

Floods and Forests

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A CHRONICLE OF THE EARLY MIDDLE AGES records a strange tradition about the last prince of the [Heruli](#), who became so deeply interested in a game of chess that he failed to heed the uproar caused by the approach of a hostile army, and had just managed to “castle” his king when the gates of his own castle yielded to the battle-axes of the [Longobards](#).

The historians of the future may credit us with a taste for equally absorbing studies, if they should try to explain our indifference to the significance of an omen which, in the course of the last fifteen years, has repeated its warnings at half a hundred different points of our national territory.

About sixty years after the arrival of the first Caucasian colonists, it was first noticed that the lower river valleys became subject to inundation that had been unknown at the time when the Atlantic slope from Florida to the Gulf of St. Lawrence was covered with continuous forests. Still, those floods were too rare to cause serious alarm; but soon after the celebration of our first national centennial it became evident that the climate of North America must have undergone a permanent, though rather sudden, change for the worse. Spring floods of increasing destructiveness became phenomena of almost yearly occurrence, even in districts where there had been no appreciable increase in the rate of forest destruction. All along the lower course of the Ohio, the Tennessee, the Cumberland, the Arkansas, and the Missouri, freshets caused an amount of havoc suggesting the conjecture that

the rainfall in the headwater regions of those rivers must have more than doubled. The records of the meteorological observatories refuted that theory; yet the suddenness of the change can be fully explained. In all new colonies offering a choice between lowlands and highlands, the valleys of the foothills attract the largest number of permanent settlers. The tidewater regions repel by their malarial swamps, and mosquitoes are as troublesome in eastern New Jersey as in eastern Georgia, while the higher mountains are too inaccessible to carts and ploughs to encourage rapid settlement. In central New York, Maryland, Virginia, Georgia, and the Carolinas, millions of acres had thus been cleared when the forests, both of the coast plains and the highlands, were still large enough to afford shelter to the solitude-loving hearts of the wilderness.

The rapid increase of population, however, soon invaded those sylvan solitudes. The recoil of the westward exodus was followed by a woodward overflow of the stream of home-seekers. Droughts, fuel-famines, and locust swarms had taught thousands to prefer the shaggy mountains to the naked plains. The increasing price of lumber attracted attention to the virgin forests of the highlands. The song of the mountain thrush was silenced by the sound of countless axes and the crash of falling trees. In the Adirondacks, in the southern Alleghanies, even in the cloud-capped Unakas of eastern Tennessee, every “cove” containing a few acres of arable land was cleared and settled. Hundreds of tramways, “timber roads” as they are significantly called, connected the main railway lines with the lumber camps of the uplands.

Those uplands have now become accessible enough but also rather uninviting by the contrast of their treeless slopes with the magnificent forests and “wild-hanging woods” of former years. And here we find the key to the enigma of the remarkable change in the frequency of spring floods. The reckless destruction of woodlands in extensive plains may avenge itself by the disappearance of insect-eating birds and the liability to protracted droughts; but local floods are caused only by the most violent rains, since

the drainage of level fields is mostly absorbed by the soil before its overflow can materially affect the valley rivers. In treeless highlands, on the other hand, rainwater runs down a steep mountain slope as from a roof, and, where such waters are swelled by rills from extensive banks of melting snow, a few wet days may turn brooks into torrents and small rivers into surging seas.

Hence the destructiveness of spring floods since the middle of the last decade. For while in the valleys, the area of treeless lands has only doubled once in twenty years, it has doubled yearly in the highlands and will soon extend to the very summit regions of every east-American mountain range accessible to the skilled road-builders of Yankeedom. The prospective exhaustion of the Maine and Michigan pineries has warned speculators to turn to new fields of enterprise, and some three million acres of mountain forests, representing the last remains of the old east-American *sylvania*, have already been doomed to the axe.

We cannot hope that such secular trifles as the preservation of national parks should employ the leisure of statesmen engaged in the enactment of laws for the suppression of popular pastimes on the day on which ninety-nine in every hundred workingmen find their only chance for recreation; the “plea of the wood-bird” has no chance against the eloquence of the anti-forest-law lobbyist; but before the end of this century the folly of tree-destruction will be illustrated by an *argumentum ad hominem* conveying a memorable lesson in the less resistible logic of dollars and cents.

The ways of nature are less incalculable than those of our American party politicians, and as sure as the devastation of our highland forests is permitted to continue, the time is near when the lowlands of the Mississippi valley will be damaged at the average rate of a hundred million dollars a year, and when some fifty fine cities will have to undergo the horror of an annual deluge, equivalent to the havoc of a yearly bombardment. On the other side of the Atlantic, rivers not much larger than the second-class tributaries of the Ohio have caused devastations almost exhausting the resources of once-prosperous communities; and, unless the progress of the evil is obviated

in time, the same causes will produce the same effects in Pittsburgh, Allegheny City, Wheeling, Cincinnati, Louisville, Evansville, Nashville, and New Orleans. In Nashville alone, a thousand houses had this year to be abandoned before the middle of March, the latter half of which month generally brings the heaviest freshets; 560 in Cincinnati, 710 in Allegheny, with fears of the worst in the lower quarters of New Orleans, where a rapidly rising river has already passed the high-water mark of 1885. And yet the winter of 1890–91 was not remarkable for excessive rainfalls or for sudden thaws, the three weeks from the 20th of February to the 14th of March having been cooler than the corresponding period of any winter during the last seven years. What if the western Alleghanies should become as bare as the southern Cevennes, and the accumulated snow of a severe winter should be melted by heavy and far-spread rains!

