

## Climatic Changes

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## CLIMATIC CHANGES.

BY CHARLES ALDRICH.

One who has lived his three score years and ten has seen more changes than had previously transpired in centuries. These changes are so numerous that it would be quite overwhelming to attempt their enumeration. They confront the observer who stops to think, on every hand, as in travel and transportation, the transmission of intelligence, lighting and heating, improved homes, business methods, in arts and manufactures, the diffusion of knowledge—and in fact, in everything which affects our surroundings or ministers to our comfort and enjoyment. But changes quite as marked, though not so directly palpable, have taken place in the climate and meteorological conditions of the United States, whatever may be true of other regions.

One who climbed the forested hills of Western New York in the forties and fifties found them deeply carpeted with leaves, the shade overhead so dense as often to shut out the sunlight, while brooks and creeks alive with speckled trout went singing through the ravines and valleys. The forests were musical with the songs of birds, and the passenger pigeons bred and migrated in uncounted millions. Deep snow in winter and heavy rains in the spring, summer and autumn, kept the streams alive and the earth filled with moisture. There were "January thaws" and "June floods," almost as regular in their recurrence as the seasons of the years. Whittier sang of "the long October rains" in a way to indicate that they were always to be anticipated.

Much the same state of things existed here in the Middle West thirty to forty years ago. When the snows melted in the spring the rivers were almost invariably filled with thick ice, which, in breaking up accumulated often in great gorges, causing the water to overflow the low lands along the valleys. In hundreds of instances immense cakes of ice were carried beyond the banks, where they wore or bruised patches of bark from the trees, leaving great scars, many of which partially overgrown may still be seen. Scores of the prairie

creeks flowed perennially, and were the resorts of pickerel and other fishes. The large streams were well supplied with fish and were the homes of innumerable otters and beavers, while the groves and sloughs were alive with the feathered creation. Prairie chickens, wild turkeys and the migratory aquatic birds, furnished the sportsmen with a succession of game nine months in the year. The soil was always moist from the grass roots down. The Iowa rivers were majestic streams when not encased in ice. But how all this has been changed! The rivers have shrunk to less than a twentieth of their old-time dimensions. The brooks and creeks and in many cases the ponds and lakes, have utterly disappeared, leaving peat or dry sand and gravel in their beds. The game birds are exterminated or have flown to other regions. Prairie grasses and hay are rapidly becoming things of the past. The very ground has but a thin layer of a few inches of moist earth at the surface, below which there is complete desiccation to the depth often of one to two hundred feet. Thousands of forest trees have died during the last ten years from this disappearance of water.

Let us briefly enumerate some of the phenomena the writer has observed in confirmation of the foregoing remarks, the most obvious of which is the shrinkage of lakes, ponds, springs and streams. While we have noticed these occurrences for a much longer period, they have been more marked during the last twenty years. Innumerable instances might be specified. They doubtless occur in every part of the United States, but a few will suffice.

In 1857 Boone river, the largest tributary of the Des Moines above the State Capital, was a beautiful stream, draining large portions of Hamilton and Wright counties. It was plentifully supplied with the choicest varieties of fish, as black bass, pickerel, and wall-eyed pike, with several inferior species. We saw them taken out in large quantities with seines, and there were deep places in which persons had been drowned. It was a stream which furnished water power for flouring and sawmills, and its sources seemed to be perennial. But a gradual shrinkage began in the seventies, and was more

marked in the eighties. In 1896 its bed became completely dry. In 1897 and 1898 the increased rainfall gave its bed a small supply of running water, but scarcely a twenty-fifth of that of 1870. The beds of many of the streams along the line of the Baltimore & Ohio railroad east of Pittsburg which were wild and tumultuous torrents many years later than 1860 are now dry and dusty in summer, or only threaded by little runnels of dirty water. One can easily cross the most of them by stepping from stone to stone. In the early days of the railroads these streams were noted for containing vast quantities of fish, but that fame has passed them by for all time—apparently. The wild and beautiful mountain streams have ceased to exist. The Des Moines was a majestic stream down into the seventies, the region through which it ran almost a fairy land to the artist and sportsman. Mississippi steamboats frequently ran up to the State Capital, and on one or two occasions smaller craft ascended much higher. It was long in contemplation to render it navigable during those portions of the year it was free from ice, and a great grant of land was made by Congress to secure this end. To-day so great has been its shrinkage that a Mississippi catfish of the largest size would have a hard job before him in attempting its ascent, to say nothing of steamboats. In many places its bed is being gullied into small islands crowned with such vegetation as sand and water can support.

Throughout Iowa excellent wells could be made by digging from ten to thirty feet, and they seemed to promise permanence. But water has mostly disappeared above the bed-rock—save where it exists in “pockets” of but limited extent, which in a few years are pumped dry. Thousands of farms are now only supplied with water by boring into the solid rocks, often to the depth of 200 to 500 feet. These facts tell their own story of desiccation. And here is another, in the writer’s judgment the most startling of all; our agriculture has been carried on for several years with only a few inches of moist earth at the surface, possibly not less than five or six, nor more than twenty or thirty inches. In the old days moisture was abundant from the surface down to where it was

in sufficient supply for wells. At this time there are tens of thousands of acres in which not a drop can be found in the drift and only by boring deep into the rock below. Thirty years ago, on the Plains and in the Rocky Mountains, the Indians and other travelers could depend upon finding plenty of water every ten to fifteen miles. But these springs have disappeared and at this time, such travelers are often compelled to carry a supply of water with them, or make "dry camps." We state this fact on the authority of Dr. Elliot Coues, the distinguished explorer and author.

Quite as marked atmospheric changes have also taken place. A blizzard forty years ago meant fierce and steady blowing from the northwest, with a heavy fall of snow. The blizzard storm generally lasted about three days. Perhaps three feet of snow fell in the forests where the air was still, while it would be piled in immense drifts out on the prairies. In these days, if a blizzard happens along the wind may blow furiously for some hours, leaving less than an inch of snow. Rains fell plentifully throughout many months of the year. For the most part we see few of the dense nimbus clouds which used to extend from one horizon to the other heavily charged with rain or snow. During these later years the clouds are thin and scattered, seldom ever obscuring the light of the stars. There is very little moisture in green firewood, which burns almost as freely as timber cut a year before. In one of the seasons a few years ago, our forest trees barely leaved out making no woody growth whatever. The past three or four years have witnessed a slight change for the better in this regard.

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