



WISCONSIN'S
ENVIRONMENTAL TRADITION:
A READER

C. F. WATKINS

ART GALLERY

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EDITED BY
BAILEY ALBRECHT AND MICHAEL EDMONDS

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WISCONSIN HISTORICAL SOCIETY
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*Cover photograph: portrait of John Muir ca. 1869-1874,
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(Wisconsin Historical Society image ID 1946).*

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PREFACE

We've assembled these short pieces for book groups being held around Wisconsin in 2016. This reading program accompanies a travelling exhibit from the Wisconsin Historical Society to mark the centennial of the National Park Service and celebrate the work of John Muir, who grew up in Wisconsin. Participants are reading Muir's Wisconsin memoir, *The Story of My Boyhood and Youth*, and we produced this small companion volume to put his career in historical context.

Wisconsin residents have written thousands of pages on environmental issues over the past three centuries, and other editors would choose different examples. We hope that this first attempt may prompt an expert in environmental history to do the subject proper justice.

We've tried to compile an anthology that covers a range of habitats, plants, and animals; that describes nearly all regions of the state, from Kenosha to Superior; that includes leading Wisconsin environmental thinkers such as Muir, Aldo Leopold, Sigurd Olson, and Gaylord Nelson; and that is likely to be enjoyed by non-specialists.

We have generally excerpted short sections of longer works, lightly editing some of them to make them easier to read, and introducing each with a paragraph of background information. Readers who want to consult the originals should follow the links in the Bibliography, which cites in full the source from which each selection is taken. Most are in the public domain. Omissions in the texts are noted with an ellipsis. Words within square brackets have been supplied by us.

We are grateful to *empower Magazine* for allowing us to use their interview with Will Allen, to our colleagues at the Wisconsin Historical Society Press for letting us reprint Patty Loew's preface to *Seventh Generation Earth Ethics*, and to the University of Wisconsin Digital Publishing and Printing Services

for producing the book in record time. We have printed only 500 copies for participants in the 2016 reading program, but will be happy to provide a PDF version to anyone else.

Bailey Albrecht
Michael Edmonds

Library-Archives Division,
Wisconsin Historical Society

I. BEFORE PERMANENT WHITE SETTLEMENT

1. MARGARET BOGUE ON EARLY USE OF LAKES AND RIVERS

[*UW historian Margaret Bogue is the author of several books on the Great Lakes, including the definitive work, Fishing the Great Lakes: An Environmental History, 1783–1933, published in 2000. These pages are selected from a 200-page article on the history and geography of Wisconsin's waterways that she contributed to the 1989-1990 State of Wisconsin Blue Book.*]

When in 1988 the Wisconsin Department of Natural Resources highlighted the Badger State's natural attractions, it ranked lakes, rivers, and streams among the leading resource treasures. The first 4 items on its roster read:

Wisconsin has 13,580 miles of streams.

Wisconsin has 2,444 trout streams totaling 9,560 miles.

Wisconsin has 860 miles of Great Lakes shoreline.

Wisconsin has about 15,000 lakes larger than 50 acres.

An outstanding feature of Wisconsin's rich natural endowment, over the centuries these waters have added great beauty and immeasurable material wealth to human life. Today they are popularly regarded as a wonderland for boating, fishing, swimming and for the restful aesthetic qualities that attract hundreds of thousands of vacationers and tourists annually.

Significant in the long record of human experience in the upper Great Lakes environment, Wisconsin waterways contributed vitally to Indian life, to the success of the French explorers and missionaries, to the feasibility of the multimillion dollar fur trade, to the empire building fortunes of France, Britain, and the United States, and to the progress of frontier settlement and development in the 19th century...

The prehistoric Indians were the first people to use Wisconsin's natural waterways. The findings of archaeologists and anthropologists reveal just how important a part rivers, streams, and lakes played in their lives. The single most substantial piece of archaeological evidence of Paleo-Indian hunting of mastodons

in Wisconsin has been tentatively identified at a stream bank in southwestern Wisconsin, near Boaz in Richland County, where a mastodon skeleton and a fluted spear point were found at a kill site. The presence of late Paleo-Indian hunters of the period 7,000-5,000 B.C. in the northern central lakes of Wisconsin has also been identified. They utilized lakeshores and points where lakes and streams joined for temporary camps in their very nomadic existence. Remaining evidence does not reveal whether or not these people fished. Surely they used the water and probably found that such places made good hunting locations. Similarly, the richness of available food, it is hypothesized, attracted late Paleo-Indians to the Lake Michigan shore.

Archaeological records found along streams, rivers, and lakes dating from succeeding time periods are more abundant, furnishing ample evidence of the highly important place of natural waterways in the techniques of subsistence. Surveying that long period of prehistoric Indian experience before the coming of Western Europeans, Helen Hornbeck Tanner characterizes it as "thousands of years of trial and error in which countless choices for the investment of human effort were balanced against a possible yield of food resources." She points out that fish came to occupy a significant part of the diet for Indian peoples in the Great Lakes region generally and especially for those living at the heads of Lake Michigan and Lake Huron and at the eastern end of Lake Superior. There fishing became the principal food source. Along Wisconsin's Great Lakes coastline, Indian people intensively fished the rich waters of Green Bay and Chequamegon Bay. Of the Great Lakes fish, whitefish and trout were preferred, but prehistoric people living on rivers, streams, and inland lake shores ate a very wide variety of fish. Mussels, waterfowl, and streamside animals like beaver, muskrat, and raccoon also furnished significant quantities of food. Water plants held places of varying importance in Indian diets. Wild rice, available in streams and lakes in an area roughly from the southern tip of Lake Winnebago north to Lake Superior's lower shore, provided

the basis for a distinct subsistence pattern. Moreover, both fish and wild rice entered into the trade patterns between Indian groups. For example, during the Middle Woodland period, a significant trade developed between the North Bay and Nakomis people of northern Wisconsin and the Hopewells to the south, quite possibly resulting in the southward movement of fish, furs, and wild rice as well as copper.

To pursue trade, to travel between hunting and fishing grounds, and to harvest the foods produced by streams, lakes, and rivers, Indian people developed both dugout and birchbark canoes. Dugouts were rather heavy and crude craft made from hollowed logs. The Chippewa became masters at building and paddling the birchbark canoe, the first of the eminently practical and beautifully designed light craft used on the natural waterways of the upper Great Lakes region. They often used jack pine or spruce roots for sewing and binding, spruce and pine gum for waterproofing, hardwood for ribbing, and cedar for flooring and paddles, and they always used white birch bark for covering. Family canoes were usually less than 18 feet long. Light, sturdy, and easy to portage, they worked well in streams and lakes, in very shallow water, and in white water, but skill and good judgment were essential, because the birchbark canoe was easily damaged by rocks and logs and was unstable, especially in turbulent lake waters. Fishing gear is the other obvious example of water-oriented technology developed over a long time span by prehistoric people. Fishhooks, spears, traps, gill nets, lures, trolling lines, and seines, often commonly assumed to be Western European in origin, are attributable as well to North American prehistoric people who fashioned them from natural materials.

Given the importance of the waterways as a source of food and as avenues of travel, many prehistoric Indian villages were sited on lakes, rivers, and streams, locations that appealed to later settler-developers for similar reasons. Lakes and rivers bore special significance as burial and ceremonial sites and as boundaries between hunting grounds...

The knowledge gleaned from centuries of prehistoric Indian life carried over into the historic period in many ways. The patterns of subsistence living based on natural resources continued to be significant for Indian people well into the 19th century, especially in areas of the upper Great Lakes where intensive development came late in the century.

In particular, fishing, gathering nature's bounty such as wild rice, and hunting remained important sources of food. Their importance to the Indian peoples of Wisconsin is clearly shown in the treaties made between the U.S. government and the Indian tribes in which hunting, fishing, and gathering rights were guaranteed on land ceded to the United States. These guarantees became part of the law of the land and remain so today. The Indian peoples passed along their accumulated knowledge of geography and life-sustaining techniques to the incoming Western Europeans. This knowledge allowed the newcomers to penetrate and eventually completely transform the natural landscape, using it in very different and far more destructive ways than had the Indians whom they dispossessed...

From the time of the French explorers until the 1830s, the major users of Wisconsin's natural waterways as avenues of transportation and as sources of food were people associated with various aspects of the fur trade, the main economic activity in the upper Great Lakes. First the French, and after 1763 the British, and finally after the close of the War of 1812 the American fur traders, plied the waters of lake, river, and stream in adaptations of the Chippewa birchbark canoe.

Very early in their experience, the French modified the dimensions of the canoe to suit the needs of the trade. The small family canoes of something less than 18 feet were adapted to carry astonishingly large cargoes and crews. On the large lakes and rivers, fur traders used the largest of these adaptations, the *canot du maitre*, or the Montreal canoe, 35 to 40 feet long and capable of carrying 6 to 12 crewmen and 6,000 pounds of freight. They used the *canot du nord* or north canoe, about 25 feet long

and capable of carrying a crew of 4 to 8 and a 3,000-pound load, on smaller rivers and lakes. These beautifully designed craft performed well as carriers of furs and trade goods over thousands of miles between remote interior locations, trade depots and rendezvous points, and populated centers of commerce.

Guided by Indians and propelled by the voyageurs, those hardy, short, thick-shouldered young French workers from the farms of the lower St. Lawrence, the canoe brigades made their way west from Montreal using the route of the explorers, who were themselves deeply interested in the trade. The rigors of shooting rapids, paddling long hours, and portaging overland for many miles in the course of a journey were very real. The romantic image of the voyageur includes the vision of a cheerful, gay, talkative, good-natured, courageous, strong man inured to physical hardships and very hard work.

With the rigors of the day over he sat around the wilderness campfire singing, smoking a pipe, telling stories, and dancing. Indeed he sang as he paddled. The popularity of the voyageur as a romantic frontier type probably emanates from the combined attention of late 19th century artists in Canada and the United States, from travel accounts, fiction, historical writings, and folklore. These skillful canoemen of the lower St. Lawrence farms served first the traders, explorers, and missionaries of the French regime, then the British, and then the Americans.

Throughout the era of fur trade in Wisconsin, the coastlines of Lake Michigan and Lake Superior, the Fox-Wisconsin diagonal, and the St. Croix-Mississippi route served as main arteries. Fur traders used most rivers and streams as ways of penetrating deep into the interior and engaging directly in trade with the Indians. It is quite realistic to think of most Wisconsin waterways as places where traders once passed in birchbark canoes with the larger rivers and lakes serving as routes for the big freight canoes...

[In the mid-19th century,] as the great freight canoes of the fur traders disappeared from the lakes and the sound of singing voyageurs faded away, new forces were already transforming

the rivers, lakes, and streams to different human uses. The age when Wisconsin waterways helped to deliver North America's multimillion dollar harvest of animal pelts to Europe's furriers had passed, and with it went a mode of Indian life built around the beaver and European trade goods.

2. JOURNAL OF FR. JACQUES MARQUETTE, JUNE 1673.

[Marquette and his companion, Louis Joliet, were the first Europeans to cross through Wisconsin. In June 1673 they entered Green Bay, went up the Fox River to the portage and down the Wisconsin River to the site of modern Prairie du Chien, en route to the southern Mississippi Valley. We've selected these passages from his journal of the trip, which was printed several years later in Paris. To make Marquette's text easier to read, some of his 17th-century terms have been silently replaced here by their modern English equivalents. A Web link to his unedited text is given in the Bibliography for readers who want to consult the original.]

Section 2. The Father visits, in passing, the Menominee Nation.

With all these precautions, we joyfully plied our paddles on a portion of Lake Huron, on Lake Michigan, and Green Bay. The first nation that we came to was that of the Menominee. I entered their river, to go and visit these peoples to whom we have preached the Gospel for several years, in consequence of which, there are several good Christians among them.