“We will reforest our hills,” say our temporizing friends, “as soon as the magnitude of flood calamities has awakened the masses to a sense of their danger; we will plant forest trees, and the birds will return, droughts will become less severe, and winter floods will cease.”

Optimists of that sort ought to read the last report of the French Forest Commission, or better yet, the memorandum of a Virginia gentleman who tried to turn a lot of worn-out old fields into a timber plantation. The basis of his operations was a five-thousand-acre tract on the lower Chesapeake, where the climatic conditions would be supposed to be much more favorable to the growth of young trees than on the arid plains of the far West or on the torrent-swept terraces of a steep mountain range. The owner (Mr. Burnett Landreth) procured several thousand dollars’ worth of the best seed and seedlings, which he planted in well-ploughed furrows, according to the most approved rules of arboriculture; yet here are the results of his experiment: A small patch of white pine prospered fairly well. Of 150 bushels of black-walnuts a large percentage sprouted, but the trees grew too slowly to encourage an extension of the grove. Some 70,000 black locusts reached a height of twelve feet, and had already begun to form shady arcades, when “one September

the locust-tree borer mysteriously descended in swarms upon our groves, laying millions of eggs, which produced myriads of grubs, which by the next midsummer had ruined every tree. We had to cut the trees and pull out the roots with oxen at the expense of \$25 per acre.

“Next the Swiss and Scotch larch gave out, piping of the trunks, the main stem breaking off at about ten feet in height. It did not promise well at any time, and we had to strike it off the list, as well as the southern deciduous cypress.

“Of hickory and pecan the nuts planted were, to a great extent, stolen by the squirrels, woodchucks, and field-mice, and those which did vegetate made such slow growth that we ploughed them out and replanted the ground with catalpa.

“The tulip-poplar was not a success; the rabbits and field-mice during winter ate off from the tender seedlings the sweet, juicy bark, and destroyed nearly every plant.

“The Italian sumac, planted for its leaves, still stands, but the percentage of tannic acid in its foliage is not greater than in the leaves of the wild Virginia sumac; so its cultivation does not offer much hope for profit.

“The white-oak acorns were largely stolen by squirrels, woodchucks, rabbits, and field-mice, which ate the bark of the young seedlings, as they did of the poplar.”

The fact is that outraged nature at last refuses to be propitiated. Destructive insects haunt the grave of the slain primeval forests, and trees perish in the worn-out soil which still nourishes weeds and thorns.

The “storage-lake project” would lead to still more expensive disappointments. In order to prevent the sudden descent of highland floods, it has been proposed to construct artificial reservoirs, which would have to be filled before the swollen streams could pursue their coastward career of destruction, and which in midsummer could be utilized as feeders of irrigation canals. It would employ a thousand workmen for twenty years to dig out a pond large enough to check the floods which some of the upper tributaries of the Ohio roll down in a single week. The difficulties of the job might, indeed, be lessened by damming up a mountain valley at its narrowest point, but

the enterprise would, after all, be wrecked by a frequent and wholly unavoidable contingency—the fouling of the reservoir by the accumulation of sand and other sediment. In the course of a rainy winter a muddy torrent not wider than the James River at Lynchburg would pile its diluvium to the brink of the deepest pond now on this planet, and the removal of that sediment would perpetuate the expensiveness of the project, besides depopulating the neighborhood of the reservoir by the effluvium of ever-dripping mud hillocks. A similar result would follow the attempt to raise the levees of the valley rivers above the maximum of high-water marks. The mud and sand stratum at the bottom of the stream would gradually rise to the level of the dikes; the embankments would have to assume the proportion of chains of artificial hills, and the breaking of a single link in that chain would flood the adjacent lowlands with lakes which the next summer would turn into as many pestilential lagoons.

Prevention, indeed, is not only easier than

cure, but much cheaper. The hundredth part of the direct and indirect expense involved in the construction of adequate flood-gate lakes and the planting of climate-redeeming forests would suffice to buy up all the summit woods of the east-American highlands and guard them against fire and timber-pirates for the next hundred years.

All the New England states, all the states of the southern Alleghanies and the Ohio valley will be confronted with that inevitable alternative, and the time for decision is getting very short. Prevention or cure is still our choice, under tolerable conditions; a few years hence it will be pond-cure or plant-cure—the construction of half a thousand Moeris lakes, with their gnat and miasma-breeding surroundings, or else the planting and nursing of some twenty billion slow-growing seedlings, requiring constant assistance in their struggle for survival in a soil swarming with “gophers, rats, rabbits, field-mice, and chipmunks,” not to mention the grubs of the locust or the locust-tree borer. 🌿

