. Lapham of the Weather Office remarked on the situation: "A dry season, a strong wind, and an accidental fire, whenever they occur together, will do the work."

Whatever the cause, the extreme dryness of the combustible materials in the forests surrounding Lake Michigan provided the idea fuel for extremely hot fires. Such heat can produce local, violent weather conditions known as a firestorm or fire tornado. These self-generated convective storms can generate tornado-like whirlwinds blowing in excess of 150 mph (250 km/h) that are capable of lifting large logs and producing gaseous explosions around them. Under naturally generated firestorms, trees ahead of the storm appear to explode into flames as if torched by an unseen hand. Similar firestorms devastated the cities of Tokyo, Japan, and Hamburg and Dresden, Germany during World War II, the result of Allied fire bombing.

For Further Information

The City of Chicago has a site to commemorate the Great Chicago Fire:
[The Great Chicago Fire and the Web of Memory](#)

There are a number of pages with information on the Peshtigo Fire:

[The Great Peshtigo Fire of 1871](#)

[THE PESHTIGO FIRE October 8, 1871](#)

[The Marinette and Peshtigo *Eagle*](#)

[The Great Peshtigo Fire of 1871](#)