The wild rice, whose name they bear because it is found in their country, is a sort of grass, which grows naturally in the small rivers with muddy bottoms, and in swampy places. It greatly resembles the wild oats that grow amid our wheat. The ears grow upon hollow stems, jointed at intervals; they emerge from the water about the month of June, and continue growing until they rise about two feet above it. The grain is not larger than that of our oats, but it is twice as long, and the meal therefrom is much more abundant. The Indians gather and prepare it for food as follows. In the month of September, which is the suitable time for the harvest, they go in canoes through these fields of wild rice, they shake its ears into the canoe, on both sides, as they pass through. The grain falls out easily, if it be ripe, and they obtain their supply in short time. But, in order to clean it from the straw, and to remove it from husk in which it is enclosed, they dry it in the smoke, upon wooden grating, under which they maintain

slow fire for some days. When the rice is thoroughly dry, they put it in skin made into a bag, thrust it into a hole dug in the ground for this purpose, and tread it with their feet so long and so vigorously that the grain separates from the straw, and is very easily winnowed. After this, they pound it to reduce it to flour, or even, without pounding it, they boil it in water, and season it with fat. Cooked in this fashion, the wild rice has almost as delicate taste as rice has when no better seasoning is added.

I told these people of my design to go and discover those remote nations, in order to teach them the mysteries of our holy religion. They were greatly surprised to hear it, and did their best to dissuade me. They represented to me that we should meet nations who never show mercy to strangers, but break their heads without any cause, and that war was kindled between various peoples who dwelt upon our route, which exposed us to the further manifest danger of being killed by the bands of warriors who are ever in the field. They also said that the great river was very dangerous, when one does not know the difficult places; that it was full of horrible monsters, which devoured men and canoes together; that there was even a demon, who was heard from great distance, who barred the way, and swallowed up all who ventured to approach him; finally that the heat was so excessive in those countries that it would inevitably cause our death. I thanked them for the good advice that they gave me, but told them that I could not follow it, because the salvation of souls was at stake, for which I would be delighted to give my life; that I scoffed at the alleged demon; that we would easily defend ourselves against those marine monsters and, moreover, that we would be on our guard to avoid the other dangers with which they threatened us. After making them pray to God, and giving them some instruction, I separated from them. Embarking then in our canoes, we arrived shortly afterward at the bottom of Green Bay, where our Fathers labor successfully for the conversion of these peoples, over two thousand of whom they have baptized while they have been there...

The bay is about thirty leagues [roughly 75 miles] in length and eight [20 miles] in width at its mouth; it narrows gradually to the bottom, where it is easy to observe the tide which has its regular ebb and flow, almost like that of the sea. This is not the place to inquire whether these are real tides; whether they are due to the wind, or to some other cause; whether there are winds, the precursors of the moon and attached to her suite, which consequently agitate the lake and give it an apparent ebb and flow whenever the moon ascends above the horizon. What can positively be stated is that, when the water is very calm, it is easy to observe it rising and falling according to the course of the moon; although I do not deny that this movement may be caused by very remote winds, which, pressing on the middle of the lake, cause the edges to rise and fall in the manner which is visible to our eyes.

We left this bay to enter the river that discharges into it; it is very beautiful at its mouth, and flows gently; it is full of Canada geese, ducks, teal, and other birds, attracted thither by the wild rice, of which they are very fond. But, after ascending the river a short distance, it becomes very difficult of passage, on account of both the currents and the sharp rocks, which cut the canoes and the feet of those who are obliged to drag them, especially when the waters are low. Nevertheless, we successfully passed those rapids and on approaching the Mascouten, or the Fire Nation [a vanished Algonquin tribe absorbed into the Kickapoo nation before the 19th century], had the curiosity to drink the mineral waters of the river that is not far from that village [see below]. I also took time to look for a medicinal plant which an Indian, who knows its secret, showed to Father Allouez with many ceremonies. Its root is employed to counteract snake bites, God having been pleased to give this antidote against poison which is very common in these countries. It is very pungent, and tastes like powder when crushed with the teeth; it must be masticated and placed upon the bite inflicted by the snake. The reptile has so great horror of it that it even flees from a person who has rubbed

himself with it. The plant bears several stalks, a foot high, with rather long leaves and a white flower, which greatly resembles the wallflower. I put some in my canoe, in order to examine it at leisure while we continued to advance toward the Mascoutens, where we arrived on the 7th of June.

Section 3. Description of the Village of the Mascoutens...

Here we are at the Mascoutens [near modern Berlin, in Green Lake County]. This word may, in Algonquin, mean "the Fire Nation," which, indeed, is the name given to this tribe. Here is the limit of the discoveries which the French have made, for they have not yet gone any farther. This village consists of three nations who have gathered there Miamis, Mascoutens, and Kickapoos. ... I took pleasure in observing the situation of this village. It is beautiful and very pleasing for, from an eminence upon which it is placed, one beholds on every side prairies, extending farther than the eye can see, interspersed with groves or with lofty trees. The soil is very fertile, and yields much Indian corn. The Indians gather quantities of plums and grapes, wherewith much wine could be made, if desired... On the following day, the tenth of June, two Miamis who were given us as guides embarked with us, in the sight of a great crowd, who could not sufficiently express their astonishment at the sight of seven Frenchmen, alone and in two canoes, daring to undertake so extraordinary and so hazardous an expedition.

We knew that, at three leagues [roughly 8 miles] from the Mascoutens, was a river which discharged into the Mississippi. We knew also that the direction we were to follow in order to reach it was west-southwesterly. But the road is broken by so many swamps and small lakes that it is easy to lose one's way, especially as the river leading thither is so full of wild rice that it is difficult to find the channel. For this reason we greatly needed our two guides, who safely conducted us to a portage of 2,700 paces [at the modern city of Portage], and helped us to transport

our canoes to enter that river [the Wisconsin]; after which they returned home, leaving us alone in this unknown country, in the hands of Providence.

Thus we left the waters flowing to Quebec, four or five hundred leagues from here [roughly 1,000 miles], to float on those that would thenceforward take us through strange lands. Before embarking thereon, we began all together a new devotion to the blessed Virgin Immaculate, which we practiced daily, addressing to her special prayers to place under her protection both our persons and the success of our voyage and, after mutually encouraging one another, we entered our canoes.

The river on which we embarked is called Meskousing [Wisconsin]. It is very wide; it has a sandy bottom, which forms various shoals that render its navigation very difficult. It is full of islands covered with vines. On the banks one sees fertile land, diversified with woods, prairies, and hills. There are oak, walnut, and basswood trees; and another kind, whose branches are armed with long thorns. We saw there neither feathered game nor fish, but many deer, and a large number of cattle [bison]. Our route lay to the southwest, and, after navigating about thirty leagues [ca. 75 miles], we saw a spot presenting all the appearances of an iron mine and, in fact, one of our party who had formerly seen such mines, assures us that the one which we found is very good and very rich. It is covered with three feet of good soil, and is quite near a chain of rocks, the base of which is covered by very fine trees. After proceeding 40 leagues [about 100 miles] on this same route, we arrived at the mouth of our river; and, at 42 and a half degrees of latitude, we safely entered the Mississippi on the 17th of June, with a joy that I cannot express.

3. FUR-TRADER PETER POND ON THE UPPER FOX RIVER, 1773.

[Pond (1740-1807) was a Connecticut soldier and trader who spent much of his life in the West. This diary entry was written about 1773 in the upper Fox River Valley, probably in Columbia or Green Lake county. Pond was only semi-literate and spelled most words phonetically; his punctuation was equally eccentric. We have edited his text heavily in order to make it comprehensible to modern readers.]

The next morning we proceeded up the river, which was very serpentine indeed, until we came to a shallow lake where you could see water. But just in the canoe track the wild rice was so thick that the Indians could scarcely get one of their small canoes into it to gather it, and the wild ducks when they rose made a noise like thunder. We got as many of them as we chose, fat and good...

[The upper Fox River is] very gentle but very serpentine. In many parts, in going three miles you do not advance one. The bank is almost level with the water and the meadows on each side are clear of wood to a great distance, and clothed with a good sort of grass. The openings to this river are called lakes but are no more than large openings. In these places the water is about four or five feet deep, with a soft bottom.

These places produce the greatest quantity of wild rice, of which the natives gather great quantities; and eat what they have occasion for and dispose of the remainder to people that pass and repossess on their trade. This grain looks in its growth and stock and ears like rye and the grain is of the same color but longer and slimmer. When it is cleaned fit for use, they boil it as we do rice and eat it with bear's grease and sugar. But the grease they add as it is boiling, which helps to soften it and make it break in the same manner as rice. When they take it out of their kettles for use, they add a little sugar and it is eaten with fresh venison or fowls. We used it in the place of rice and it did very well as a substitute for that grain; as it bursts it turns out perfectly white as rice.

Back from this river, the lands are as good as can be conceived and good timber, but not over-thick. It is proverbial that the fires which run through these [woods] and meadows stop the growth of the wood and destroy small wood.

I have mentioned the vast numbers of wild ducks which fatten on the wild rice every fall. It would sound too much like a traveler's story to say what I really believe from what I have seen. You can purchase them very cheap at the rate of two pence apiece. If you prefer shooting them yourself, you may kill what you please.

An account of the portage of Wisconsin. The south end of this carrying place is very level but in wet weather it is bad on account of the mud and water, which is two-thirds of a mile; and then the ground rises to a considerable height and is clothed with fine open wood and a handsom verdure. This spot is about the center of the portage and takes up about a quarter part of it. The south end is low, flat and subject to wet.

4. ARLIE SCHORGER ON THE ECOLOGY OF THE FUR TRADE

[Fur was the commodity that brought French explorers to the region in the 17th century, and the fur trade fueled Wisconsin's economy for most of the next two centuries. By 1840, local populations of fur-bearing mammals had been decimated, as these short selections describe. Their author, Arlie W. Schorger (1884-1972), was a U.S. Forest Service chemist and UW-Madison professor of wildlife management with a passion for the history of Wisconsin's environment. We have excerpted portions of two articles by him, a 1942 study of extinct mammals and birds and a 1965 investigation of the ecology of the beaver. We omitted many pages and inserted the section titles used below; the full texts are available on the Web (see Bibliography).]

The Number of Beaver

Wisconsin was noted among the French for the quantity and quality of its beaver. Perrot, who came first to the Northwest in 1665, stated that as one went north to the Wisconsin River, the winters became long and cold. Here the beaver was best and the hunting season lasted longest. A memorandum of 1786 from the British traders at Montreal states that the Chippewa country south of Lake Superior was scarcely to be surpassed or equaled for its fine furs. Johnston was at Fond du Lac (Superior) in 1792 and thought that the region produced the best assortment of furs of any place on the continent. Beaver of the highest quality, however, came from north of Lake Superior according to Aigremont.

The upper Mississippi district in the season 1734-35 produced 100,000 good beaver skins, worth 178,000 livres, and this in spite of the Indian troubles. Champigny expressed the opinion that Le Seuer's request to develop mines on the upper Mississippi concealed an intention to mine for beaver. The number of Indian hunters frequenting Lake Pepin about 1766 was 2,000 and each brought to trade 100 pounds of beaver. This

is approximately 160,000 pelts. In 1774 about 130 canoes from Mackinac came to Prairie du Chien and departed with 1500 packs of various furs.

Green Bay (La Baye, Baye des Puants) was long the beaver emporium in the state. La Salle, piqued at ecclesiastical competition, wrote that the Jesuits at the mouth of the Fox River held the key to the beaver country. There “a lay brother that they have, who is a blacksmith, with two companions converts more iron into beaver-skins than the Fathers convert savages into Christians.”

In 1739 Green Bay produced only 110 packs of beaver, though ordinarily 300 to 400 packs. A few years later this post provided 500 to 600 packs of mixed furs and was farmed for 9,000 francs. The post was worth 312,000 livres to Rigaud and Marin over a period of three years (1754—56); and in the time of the Sieur Marin it netted a profit of more than 150,000 livres annually. Todd and McTavish, merchants of Montreal, estimated in 1794 that Green Bay, including the upper Mississippi and the south shore of Lake Superior, provided 300 packs; and Milwaukee 120 packs.

A government factory, or trading post, was established at Green Bay in 1810. Joseph P. Varnum, Indian agent at Mackinac, recommended the Bay on account of the valuable beaver pelts produced in the area. This is a far cry from reality at that time. During a period of four years the returns in beaver to the factory were: 1816, none; 1817, 13 pounds; 1818, none; and 1819, 2 pounds. The factories were never able to compete successfully with the private traders...

Beaver Pelts for Hats

...Though garments of beaver fur were worn quite extensively, particularly in Russia, the greatest use of the fur was in the manufacture of hats. Only the hairs of the undercoat (wool) were employed. The nature of the scales on beaver hairs gives them a high felting quality by interlocking. At first the

hat was made entirely of beaver hair. According to Cadillac a satisfactory hat could be made by using one-third dry beaver wool and two-thirds of fat or semi-fat wool. These terms will be explained subsequently. The French for a long period enjoyed a monopoly in hat manufacture. In 1752 the wool sold in France at 18 shillings a pound and in England at 32 shillings. Beaver pelts were worth 6 shillings a pound in France and 11 shillings in England. One English manufacturer used 10 to 12 ounces of the wool in a hat for export and 7 to 8 ounces in one for domestic wear. In France it was estimated that 10 pounds of pelt would produce 33 ounces of wool which would make three and one-half hats, since at most 9 ounces of wool were used in a hat.

Hats were eventually cheapened by using a foundation of rabbit and other common fur hairs, and limiting beaver wool to the nap or surface. About 1830 the silk hat came into fashion and the use of beaver declined rapidly. In January, 1836, the London agent of the American Fur Company wrote that the abundance of nutria had lowered the price of beaver; and in August of the same year that silk hats were in almost universal use.

Hunting Beaver

Several methods for taking beaver were employed. The only trap used by the Indians prior to the arrival of Europeans was the deadfall which was baited with a branch of aspen or other suitable wood. This mechanism was used from the Atlantic Ocean to the Mississippi River. The deadfall was of little use in winter, the season when the fur was most valuable, since at that time the beaver seldom appeared on land. Then the beaver had to be driven from its house. The early writers frequently garbled the procedure or omitted essential details. Having found the exit from the house, by cutting a hole in the ice, a net was placed in front of it. A hole was then cut into the house to drive out the beaver which was caught in the net, drawn to the surface, and dispatched. Before iron axes and spuds were made available by

Europeans, the opening of a frozen beaver house was a laborious procedure for the Indian with his primitive tools...

Some beavers lived in bank burrows in lieu of houses. There were also escape burrows around the ponds if the banks permitted. The Chippewa name for a burrow was *o-wazhé*, corrupted to "wash." Before the steel trap came into use most of the beavers were taken from washes. Henry wrote of his hunting experiences with the Indians: "Breaking up the house, however, is only a preparatory step. During this operation the family make their escape to one or more of their washes. These are to be discovered by striking the ice along the bank, and where the holes are a hollow sound is returned. After discovering and searching many of these in vain we often found the whole family together in the same wash... From the washes they must be taken out with the hands; and in doing this the hunter sometimes receives severe wounds from their teeth."

The presence of a beaver in a wash could sometimes be detected by the motion of the water at the entrance or by the muddy appearance of the water after the beaver had entered, following exodus from the house. The burrow rose from its underwater entrance to a dry chamber near the surface of the ground in which was a small opening for the admission of air. In order to secure the beaver the entrance to the burrow was closed with stakes and the burrow opened at the chamber. If the beaver remained above water it was killed with a club; and if submerged, it was withdrawn with a crooked stick or by hand. The Indians of western Manitoba had a peculiar breed of dogs with an extremely keen sense of smell. They were used to detect the thinnest places in the beaver houses and the air openings of the burrows. The Chippewa along Lake Superior also used dogs for detecting inhabited washes.

Many beavers were taken with spears. Le Jeune was requested by the Indians to furnish them with cord which was to be attached to spears with barbed iron points. The Indian held the cord until the diving beaver became so exhausted that it could be

drawn in. The father of W. W. Cooke speared beaver in Buffalo County. He would follow a stream with his dog which was so highly trained that he would come to a point at the air opening of an occupied wash. Cooke would go to the edge of the stream and locate the exit. On a signal the heavy eighty-pound dog would rear and come down on the ground at the air hole. The earth was usually so thin that it caved in. The beaver would break for the stream and was speared easily.

Beavers were sometimes shot. At dusk when they came out to feed or work on their dams, the hunter allowed his canoe to drift silently downstream. The hazard lay in securing a beaver which had been killed since it sank quickly to the bottom. The trade goods shipped to Milwaukee in 1821 for James Kinzie contained 112 pounds of beaver and duck shot invoiced at \$22.40. As long as a demand existed for beaver for making hats, the value of the skin was not decreased by the perforations produced by shot and spear. After the hair was removed, the "leather," or skin proper, was made into glue.

The most effective way of taking beaver was with the steel trap which was in general use by 1750. Pierre Grignon who traded at Green Bay from 1763-95 always kept a blacksmith to make traps. All that was necessary to catch a beaver was to place in the water a trap beside which projected a stick having castoreum on the end. The discoverer of this efficient lure remains unknown. Strangely the Indians learned its use from the whites. Many aromatic substances were used as a substitute for castoreum and were frequently mixed with it. In Trempealeau County the Indians sometimes used castoreum but camphor would also serve. Cinnamon, cloves, and oil of juniper were used in the Lake Superior region. The government factories, of which there was one at Prairie du Chien and one at Green Bay, carried in stock for this purpose cinnamon, nutmeg, cloves, ginger, allspice, and mace...

The Indians captured beavers at all seasons. Those taken in summer for food might or might not be skinned. The poorest

pelts were taken at this season. The quality improved through fall, winter, and spring. The pelts were not fully prime until spring, the best being obtained between the first of February and the first of April, depending on latitude and altitude. In order to keep the goodwill of the Indians, it was necessary for the trader to buy all the skins presented, and this forced the establishment of several grades...

Packs and Pelts

Beaver pelts were compressed into packs for economy of space and ease of handling. Poor grades of bear skins were commonly used as covers. Four methods of compression were used. At small and remote posts a pole was employed. One end was fastened to the ground and pressure was applied by the weight of a man on the other end of the pole. The wedge press consisted of a frame of four posts driven into the ground, and provided with cross pieces beneath which were placed the furs covered with slabs of wood. Pressure was obtained by driving wedges between the slabs. Large trading posts having easy shipping facilities, such as Mackinac, used a heavy metal screw press. This press was superseded by the simple and efficient jack.

The weight of a pack of furs is usually given as 90 to 100 pounds. Chittenden states that a pack weighed 100 pounds and contained 80 beaver pelts, which would be 1.25 pounds per pelt. Larpenteur gives 100 pounds for a pack containing 60 average pelts, or 1.66 pounds a pelt. A weight of 100 pounds is also mentioned by Henry. The packs of beaver taken along the Minnesota River in 1822 weighed 100 pounds and contained 80 skins; again 1.25 pounds a pelt. Harmon in 1801 had his furs in packs weighing 90 pounds each. According to Morgan, an average pelt from the Upper Peninsula of Michigan weighed 1.5 to 1.75 pounds.

Extensive data on the packs of beaver collected by the Northwest Company at the Fond du Lac post in 1804-05 are given

by Pike. Four packs of mixed large and small pelts averaged 91.5 pounds in weight and contained on the average 69.5 skins weighing 1.32 pounds each. He lists the weights of 115 packs. If the highly abnormal weights of 72 and 127 pounds for two packs are rejected, the average weight of a pack is 91.5 pounds.

The following data were compiled from 133 invoices of the American Fur Company and its agents of beaver taken in the upper Great Lakes region, principally in Wisconsin. A total of 25,630 pelts weighed 29,545 pounds, or 1.15 pounds each. All lots weighing less than a pound per pelt were rejected as young or "cubs." Their average weight was 0.88 pound. The heaviest lot consisted of 416 pelts having an average weight of 1.4 pounds, shipped by Jacques Porlier in August, 1821. Two apparently especially selected skins weighed two pounds each. It may be accepted that the average pack of Wisconsin beaver pelts weighed 91.5 pounds and contained 80 pelts of 1.15 pounds each...

Decline of Beaver Populations

Few species of mammals can withstand continuous and indiscriminate trapping. There is precious little evidence that the Indian practiced conservation in spite of Lahontan's statement that after breaking down a dam the Indians spared a dozen females and half a dozen males for reproduction. It would be an unusual pond that even had an initial population of eighteen beavers. Indians were directly responsible for exhaustion of the beaver as nearly all the pelts were taken by them.

Only a few Indian tribes were of importance in taking beaver in Wisconsin. The Chippewa hunted the south shore of Lake Superior and bartered their furs at Fond du Lac and La Pointe. In 1757 the Menominee, Sauk, Fox, Winnebago, Mascouten, Kickapoo, Prairie Sioux and Lake Sioux came to Green Bay to trade. It is sometimes stated that the Sioux occupied lands west of the Mississippi and were not residents of Wisconsin. In the early days, the Sioux held the country immediately east of the

Mississippi and never relinquished in spirit their rights to this borderland, especially the privilege of hunting. In the census of 1821, the number of Sioux men, women, and children residing east of the Mississippi is given as 1,182. As late as 1850 Grignon traded with the Sioux for the furs which they had obtained up the Trempealeau River.

Beaver were so scarce in the Mackinac region by 1700 that the Indians went 200 leagues to hunt them. Between October and May a good hunter could capture 50 to 60 beavers, more or less. This means that he would average only one beaver in four days. Morgan wrote that an Indian family of four effective persons would take 75 to 150 beavers in a season on the south shore of Lake Superior in well-stocked beaver territory, and that 50 to 100 were not uncommon. This statement might have applied to the Upper Peninsula of Michigan, but doubtfully to Wisconsin. The winter of 1870-71, Cartwright and a companion caught 73 beavers in Marquette County, Michigan.

By 1793, according to Dickson, very few beavers were taken east of the Mississippi or on the streams which flowed into it. The land of the Menominee on Green Bay was almost exhausted of game. These Indians accordingly spent the winter in part on the upper Wisconsin, but chiefly on the upper Mississippi where they captured large numbers of beaver. They excelled all the other Indians in art. The Winnebago [Ho-Chunk], Sauk, and Fox hunted chiefly deer, raccoon, and bear. Furs at Fond du Lac (Superior), which was once a highly productive region, had dwindled to a trifle by 1807. This year, at Prairie du Chien, Dubuque outfitted a party of eight men to trap beaver on the Missouri. The Fond du Lac Indians hunted south to Pine Lake, Polk County, and in 1820 had but few beavers in their territory. Brunson traveled overland from Prairie du Chien to La Pointe. The only sign of beaver found was between the headwaters of the Black and Chippewa rivers.

The statement of Lanman [in 1847] that the beaver was extinct south of Lake Superior is not true. In the 1880's it was

supposed to be close to extinction in the state. It was sufficiently uncommon at that period that the trapping of one, or the presence of its dams, was certain to receive publicity. In 1912 it was still to be found in most of the northern counties. The estimate of Seton that in 1925 only 100 beavers remained in Wisconsin is much too low since 2,208 beavers were trapped in the season 1933-34. The recovery of the beaver under protection has been remarkable as 14,232 were trapped in 1958, and 9,806 in 1962. These figures were not approached at any time during the nineteenth century.

I have tabulated the copious data on the shipment of beaver from Wisconsin in the nineteenth century to be found in the fur papers in the Wisconsin Historical Society without being able to find consecutive quantitative data for any one post extending over a period as short as ten years. Henry obtained 150 packs at Chequamegon Bay in the spring of 1766. The return in 1832 at adjacent La Pointe, under Lyman F. Warren, was down to 250 pelts. These came from the seven posts on the St. Croix, Lac Court Oreilles, Lac Chetec, Chippewa River, and Lac Vassale. The shipment of beaver from Green Bay declined from 535 pounds in 1863, but in neither case is it possible to know the extent of the area from which the furs were collected. The last shipment of beaver from Milwaukee which I found was 21.5 pounds in 1822...

Decline of Other Species

The early French voyageurs called the Chippewa River *Bon Secours* (Good Succor) since in its valley game could be obtained without fail and in abundance. Subject to seasonal wanderings, the prairies and oak openings contained large herds of deer, elk, and bison. The black bear was common in all the wooded areas, while moose and caribou were to be found towards Lake Superior. Fur-bearing animals were abundant. Game birds, though numerous, were seldom molested since the ball required to secure a sharp-tailed grouse could fell a deer as readily.

The advent of settlement initiated vast changes in the flora and fauna, and the end is not yet. The attitude towards conservation must be realistic. Agriculture is incompatible with great herds of elk and bison, and darkening flocks of pigeons. Whether a more satisfactory compromise than the present could have been reached by a premeditated plan is conjectural.

Today [1942], among the mammals, the native stock of the bison, elk, and cougar is extinct. The restoration of the bison and cougar is impractical. The same may be said of the elk except for a few special areas.

In the preservation of most species two factors loom large. The obvious one is a favorable habitat. The other, a population "reservoir" from which a species can draw recruits, is more often overlooked. The reservoirs no longer exist and the remnants live precariously.

The elk actually flourished only in the oak openings and on the prairies... In Wisconsin, the elk did not receive permanent protection until 1913, long after the native stock was exterminated. In 1917, forty-one elk from the Yellowstone National Park were placed on the state game farm in Vilas County. Approximately one-half of the animals died following release, yet in 1924 it was thought that the drove had increased to 75. At the present time there are possibly 35 elk in Vilas and Oneida Counties...

The caribou was never numerous in Wisconsin and Michigan. The small population that did exist was maintained unquestionably by infiltrations from Ontario and Minnesota...

The moose received permanent protection in Wisconsin in 1907 and in Minnesota in 1922. No native stock exists in Wisconsin or in Michigan except on Isle Royale. Eighteen moose trapped on Isle Royale in the winter of 1935-36 were liberated along the Escanaba River in the spring of 1936. A bull moose injured in transport was not released until a year later. The bull and four cows eventually wandered southward into Florence County, Wisconsin. In the fall of 1937, the bull was found shot, and in the fall of 1939, a cow met a similar fate. At

times, an adequate public respect for game seems distant. All the painstaking and costly efforts to perpetuate a species can be annulled in a brief time by a few thoughtless individuals. There is hope that the moose can be restored permanently on some of the state and national forests, but the wandering habit of the animal provides another difficulty with which to cope.

The timber wolf exists in sufficient numbers that there is no immediate danger of extinction. Cessation of trapping could increase the population readily. Fortunately it is possible to exercise complete control on the national forests. Elsewhere, where there is damage to stock, the coyote and timber wolf decline together. Deer are sufficiently numerous so that only under exceptional conditions will it be necessary to control the timber wolf on this account, should the point be reached where its existence is endangered.

The restoration of the fur-bearing mammals, the fisher and the marten, is an especially difficult problem. They were protected permanently in Minnesota in 1933 and in Wisconsin in 1921. The intervening years offer no hope of a substantial increase in their numbers in the sections where a few individuals presumably still exist. The introduction of Canadian stock into the national forests would be an experiment well worth the effort.

Many attempts have been made by states and private individuals to restock the north central states with wild turkeys. All have been failures. Habitats suitable for restoration no longer exist. Hatchery stock, aside from a pronounced tendency to end up in a barnyard with domesticated turkeys, is seldom sufficiently hardy. Experience teaches that it is necessary to start with wild, trapped birds. The expense involved and the slender chances of success scarcely justify the effort.

Man by a single plowing permanently destroyed the virgin prairie. All the knowledge of prairie ecology acquired during the past century is insufficient to enable him to restore it should there be the will. With the destruction of the prairie, the prairie chicken was forced northward into what was formerly ultra-marginal

territory. What with drainage and drought even this territory is being made distinctly less favorable through the growth of brush. Judicious burning and flooding appear to be essential if the prairie chicken is to be preserved. Whether the disease cycle is recent in the history of the species and whether it is becoming more or less severe in its effects are still unknown factors. The serious study that has been given to the prairie chicken should eventually bear fruit provided that "patient money" continues to be available.

The complete disappearance of breeding sandhill cranes would create a deplorable gap in our fauna. Whoever has heard the sonorous cries of a flock of cranes circling high overhead will never forget the experience. The few cranes that remain are a tribute to the thoughtfulness of landowners. If left unmolested by man, especially the poacher, there is no doubt but that the sandhill crane would multiply satisfactorily. It is known that this bird requires large areas of grasslands and marshes with pools of water, but it will be a sad commentary on our civilization if we must resort to management.

The vast environmental changes produced by man have reduced many species to remnants. Conservation since its inception under the mantle of game laws has been a continual compromise with the hunter and the poacher. The zealous attempts of a few to preserve our residual fauna for future generations are being rewarded by the gradual development of a public conscience. When the great majority of the people realize that a spruce grouse has more aesthetic than culinary value, that a fisher in the wilderness is as deserving of preservation as a squirrel in the park, then the aims of conservation can be achieved.

5. INCREASE LAPHAM ON WISCONSIN'S LANDSCAPE IN 1844

[Increase Lapham (1811-1875) has often been called "Wisconsin's First Scientist" because he was an engineer, geologist, cartographer, zoologist, archaeologist and climate expert, among other things. He was also one of the founders of Milwaukee, and as the city mushroomed from a tiny village to a booming metropolis, he wrote a book-length description of Wisconsin that helped thousands of people settle in the state. The portions of his first chapter given here describe the natural environment of Wisconsin on the eve of a massive invasion by pioneers and immigrants.]

This work is now given to the public with the hope not only of furnishing the thousands of newcomers, who are annually flocking to our Territory, and to others, in a cheap and convenient form, a large amount of useful information, which it would be difficult for them to obtain from any other source; but also to preserve for the future historian many interesting facts which might otherwise soon be forgotten and lost. The author is fully sensible of its defects and omissions, but hopes that due allowance will be made, when it is considered that this is the first attempt of the kind relative to a country more than twice the extent of the great State of New York, which had been made public.

Many parts of the country are but thinly peopled, and but little communication exist between them and other settlements, such that it is difficult to ascertain what are their extent, population, improvements, &c. New settlements are commenced almost every day, and soon grow into important places without any notice being taken of them by the public. Towns and villages spring up so rapidly that one has to "keep a sharp look out" to be informed even of their names and location, to say nothing about their populations, trades, buildings, &c...

Topography

There are no mountains, properly speaking, in Wisconsin; the whole being one vast plain, varied only by the river hills, and the gentle swells or undulations of country usually denominated "rolling." This plain lies at an elevation of from six to fifteen hundred feet above the level of the ocean. The highest lands are those forming the dividing ridge between the waters of Lake Superior and the Mississippi. From this ridge there is a gradual descent towards the south and southwest. This inclination is interrupted in the region of the lower Wisconsin and Neenah [Fox] rivers, where we find another ridge extending across the Territory, from which proceeds another gently descending slope, drained mostly by the waters of Rock river and its branches. These slopes indicate, and are occasioned by, the dip or inclination of the rocky strata beneath the soil. The Wisconsin hills and many of the bluffs along the Mississippi river often attain the height of three hundred feet above their base, and the Blue Mound was ascertained by Dr. Locke, by barometrical observations, to be one thousand feet above the Wisconsin river at Helena.

The surface is further diversified by the Platte and Sinsinawa Mounds, but these prominent elevations are so rare that they form very marked objects in the landscape, and serve the traveller in the unsettled portions of the country, as guides by which to direct his course. The country immediately bordering on Lake Superior, has a very abrupt descent towards the lake; hence the streams entering that lake are full of rapids and waterfalls, being comparatively worthless for all purposes of navigation, but affording a vast superabundance of water power, which may at some future time be brought into requisition to manufacture lumber from the immense quantities of pine trees with which this part of the Territory abounds.

There is another ridge of very broken land running from the entrance of Green Bay in a southwesterly direction, forming the "divide" between the waters of Lake Michigan and those

running into the Bay and Neenah, and continuing thence through the western part of Washington county, crossing Bark river near the Nagowieka lake, and thence passing in the same general direction, through Walworth county into the State of Illinois. The very irregular and broken appearance of this ridge is probably owing to the soft and easily decomposed limestone rock of which it is composed.

Lakes

On our northern border is Lake Superior, the largest body of fresh water in the world, and on the east is Lake Michigan, second only to Lake Superior in magnitude, forming links in the great chain of inland seas by which we are connected with the "lower country" by a navigation as important for all purposes of commerce as the ocean itself. Besides these immense lakes, Wisconsin abounds in those of smaller size, scattered profusely over her whole surface. They are from one to twenty or thirty miles in extent. Many of them are the most beautiful that can be imagined—the water deep and of crystal clearness and purity, surrounded by sloping hills and promontories covered with scattered groves and clumps of trees. Some are of a more picturesque kind, being more rugged in their appearance, with steep, rocky bluffs, crowned with cedar, hemlock, spruce and other evergreen trees of a similar character. Perhaps a small rocky island will vary the scene, covered with a conical mass of vegetation, the low shrubs and bushes being arranged around the margin, and the tall trees in the center. These lakes usually abound in fish of various kinds, affording food for the pioneer settler; and among the pebbles on their shores may occasionally be found fine specimens of agate, carnelion, and other precious stones.

In the bays where the water is shallow and but little affected by the winds, the wild rice (*Zizania aquatica*) grows in abundance, affording subsistence for the Indian, and attracting innumerable water birds to these lakes. The rice has never been made use of by

the settlers in Wisconsin as an article of food, although at some places it affords one of the principal means of support for the red men. It is said to be about equal to oatmeal in its qualities, and resembles it in some degree in taste. The difficulty of collecting it, and its inferior quality, will always prevent its use by white men, except in cases of extreme necessity...

Rivers

The Mississippi, the great river of rivers, forms, as before remarked, the western boundary of Wisconsin. It is augmented in this Territory by the waters of the Wisconsin, Black, Chippewa, St. Croix and St. Francis rivers, which alone would be sufficient to form a very respectable "Father of Waters," but which do not perceptibly swell the mighty flood of the Mississippi: these with the Rock river, which empties into the Mississippi in Illinois, and the St. Louis, Bois Brule, Mauvaise and Montreal rivers, tributaries of Lake Superior; and the Menomonee, Fox or Neenah, Wolf and Milwaukee rivers, tributaries of Lake Michigan, are the principal rivers in Wisconsin. Innumerable smaller streams and branches run through the whole extent of the Territory, so that no portion of it is without an abundant supply of good, and generally pure water.

The Mississippi is navigable as far up as the Falls of St. Anthony [the site of modern Minneapolis-St. Paul]. The Wisconsin is navigable as far up as the Portage by small steamboats at certain seasons of the year; and they have been up Rock river as far as Aztalan, in Jefferson county, but these streams are comparatively of little value for the purposes of navigation. All the principal rivers are, however, navigable for canoes. Their waters usually originate in springs and lakes of pure and cold water. Many of them, especially in the northern or primitive region, are precipitated over rocky barriers, forming beautiful cascades or rapids, and affording valuable sites for mills or manufactories of all kinds. The Falls of St. Anthony, on the Mississippi, seven miles above the mouth of the St. Peters,

are only surpassed by the great Niagara, in picturesque beauty and grandeur; and are now becoming a place of fashionable resort for summer tourists.

The rivers running into the Mississippi take their rise in the vicinity of the sources of those running into the lakes, and they often originate in the same lake or swamp, so that the communication from the Mississippi to the lakes is rendered comparatively easy at various points. The greatest depression in the dividing ridge in the Territory is supposed to be at Fort Winnebago, where the Wisconsin river approaches within half a mile of the Neenah, and where, at times of high water, canoes have actually passed across from one stream to the other. Some of the rivers are supplied from the tamarack swamps, from which the water takes a dark color...

Animals

For the scientific naturalist, the sportsman and the angler, Wisconsin affords a very interesting and highly attractive field. A large proportion of the quadrupeds of the United States have been found within her limits, and hence it would be easier to enumerate what are not found here, than to make a list of those that are. Of all the other classes of animals we have our due proportion. Several species of animals have already been compelled to leave Wisconsin by the approach of civilized men; and others are driven into the remote, unsettled portions, where they are probably destined to remain but a short time before they will, from the same cause, have to retire still further towards the "far west."

The industrious beaver has left traces of its former existence on nearly every small brook; and horns of the elk are still occasionally found scattered over the prairies. The buffalo has but recently been driven beyond the Mississippi. As yet no bones or teeth of the extinct mammoth or mastodon have been discovered in Wisconsin. In the remote parts of the country, about the source

of the Mississippi, and west of Lake Superior, several species have been found that are not found in the southern parts of the Territory. Among those occasionally seen are, according to Mr. Schoolcraft, the great white or polar bear, the arctic fox, with fur as white as the snow in which it lives; and also the moose, reindeer and the antelope. The great white or northern owl and three species of grouse are found there, different from the two that are so abundant in the woods and about the prairies at the south.

A great many species of ducks and other aquatic birds swarm our lakes and rivers. Pelicans occasionally ascend the Mississippi and its branches far into Wisconsin. [Passenger] pigeons are abundant; quails, and a great variety of smaller birds, both useful and injurious to the interests of man, are found. Of reptiles, we have also a due proportion, especially of frogs. The rattlesnake is the only poisonous species.

Among the fish afforded by our lakes and rivers are whitefish, salmon, sturgeon, perch, bass, suckers, herring, pickerel or muskellunge, trout, catfish, sheep's head, lawyers, and many others, nearly all valuable as articles of food for man. They are caught in large quantities, and some are exported. The inhabitants at the north, where game is scarce, and where agriculture has not yet been introduced, live almost exclusively upon fish, which are caught in vast quantities at the mouths of the rivers...

Plants

Wisconsin abounds in plants of an interesting and useful character, embracing all varieties, from the stately pine tree, towering its head above the other trees of the forest, to the humblest "wild wood flower." The broad prairies are covered with a profusion of flowers of every form and hue which are changed with every change of season. The eastern portion of the Territory abounds in hard wood timber, the northern in forests of pine, and the central and western portions are comparatively

destitute of trees. Here however, are generally found a few trees, constituting the "oak openings" and affording sufficient wood and timber for the purposes of the first settlers...

Climate

The salubrity of the climate, the purity of the atmosphere, and of the water, which is usually obtained from copious living springs; the coolness and short duration of summer, and the dryness of the air during winter, all conspire to render Wisconsin one of the most healthy portions of the United States. The wet meadows, marshes and swamps are constantly supplied with pure water from springs; and as they are not exposed during summer to a burning heat, they do not send forth those noxious and deleterious qualities so much dreaded in more southern and less favored latitudes. Many of our most flourishing towns and settlements are in the immediate vicinity of large swamps and partially overflowed meadows, yet no injurious effects upon the general health are produced by them.

It has usually been found, in making new settlements in the western wilderness, that as the forests are cleared away and the surface thereby exposed to the direct influence of the sun and winds, a deleterious effect is produced on the general health — the decaying vegetable matter being thus suddenly made to send forth its malarious qualities. But in Wisconsin no such result is apprehended, or can be produced, for a large proportion of the country consists of oak openings and prairie, and may therefore be considered as already cleared. The removal of the few remaining "burr oaks" cannot have the same effect upon the soil as the cutting down of the dense forests of the other states. And besides this, the fires that have annually raged over the surface, often kindled purposely by the Indians, on their hunting excursions, have prevented that rapid accumulation of vegetable matter which is always found in deep shady woods where the fires do not so often penetrate...

It is believed that the facts here stated, will be sufficient to satisfy the reader of the truth of the opinion expressed by our most intelligent physicians, that Wisconsin is, and will continue to be, one of the most healthy places in the world.

II. THE ERA OF EXPLOITATION

6. JOHN MUIR ON WISCONSIN BIRDS AND PLANTS IN THE 1850S

[John Muir (1838-1914) was born in Scotland and grew up near Portage, Wisconsin. Prevented from fighting in the Civil War by deep religious impulses, he wandered the country doing odd jobs until landing in San Francisco in 1868. He spent the next several years deep in the untamed wilderness of the Sierra Nevada mountains. Like the Transcendentalists Henry Thoreau and Ralph Waldo Emerson, he believed that "in Wildness is the preservation of the world," and through his writings and personal contacts helped create the country's first national parks. He later founded the Sierra Club and became a popular nature writer. These short excerpts are from his memoir of growing up in Wisconsin.]

On our wavering westward way, a grain-dealer in Buffalo told father that most of the wheat he handled came from Wisconsin; and this influential information finally determined my father's choice. At Milwaukee a farmer who had come in from the country near Fort Winnebago with a load of wheat agreed to haul us and our formidable load of stuff to a little town called Kingston for thirty dollars. On that hundred-mile journey, just after the spring thaw, the roads over the prairies were heavy and miry, causing no end of lamentation, for we often got stuck in the mud, and the poor farmer sadly declared that never, never again would he be tempted to try to haul such a cruel, heart-breaking, wagon-breaking, horse-killing load, no, not for a hundred dollars.

In leaving Scotland, father, like many other home-seekers, burdened himself with far too much luggage as if all America were still a wilderness in which little or nothing could be bought. One of his big iron-bound boxes must have weighed about four hundred pounds, for it contained an old-fashioned beam-scale with a complete set of cast-iron counterweights, two of them fifty-six pounds each, a twenty-eight, and so on down to a single pound. Also a lot of iron wedges, carpenter's tools, and so forth, and at Buffalo as if on the very edge of the wilderness, he gladly

added to his burden a big cast-iron stove with pots and pans, provisions enough for a long siege, and a scythe and cumbersome cradle for cutting wheat, all of which he succeeded in landing in the primeval Wisconsin woods.

A land-agent at Kingston gave father a note to a farmer by the name of Alexander Gray, who lived on the border of the settled part of the country, knew the section-lines, and would probably help him to find a good place for a farm. So father went away to spy out the land, and in the meantime left us children in Kingston in a rented room. It took us less than an hour to get acquainted with some of the boys in the village; we challenged them to wrestle, run races, climb trees, etc., and in a day or two we felt at home, carefree and happy, notwithstanding our family was so widely divided. When father returned he told us that he had found fine land for a farm in sunny open woods on the side of a lake, and that a team of three yoke of oxen with a big wagon was coming to haul us to Mr. Gray's place.

We enjoyed the strange ten-mile ride through the woods very much, wondering how the great oxen could be so strong and wise and tame as to pull so heavy a load with no other harness than a chain and a crooked piece of wood on their necks, and how they could sway so obediently to right and left past roadside trees and stumps when the driver said haw and gee. At Mr. Gray's house, father again left us for a few days to build a shanty on the quarter-section he had selected four or five miles to the westward. In the meanwhile we enjoyed our freedom as usual, wandering in the fields and meadows, looking at the trees and flowers, snakes and birds and squirrels. With the help of the nearest neighbors the little shanty was built in less than a day after the rough bur-oak logs for the walls and the white-oak boards for the floor and roof were got together.

To this charming hut, in the sunny woods, overlooking a flowery glacier meadow and a lake rimmed with white water-lilies, we were hauled by an ox-team across trackless carex swamps and low rolling hills sparsely dotted with round-headed

oaks. Just as we arrived at the shanty, before we had time to look at it or the scenery about it, David and I jumped down in a hurry off the load of household goods, for we had discovered a blue jay's nest, and in a minute or so we were up the tree beside it, feasting our eyes on the beautiful green eggs and beautiful birds, - our first memorable discovery. The handsome birds had not seen Scotch boys before and made a desperate screaming as if we were robbers like themselves, though we left the eggs untouched, feeling that we were already beginning to get rich, and wondering how many more nests we should find in the grand sunny woods. Then we ran along the brow of the hill that the shanty stood on, and down to the meadow, searching the trees and grass tufts and bushes, and soon discovered a bluebird's and a woodpecker's nest, and began an acquaintance with the frogs and snakes and turtles in the creeks and springs.

This sudden splash into pure wildness—baptism in Nature's warm heart—how utterly happy it made us! Nature streaming into us, wooingly teaching her wonderful glowing lessons, so unlike the dismal grammar ashes and cinders so long thrashed into us. Here without knowing it we still were at school; every wild lesson a love lesson, not whipped but charmed into us. Oh, that glorious Wisconsin wilderness! Everything new and pure in the very prime of the spring when Nature's pulses were beating highest and mysteriously keeping time with our own! Young hearts, young leaves, flowers, animals, the winds and the streams and the sparkling lake, all wildly, gladly rejoicing together!

Next morning, when we climbed to the precious jay nest to take another admiring look at the eggs, we found it empty. Not a shell-fragment was left, and we wondered how in the world the birds were able to carry off their thin-shelled eggs either in their bills or in their feet without breaking them, and how they could be kept warm while a new nest was being built. Well, I am still asking these questions. When I was on the Harriman Expedition I asked Robert Ridgway, the eminent ornithologist, how these sudden flittings were accomplished, and he frankly confessed that he didn't

know, but guessed that jays and many other birds carried their eggs in their mouths; and when I objected that a jay's mouth seemed too small to hold its eggs, he replied that birds' mouths were larger than the narrowness of their bills indicated. Then I asked him what he thought they did with the eggs while a new nest was being prepared. He didn't know; neither do I to this day. A specimen of the many puzzling problems presented to the naturalist.

We soon found many more nests belonging to birds that were not half so suspicious. The handsome and notorious blue jay plunders the nests of other birds and of course he could not trust us. Almost all the others—brown thrushes, bluebirds, song sparrows, kingbirds, hen-hawks, nighthawks, whip-poor-wills, woodpeckers, etc.—simply tried to avoid being seen, to draw of drive us away, or paid no attention to us.

We used to wonder how the woodpeckers could bore holes so perfectly round, true mathematical circles. We ourselves could not have done it even with gouges and chisels. We loved to watch them feeding their young, and wondered how they could glean food enough for so many clamorous, hungry, unsatisfiable babies, and how they managed to give each one its share; for after the young grew strong, one would get his head out of the door-hole and try to hold possession of it to meet the food-laden parents. How hard they worked to support their families, especially the red-headed and speckled woodpeckers and flickers; digging, hammering on scaly bark and decaying trunks and branches from dawn to dark, coming and going at intervals of a few minutes all the live-long day!

We discovered a hen-hawk's nest on the top of a tall oak thirty or forty rods from the shanty and approached it cautiously. One of the pair always kept watch, soaring in wide circles high above the tree, and when we attempted to climb it, the big dangerous-looking bird came swooping down at us and drove us away...

This first spring, while some of the birds were still building their nests and very few young ones had yet tried to fly, father hired a Yankee to assist in clearing eight or ten acres of the best

ground for a field. We found new wonders every day and often had to call on this Yankee to solve puzzling questions. We asked him one day if there was any bird in America that the kingbird couldn't whip. What about the sandhill crane? Could he whip that long-legged, long-billed fellow?

"A crane never goes near kingbirds' nests or notices so small a bird," he said, "and therefore there could be no fighting between them." So we hastily concluded that our hero could whip every bird in the country except perhaps the sandhill crane.

We never tired listening to the wonderful whip-poor-will. One came every night about dusk and sat on a log about twenty or thirty feet from our cabin door and began shouting "Whip poor Will! Whip poor Will!" with loud emphatic earnestness. "What's that? What's that?" we cried when this startling visitor first announced himself. "What do you call it?"

"Why, it's telling you its name," said the Yankee. "Don't you hear it and what he wants you to do? He says his name is 'Poor Will' and he wants you to whip him, and you may if you are able to catch him." Poor Will seemed the most wonderful of all the strange creatures we had seen. What a wild, strong, bold voice he had, unlike any other we had ever heard on sea or land!...

Everything about us was so novel and wonderful that we could hardly believe our senses except when hungry or while father was thrashing us. When we first saw Fountain Lake Meadow, on a sultry evening, sprinkled with millions of lightning-bugs throbbing with light, the effect was so strange and beautiful that it seemed far too marvelous to be real. Looking from our shanty on the hill, I thought that the whole wonderful fairy show must be in my eyes; for only in fighting, when my eyes were struck, had I ever seen anything in the least like it. But when I asked my brother if he saw anything strange in the meadow he said, "Yes, it's all covered with shaky fire-sparks." Then I guessed that it might be something outside of us, and applied to our all-knowing Yankee to explain it. "Oh, it's nothing but lightnin'-bugs," he said, and kindly led us down the hill to the edge of the fiery meadow,

caught a few of the wonderful bugs, dropped them into a cup, and carried them to the shanty, where we watched them throbbing and flashing out their mysterious light at regular intervals, as if each little passionate glow were caused by the beating of a heart. Once I saw a splendid display of glow-worm light in the foothills of the Himalayas, north of Calcutta, but glorious as it appeared in pure starry radiance, it was far less impressive than the extravagant abounding, quivering, dancing fire on our Wisconsin meadow.

Partridge drumming was another great marvel. When I first heard the low, soft, solemn sound I thought it must be made by some strange disturbance in my head or stomach, but as all seemed serene within, I asked David whether he heard anything queer. "Yes," he said, "I hear something saying boomp, boomp, boomp, and I'm wondering at it." Then I was half satisfied that the source of the mysterious sound must be in something outside of us, coming perhaps from the ground or from some ghost or bogie or woodland fairy. Only after long watching and listening did we at last discover it in the wings of the plump brown bird.

The love-song of the common jack snipe seemed not a whit less mysterious than partridge drumming. It was usually heard on cloudy evenings, a strange, unearthly, winnowing, spirit-like sound, yet easily heard at a distance of a third of a mile. Our sharp eyes soon detected the bird while making it, as it circled high in the air over the meadow with wonderfully strong and rapid wing-beats, suddenly descending and rising, again and again, in deep, wide loops; the tones being very low and smooth at the beginning of the descent, rapidly increasing to a curious little whirling storm-roar at the bottom, and gradually fading lower and lower until the top was reached. It was long, however, before we identified this mysterious wing-singer as the little brown jack snipe that we knew so well and had so often watched as he silently probed the mud around the edge of our meadow stream and spring-holes, and made short zigzag flights over the grass uttering only little short, crisp quacks and chucks.

The love-songs of the frogs seemed hardly less wonderful

than those of the birds, their musical notes varying from the sweet, tranquil, soothing peeping and purring of the hylas to the awfully deep low-bass blunt bellowing of the bullfrogs. Some of the smaller species have wonderfully clear, sharp voices and told us their good Bible names in musical tones about as plainly as the whip-poor-will. Isaac, Isaac; Yacob, Yacob; Israel, Israel; shouted in sharp, ringing, far-reaching tones, as if they had all been to school and severely drilled in elocution. In the still, warm evenings big bunchy bull-frogs bellowed, Drunk! Drunk! Drunk! Jug o' rum! Jug o' rum! and early in the spring, countless thousands of the commonest species, up to the throat in cold water, sang in concert, making a mass of music, such as it was, loud enough to be heard at a distance of more than half a mile.

Far, far apart from this loud marsh music is that of the many species of hyla, a sort of soothing immortal melody filling the air like light.

We reveled in the glory of the sky scenery as well as that of the woods and meadows and rushy, lily-bordered lakes. The great thunder-storms in particular interested us, so unlike any seen in Scotland, exciting awful, wondering admiration. Gazing awe-stricken, we watched the upbuilding of the sublime cloud-mountains,—glowing, sun-beaten pearl and alabaster cumuli, glorious in beauty and majesty and looking so firm and lasting that birds, we thought, might build their nests amid their downy bosses; the black-browed storm-clouds marching in awful grandeur across the landscape, trailing broad gray sheets of hail and rain like vast cataracts, and ever and anon gashing down vivid zigzag lightning followed by terrible crashing thunder. We saw several trees shattered, and one of them, a punky old oak, was set on fire, while we wondered why all the trees and everybody and everything did not share the same fate, for oftentimes the whole sky blazed. After sultry storm days, many of the nights were darkened by smooth black apparently structureless cloud-mantles which at short intervals were illumined with startling suddenness to a fiery glow by quick, quivering lightning-flashes,

revealing the landscape in almost noonday brightness, to be instantly quenched in solid blackness...

Our beautiful lake, named Fountain Lake by father, but Muir's Lake by the neighbors, is one of the many small glacier lakes that adorn the Wisconsin landscapes. It is fed by twenty or thirty meadow springs about half a mile long, half as wide, and surrounded by low finely-modeled hills dotted with oak and hickory, and meadows full of grasses and sedges and many beautiful orchids and ferns. First there is a zone of green, shining rushes, and just beyond the rushes a zone of white and orange water-lilies fifty or sixty feet wide forming a magnificent border. On bright days, when the lake was rippled by a breeze, the lilies and sun-spangles danced together in radiant beauty, and it became difficult to discriminate between them.

On Sundays, after or before chores and sermons and Bible-lessons, we drifted about on the lake for hours, especially in lily time, getting finest lessons and sermons from the water and flowers, ducks, fishes, and muskrats. In particular we took Christ's advice and devoutly "considered the lilies"—how they grow up in beauty out of gray lime mud, and ride gloriously among the breezy sun-spangles. On our way home we gathered grand bouquets of them to be kept fresh all the week. No flower was hailed with greater wonder and admiration by the European settlers in general—Scotch, English, and Irish—than this white water-lily (*Nymphoea odorata*). It is a magnificent plant, queen of the inland waters, pure white, three or four inches in diameter, the most beautiful, sumptuous and deliciously fragrant of all our Wisconsin flowers. No lily garden in civilization we had ever seen could compare with our lake garden.

The next most admirable flower in the estimation of settlers in this part of the new world was the pasque-flower or wind-flower (*Anemone Patens* var. *Nuttalliana*). It is the very first to appear in the spring, covering the cold gray-black ground with cheery blossoms. Before the axe or plough had touched the "oak openings" of Wisconsin, they were swept by running fires almost

every autumn after the grass became dry. If from any cause, such as early snowstorms or late rains, they happened to escape the autumn fire besom, they were likely to be burned in the spring after the snow melted. But whether burned in the spring or fall, ashes and bits of charred twigs and grass stems made the whole country look dismal. Then, before a single grass-blade had sprouted, a hopeful multitude of large hairy, silky buds about as thick as one's thumb came to light, pushing up through the black and gray ashes and cinders, and before these buds were fairly free from the ground they opened wide and displayed purple blossoms about two inches in diameter, giving beauty for ashes in glorious abundance. Instead of remaining in the ground waiting for warm weather and companions, this admirable plant seemed to be in haste to rise and cheer the desolate landscape. Then at its leisure, after other plants had come to its help, it spread its leaves and grew up to a height of about two or three feet. The spreading leaves formed a whorl on the ground, and another about the middle of the stem as an involucre, and on the top of the stem the silky, hairy long-tailed seeds formed a head like a second flower. A little church was established among the earlier settlers and the meetings at first were held in our house. After working hard all the week it was difficult for boys to sit still through long sermons without falling asleep, especially in warm weather. In this drowsy trouble the charming anemone came to our help. A pocketful of the pungent seeds industriously nibbled while the discourses were at their dullest kept us awake and filled our minds with flowers.

The next great flower wonders on which we lavished admiration, not only for beauty of color and size, but for their curious shapes, were the cyripediums, called "lady's-slippers" or "Indian moccasins." They were so different from the familiar flowers of old Scotland. Several species grew in our meadow and on shady hillsides—yellow, rose-colored, and some nearly white, an inch or more in diameter, and shaped exactly like Indian moccasins. They caught the eye of all the European settlers and made them gaze and wonder like children. And so did calopogon,

pogonia, spiranthes, and many other fine plant people that lived in our meadow. The beautiful Turk's-turban (*Lilium superbum*) growing on stream-banks was rare in our neighborhood, but the orange lily grew in abundance on dry ground beneath the bur-oaks and often brought Aunt Ray's lily-bed in Scotland to mind. The butterfly-weed, with its brilliant scarlet flowers, attracted flocks of butterflies and made fine masses of color. With autumn came a glorious abundance and variety of asters, those beautiful plant stars, together with goldenrods, sun-flowers, daisies, and liatris of different species while around the shady margin of the meadow many ferns in beds and vaselike groups spread their beautiful fronds, especially the osmundas (*O. claytoniana*, *regalis*, and *cinnamomea*) and the sensitive and ostrich ferns.

Early in summer we feasted on strawberries that grew in rich beds beneath the meadow grasses and sedges as well as in the dry sunny woods. And in different bogs and marshes, and around their borders on our own farm and along the Fox River, we found dewberries and cranberries, and a glorious profusion of huckleberries, the fountain-heads of pies of wondrous taste and size, colored in the heart like sunsets. Nor were we slow to discover the value of the hickory trees yielding both sugar and nuts. We carefully counted the different kinds on our farm, and every morning when we could steal a few minutes before breakfast after doing the chores, we visited the trees that had been wounded by the axe, to scrape off and enjoy the thick white delicious syrup that exuded from them, and gathered the nuts as they fell in the mellow Indian summer, making haste to get a fair share with the sapsuckers and squirrels. The hickory makes fine masses of color in the fall, every leaf a flower, but it was the sweet sap and sweet nuts that first interested us. No harvest in the Wisconsin woods was ever gathered with more pleasure and care. Also, to our delight, we found plenty of hazelnuts, and in a few places abundance of wild apples. They were desperately sour, and we used to fill our pockets with them and dare each other to eat one without making a face—no easy feat.

7. JOHN MUIR'S VERSE LETTERS TO EMILY PELTON, 1864

[Muir wrote these poems to Emily Pelton, with whose family he boarded in Prairie du Chien in 1860-61. Throughout all his travels and wilderness ramblings over the next 50 years he kept in touch with Pelton, in later years writing an annual New Year's summary of his activities and circumstances. His letters to her total more than 100 pages. He sent these poems to her in March 1864, describing his rambles with two unnamed companions. He included this note: "Emily - The rest of this day's ramble closes with our Woodman adventure which I have not time to write now. I have not time either to write off a copy of what I have already written you. Some day when you are not very busy I wish you would draw off a copy for me correcting it at the same time. I am to take the cars [railroad] in about half an hour. I really do not know where I shall halt. I feel like Milton's Adam and Eve: 'The world was all before them where to choose their place of rest.' Write to Midland soon, I have already bidden all my friends goodbye. I feel lonely again."]

ADVENTURES OF THREE NATURALISTS IN SEARCH OF A BREAKFAST (OR) A PEEP INTO A CRAWFORD CO. MAIL BAG.

A Breakfast Dedicated to the
"Patron of all those luckless brains,
Which to the wrong side leaning,
Indite much metre with much pains
And little or no meaning."

The early breeze of morning falls
Upon the trembling chamber walls,
The hours of evening, one by one,
Retreat before the joyful sun,
Our hero's task of resting oer,
They leave their ever-open door
And yawn, and stretch, and view the sky
With locks and garments much awry,

Then seek with faltering steps and slow
The bustling stream that winds below,
Where, like wet poultry after rain
That trim disordered plumes again,
They wash, and lave, and dress their hair,
And for the breakfast search prepare.
All harnessed now, in rambling style,
With bounding glee they march a while
The gen'rous grass and twigs bestow
Their dewy honors as they go,
'Till we might deem, the strangers three
All night had drifted in the sea.
Minutely now each sheltered shade,
Soft, sedgy pool and waving glade,
Is searched throughout with patient eye,
If stranger plant they might descry,
If such be found, no golden treasure
May bring so much of honest pleasure -
But smoke curls on that mountain brow,
And breakfast is the question now. -
The house is gained - with air half bold
Their tale of morning hunger's told;
They ask no bun of prickly fast,
No pie complex with frosty paste,
No fiery mixture striped with candy,
No slimy oysters boiled in brandy,
But bread and milk, at any time
Purchased with a paper dime,
But Ah! How marred was breakfast then
How lost the plans of "mice and men":
For bread - "I've none good mother cries -"
"Because my risings did not rise."
"I've biscuit, but a pair at most,"
"And as for milk the can is lost;"
"But, three miles farther on your way"

“You’ll come to Dick and Simon Day.”
With tardy steps they leave the door
And more of hunger than before
And slow, the lengthened miles they tread
Which lead to Simon’s timber shed.
With growing emphasis they tell,
How ‘neath a cotton sheet they dwell,
And, ‘mid the hills, all daylight hours
Roam near and far for weeds and flowers
But growling want still pressing sore
Compels to seek the farmer’s door.
And add with deeply serious brow,
How much they feel of hunger now.
But Simon has not bread to spare –
The milk is soured by sultry air –
But Jacob Wise at Fountain well
“Has heaps of cows, and milk to sell”,
Then from a fallen log they rise
And gravely steer for farmer Wise.
Meanwhile the day of sultry June
Approaches fast the hour of noon;
Our heroes, faint and fainter still,
Toil on with braced unfaltering will,
Till on a ridge of thistly ground
The home of master Wise is found,
And, waxing bold, our starving men
Bestow their tale of want again,
But Jacob with commanding air
Presents on each a Yankee stare,
And slowly, in dull angry tone,
Assures them they “had best be gone”
But stanchly fixed with needful will
‘Till fed with milk and bread their fill,
And, wiser grown, they know their task
And kindly divers question ask –

How long beside this darkened wood
His house and handsome barn have stood?
How old himself and curly dog?
How much had weighed his father's hog?
How great the price of meadow hay?
How far from here his clearing lay?
These cords so struck resounding well,
With kindling eye he'll warily tell,
How first this woodland farm he found
When all was Indian hunting ground,
And coons and herds of fallow deer
Were tame as sheep or broken steer,
And howling wolf and savage yell
Mixed all the echoes up the dell.
Thus poulticed he inflamed before
Is calm as Bass, and all her store
Uncreamed, with bread and Sally's pie,
Bestows with kindly beaming eye,
"Nor aught" said he "will I deny"
"To honest folks as good as I,"
"But strolling men of riley looks"
"A pedlin clothes and dirty books"
"However so learned or big he be"
"Much comfort shall get from me."

Noon Rest, Evening, etc.

Untrammelled now with eating toil
They gather free their flow'ry spoil
Now wandering lost in verdure rank
O'er broken slope and shelving bank
Now wandering heedless on their way
Like winding streamlet in the hay
'Till laden quite like active bees
They seek a soothing place of ease
Perhaps they find a hillside brook

And trace it to the mossy nook
Where first its cooling waters spring
And grateful birds delight to sing.
The sun is strength and glory now
Glow's fiery on the mountain's brow.
Dark shadows on the prairies fall
And hazy radiance over all
But sheltered from the blazing sky
Their grateful task they joyful ply.
Their plants arranged at rest and free,
The time goes by in noisy glee
Or silent, they at rest reclined
The dreamy sheaves of Fancy bind,
Or thoughtful mark the future day
When like the snow shall melt away
This blooming life of all the land
Crushed in Winter's icy hand.
Perhaps a district school is near
Deep in the wood all lone and drear
For Yankee Sam would as he lives
Prove all the bliss which giving gives
By granting farms and education
To seeking poor of every nation.
But ever doth his bowels move
Towards badger youth with special love
And thus his schools has sprinkled wide
O'er prairie swell and dark hillside
Where turning sons of every trade
But chiefly young or luckless maid.
How blest indeed their lot who may
This freely view from day to day
With sight scarce dimmed by carnal sense
These tokens of Omnipotence
While friends all worn with ghastly war
Are lost in friendless climes afar - - - -

8. INCREASE LAPHAM ON THE NEED TO PRESERVE FORESTS, 1867

[In 1854 Lapham published an article in the Wisconsin Agricultural Society Transactions urging that Wisconsin forests be carefully preserved, but his warning went unheeded. In 1867 the state legislature authorized an investigation of whether the lumber industry was likely to cause harm and what actions, if any, the government ought to take to prevent it. Lapham was appointed to chair the investigation, and his report is excerpted here. After describing the harm done by clearing forests in other places and the benefits of retaining them, he suggests tax incentives be given for preserving and planting trees. His recommendations fell on deaf ears, and not until long after his death, when much of northern Wisconsin had been turned into a wasteland, would policy makers follow his lead.]

Necessity of Trees

Both past history and present experience show that a country destitute of forests as well as one entirely covered with them is only suited to the condition of a barbarous or semi-barbarous people. Deprive a people of the comforts and conveniences derived directly or indirectly from forest products, and they soon revert to barbarism. It is only where a due proportion between the cultivated land and the forests is maintained that man can attain and enjoy his highest civilization...

As heavy forests are removed and the country is brought under culture, civilization advances until a certain breadth of plowing and pasturage is reached; but if the removal of trees advances beyond that extent, so that the country is denuded of its trees, barbarism equally ferocious as in the timbered region again sets in. In the one case the savage men, destitute of all domestic animals except the dog, are driven to the seacoast and water-courses, where by means of rudely constructed canoes they gratify the human passion for migration to and from their small corn patch, fishing places and hunting grounds; in the other, the horse, the camel or even the ox affords the means of wandering

over extensive countries of thin grass, or desert sands, in quest of their prey...

Effect of Clearing the Land of Forest Trees Upon the Climate

Temperature.— To become convinced that the destruction of the forests would increase the temperature of the ground in summer one has only to ride in an open conveyance, on a hot day, across a prairie or cleared country, and then enter the depths of a dense forest. The change is at once apparent — from the burning heat of the sun we pass to the cool shade of the trees, and find a contrast so great that it must have been observed by everyone; it is the difference between sunshine and shade; and is so obvious that it seems scarcely necessary to adduce arguments or illustrations in further proof of the fact that clearing the land of trees increases the temperature of the ground in the summer.

It is not to be supposed that the sun supplies a less amount of heat upon a given surface of forest than upon the same area of cleared ground; but in the former case the heat is intercepted by the leaves of the trees, and therefore does not reach the ground. Hence, although the mean temperature of the summer as measured by the thermometer in the shade in the usual way, may not be affected by the clearing away of forests, yet the quantity of heat that actually reaches the ground is vastly increased; and it is this temperature of the ground, perhaps as much as that of the air above it, that affects the growth of farm crops.

Again, if one should pass in an open conveyance from an exposed or prairie country into one covered with trees, at a time when the winter cold is the most severe, he would immediately find a degree of comfort and relief, that renders all arguments needless, to show that clearing away the trees from the land diminishes the temperature of the ground in winter. It is familiarly known that frost does not penetrate the ground to the same depth in the woods as in the fields.

Although the thermometer will always exhibit several degrees, often as high as twenty, between the temperature of the thick woods and the open prairies; yet men do not require the delicate sense of the thermometer to teach them this truth; their own sensation advises them of the change from open grounds to the surroundings of overhanging trees, before they have time to consult the instrument. Cut away these trees and a change must follow the destruction.

In the state of Michigan it has been found that the winters have greatly increased in severity within the last forty years, and that this increased severity seems to move along even-paced with the destruction of the forests. Thirty years ago the peach was one of the most abundant fruits of that state; at that time frost, injurious to corn at any time from May to October, was a thing unknown. Now the peach is an uncertain crop, and frost often injures the corn.

Trees have a power to conduct heat, by which they facilitate its passage from the air to the ground in summer, and from the ground to the air in winter. Trees also, like animals, have a specific heat of their own, which aids in equalizing the temperature of the surrounding air. For some unexplained reason, connected with vegetable life, trees when in full foliage become cold at night, often colder than the air, which therefore is also cooled by this cause. Forests, by their shade, prevent the radiation of heat from the ground. The evaporation of a large amount of water from the surface of the leaves of trees produces coldness in the air in contact with them.

It is quite evident, therefore, that a forest is a great equalizer of temperature, modifying both the extreme heat of summer and the extreme cold in the winter; its removal makes the climate more excessive; the range of the thermometer being increased; and many crops, fruits, &c., that could be raised under the protection of the forests, are killed, either by this excessive heat or extreme cold.

Humidity.— No constituent of the atmospheric air is more important, or less understood, than aqueous vapor, the greater or less amount of which regulates not only the growth of plants, but also to a considerable degree the health and comfort of the inhabitants. It prevents the undue radiation of heat from the ground, and thus aids materially in maintaining that equitable degree of temperature so essential to many of the processes of nature. Here again, it will be found upon passing, on a very dry day, from an open to a well-wooded country, that a very marked change occurs; in the woods the air is more nearly saturated with vapor, the ground is moist, and not hardened by the loss of water, and hence no further arguments need be adduced to show that clearing away the forests from a country will increase the dryness of the ground.

This effect of aqueous vapor in preventing the radiation and loss of heat from the ground is subject to direct measurement. During nine days in June, 1866, at Milwaukee, when the air was most nearly saturated with vapor (relative humidity 90 per cent.), it was found that the difference of temperature of the day, and of the night was 18°, while in the same number of days when the air was most dry (relative humidity being only 56 per cent.), the difference of temperature between day and night was 29°, showing a difference of 11°, due to the existence of the vapor, which acts like a blanket in preventing the occurrence of frosts and the consequent destruction of tender plants. Forests, by increasing the moisture of the air add to the security against frosty nights.

From observations made at the agricultural college at Lansing, Michigan, by Dr. R. C. Kedzie, as compared with those made at Milwaukee, it appears that the amount of evaporation from the surface is considerably greater in the latter place; and in the interior of Wisconsin, away from the influence of the lake, the difference must be still greater — thus showing a greater necessity for the protection by forest trees in this state than in Michigan. This necessity continues to increase as we go

westward until we approach the arid and almost desert plains at the foot of the Rocky Mountains.

Trees have a very decided effect upon the temperature and humidity of the air by the evaporation constantly going on from the surface of the leaves. It is a principle in chemical science, that evaporation produces cold; and careful experiments show, that to convert water into steam or vapor 965° of heat must be supplied. In the steam engine this supply comes from the fuel consumed for the purpose, but in ordinary evaporation an equal quantity comes, (though a longer time is required,) from the surrounding air. To absorb heat from any medium is to make it cold; and the amount of heat, absorbed from the atmosphere by the evaporation of water from leaves of trees must therefore be very considerable... The process of evaporation of water is very much accelerated by wind; for when the air is still it soon becomes so nearly saturated with moisture that no more can be absorbed from the soil, or from leaves: but when this moist air is removed by the wind the absorption of moisture continues.

The ground under the forests being shaded and kept cool, the evaporation from the surface is very much diminished, and the water of rains remains longer in the ground to supply the absorption of roots, within the forests, than upon open fields. Another source of increased moisture under trees is the coolness of the leaves at night causing a deposition of dew, sometimes in such quantities as to cause drops of water to fall to the ground like rain...

Suggestions for Practice

Among the duties assigned to the present commission is that of suggesting the best method of preventing the evils that threaten the future progress of our state in wealth and population by the too rapid destruction of the forests. This would obviously be, to encourage the growth of trees in all those portions of the state where they are deficient, and their preservation where they

are still sufficiently abundant. At least one-sixth of the entire surface should be devoted to wood — and one-fifth would not be too much — to supply the wants of the present and future population, and to secure the needed protection to crops, &c. Lands least suitable for ordinary culture should remain, or be planted in wood. But to secure the greatest benefit from tree-culture, belts of timber should be reserved or planted. With proper tree-belts the number of our agricultural products might be increased; the annual product of the crops now cultivated would be increased; the quality of these products would be improved; the health, comfort and enjoyment of both “man and beast” would be promoted, and with judicious management these tree-belts would very soon yield an annual income, that would amply repay their cost, in addition to all their incidental advantages.

It is believed that this object might be accomplished by offering, under proper regulations, a bounty of one per centum of the assessed value of all lands, not exceeding one-fifth of the tract of which it forms a part, upon which the owner has planted trees in such manner as to secure the required protection; and a similar bounty should be allowed to such as shall reserve a suitable number of trees for the purpose, when clearing new land; or if deemed more advisable, proper tree-belts might be exempted from taxation...

We have stated that the best and cheapest way was to plant the seeds of the trees where they are required to grow. Acting on this principle, and having prepared the land by thorough tillage, the planter divides the ground into rows, one-fourth of a rod apart, lengthwise. He then plants the two outer rows with red or white cedar, so as to have a tree two feet apart, in the row. The next two rows are planted with hickory-nuts one foot apart. The next six or eight rows are to be planted so that the leading trees that are designed finally to remain for timber trees shall stand one rod apart in the rows, but quincuncially, and the space between these trees may be filled up with hickory, hackberry, oak, maple, locust, ash and other trees; care being taken that trees growing

with nearly equal rapidity be placed together. All these, except elm and red and white maple and birch may be planted in the fall. The seeds of these last mentioned ripen and are planted in June, and grow the same summer, and will be excellent trees with which to fill up vacancies. The six or ten rows of coniferæ must be planted in the spring, as the cones of these are gathered after it is too late to plant the seeds. Only pines, larch and spruce can be planted in these rows, as other trees would overgrow them during the first few years; after which they will shoot up faster than any other tree. These may be planted as thick as recommended for hickories, with the design of cutting the most of the larches and spruces when of proper size for hop-poles and stakes. Also many of the young pines must be cut for small timber, to make room for those to be grown into large trees. This trimming must be done with due care, so that the trees be neither too crowded, nor allowed too much space.

Where the belt or forest is designed exclusively for fuel, then all the rows inside of the cedars and hickories may be planted with such trees as shall make the best and most fuel, at 20 years of age, and one-half of the belt may be cut away at a time, leaving only the cedars. When the cut portion has grown up, twenty or more feet, the other half can be cut. If kinds have been used in forming the belt or forest, which send up shoots and suckers, or if small seedlings have started, there will be no risk about the forest or belt springing up again even too thick to stand and so as to require a great deal of thinning out.

Timber belts may either be reserved in clearing lands, wherever it can be found sufficiently thickly planted by nature with valuable native trees, or be made by planting. They should run in such manner as to afford protection from the severe prevailing winds; but no farther from belt to belt than will afford the required protection. We have indicated for level land forty rods apart as a very proper distance. If the land is more or less hilly discretion must be used in placing the belts, and irregularity in their position will be necessary. They maybe allowed to occupy

a hill side, or its brow, the borders of a ravine, or other irregular surface which cannot be advantageously tilled without liability to wash. But wherever they are, however located, no cattle or hogs should at any time be allowed access to the growing belt, as the one would consume the nuts and the other destroy the young trees which are to keep the shelter perfect and afford the succession of trees when the old ones are cut...

In Conclusion

The commissioners having brought their work to a close, will state again that in their opinion, no other interest so much demands the immediate attention of the legislature of Wisconsin, as does that of increasing and preserving so much timber as shall be needed for future use by her people. The state has freely given support, premiums and rewards to its penitentiaries, eleemosynary institutions, to its agricultural societies for the products of the farms, the manufactures and handicrafts of its people, to its public schools and institutions of learning and to its roads, highways and other public uses; but hitherto this great interest, from which one-half the entire value of all the taxable property of the state has been raised, has received no attention whatever.

Whether this course ought to be continued, and if not what remedy shall be adopted by the state, is for the legislative power, and not for this commission to determine; and to that august power it must be left at last... Seeing the subject in this light, we respectfully submit the whole matter to the future action of the legislature, content, if we have given any light upon or excited any interest in this most important subject, and with the belief that the time is not far distant when it will receive that attention which its importance demands.

9. IDA TILSON ON THE SLAUGHTER OF WISCONSIN BIRDS, 1886

[Ida Tilson (1854-1936) was born in a log cabin in West Salem, La Crosse Co., in 1854. She graduated from Ripon College in 1873 and taught at a segregated school in Mississippi and in Florida until, following the early death of her husband in 1878, she returned to her hometown. In 1881 she became a lecturer for the Wisconsin Farmers' Institute, a forerunner of the UW Extension system, and for the next two decades spoke around the state and nation about agricultural issues. In 1918 she published a book, Poultry Tales and Frills, about her career as a lecturer. The article from which these pages are taken appeared near the beginning of the national movement to protect the nation's birds.]

Beyond a doubt, our native wild birds are threatened with extinction. Naturalists and poets, their special observers and friends, all unite in saying so. And one poetess writes:

“Though apple boughs are white with bloom,
And cowslips star the marshy mead,
No little lovers build their nests,
On leafy limb and swaying reed.

“The woods are hushed, no martins break,
The silence drear of field and glen:
No whirl of wings in happy flight
Is heard along the sedgy fen.”

In my own vicinity [near La Crosse, Wis.], eight years ago, quails, blue jays, cedar birds, snow birds, chippies, larks, thrushes, woodpeckers, bluebirds, robins, orioles, scarlet tanagers, wild canaries, and even shy bobolinks, were all numerous. Most of these kinds nested upon my father's farm. Few of them are now seen about the dwelling or yard, and a wooded pasture, their favorite home, is but thinly inhabited. We are reduced to bold blackbirds and semi-domestic barn swallows, and promised English sparrows. The destruction of our feathered friends has

been so ruthless, it is estimated that if it stopped now a century would hardly restore the birds to their numbers ten years ago. Surely a worse than Killingworth's massacre is here.

Its causes are not hidden nor its agents unknown. A yearly settlement and cultivation of new lands, makes constant encroachment upon their chosen haunts. Larks, plovers, quails, and all birds nesting on the ground, find the breaking-plow's furrow their writ of eviction, for our meadows, which might answer, are so often changed in rotation of crops that the home-loving birds have no abiding place and form no attachments. Red-winged and yellow-headed black birds, and others frequenting marshy places, behold them gradually drained and reclaimed. As our forests are rapidly felled, the very homes of many species are taken from over their heads, exposing them to the weather and their enemies. How heavy is the aggregate destruction by light-houses electric and other lights, which innocently become decoys. The well-nigh invisible telegraph and telephone lines have hurt more birds in unheeding flight, than the wire fences have injured stock. These natural and uncontrollable circumstances should excite our apprehension and win our pity, but to them must be added barbarous and unnecessary slaughter.

Game laws, though they protect during certain seasons of the year, do not prevent that indiscriminate butchery which often follows the termination of their restrictions. A few years ago, at the robin roost in Kentucky, and at the pigeon roosts in Wisconsin, greedy hunters bagged tens of thousands, just for the mere delight of killing, vast quantities of game spoiling on their hands, and utterly wasted. On a smaller scale, this useless sacrifice frequently attends ordinary hunting expeditions. The small boy with a gun does not lack cruel intention, but his poorer marksmanship keeps him from committing as much sin. When grains and small fruits are ripening, and birds make an effort to get their share, mistaken farmers bring out their old muskets and blaze away.

Some thousands of feathered creatures are annually killed to make ornithological museums, and eggs are gathered for the

same purpose. Law and taxation might wisely regulate this, and restrict collection to those of assured worth and usefulness. Will the undirected, desultory gathering of eggs, now fashionable among children, improve their minds more than any other sport? Science, to be worthy of its name, should do nothing inconsiderately. An embryo or a dead bird is only valuable anatomically. Bird nature and bird ways are learned from living specimens. It is asserted that Thoreau never used a gun and never killed a bird. He made his wonderful studies of sentient life by aide of a field-glass, when objects where not near enough to be seen by the naked eye. Surely an example of "the wisdom that is first pure, then peaceable?" Ada Marie Peck and Olive Thorne Miller are well versed in bird lore. I am ignorant whether they prize slain birds for purposes of examination, but the whole tenor or their writings is contrary to such a supposition.

Woman, ever before supposed tender hearted and compassionate, has, nevertheless, occasioned and sanctioned the most cruel and greatest destruction of feathered species. We may congratulate ourselves, that an earnest crusade has begun against the thoughtless fashion of adorning bonnets and dresses with bird skins and wings, though not less than 5,000,000 birds were, last year, killed for millinery purposes. This does not include young ones starved, nor eggs spoiled. One party in Texas contracted to furnish 10,000 âigrettes. A single village and district on Long Island, sent, in four months, 70,000 skins, to taxidermists. During one month, 1,000,000 rails and bobolinks were taken in the vicinity of Philadelphia and marketed there. An agent for a French house shipped home 40,000 sea-gulls skins. One auction store at London sold 700,000 South American birds in four months.

Naturalists, hunters, and dealers assure us that these figures are but examples of the slaughters going on throughout our country. One street-car in New York city was recently reviewed by an ornithologist who reports as follows: Thirteen passengers were women, eleven of whom had birds on their hats. He counted

twenty-six birds in all, two women having as high as seven little birds each, in one case making a solid square foot of this hideous ornamentation. In one Sabbath of fifty-four persons I found the hats of fifteen girls, and that of one prominent lady teacher, decorated with wings. Unfortunately, the kinds demanded are our most useful and beautiful birds.

Meanwhile field crops have been suffering from an increase of insects, in no year more noticeable than at present. It is estimated, these pests yearly destroy in the United States more than double all we export of wheat. Such a loss makes breadstuffs scarce and higher priced for all. One-half of the apple crop is generally ruined, and some orchardists consider it ineffectual to plant more trees, till stringent measures are taken for protecting their feathered allies. Wisconsin shade trees are being defoliated, and even our woods, an experience already old in Iowa and Illinois. A beautiful and natural poplar grove on my father's farm was last year nearly destroyed by leaf-rollers. Many oaks and butternuts are infested with caterpillars.

Other and older countries afford similar testimonies. An English farmer destroyed some 10,000 small birds in one season, and yet had crops below average in his neighborhoods. Some years ago, France and Germany were overrun with sportsmen, as the country is at present. Birds and crops diminished together, till those governments intervened, and, by general, stringent laws, saved the farmer's best friends. Instead of following a bitter experience to its very end, can we not learn wisdom from our predecessors on the same road?

Farmers are better aware than most people, how close the fight for possession of our earth is between man and insect. Individually he is larger, numerically they are stronger, and in their quickness, persistence and prolificness, have an inverse ratio to size. As you are aware, Audubon, Wilson, Edwards, Forbes, Lintner, King, Powell, and many other authorities unitedly affirm birds annually destroy insects to a number inexpressible by figures, and are nature's force for 'preserving the balance of power.' As

high as fifty worms have been found within a bird's crop. A pair of thrushes were seen to carry to their young over 100 insects in an hour. Prof. C. V. Riley, entomologist United States Agricultural Department, lately issued a bulletin showing that kerosene, cold water, and various insecticides have been overestimated. I have found pyrethrum and hellebore not always doing their work.

Paris green and London purple are poisoning the land. If our birds were all destroyed, is it not probable our country would speedily become a desert? The spider family would then be our best and almost only hope. "Killing two birds with one stone," an expression traced back to the dark ages of thin settlement, thick forests and denser ignorance, better be relegated to there.

But the value of some birds is disputed. Blackbirds, however, have many friends; there seems a tie on blue jays and bobolinks. English sparrows, with cow buntings and shrikes, are respectively accused of assault, theft, and murder, with relation to swallows, pewees, wrens, chippies, and other peaceable, industrious tribes. Such miscreants might be killed, and 'the survival of the fittest' thus expedited. It is respectfully suggested that ornithologists, with due diligence, hasten to settle every point decisively, as the U. S. entomologist has done by giving his public verdict against English sparrows, which, therefore, may go on bonnets, or anywhere away from our gardens and better birds. On small fruit growers, too, rests the heaviest portion of bird support, from their produce is taken the large toil. But, after thorough investigation, it is decided that even robins and cedar birds, by their destruction of insects, more than pay for what fruit they eat. Necessity, already the mother of the mighty family, will surely produce some invention to preserve ripening fruit from birds, at this one time when their company is undesirable. Nettings have been successfully used. An acquaintance hung a bell among his cherry trees, an occasional ringing of which, substantially saved his crop.

After leaving economic grounds, with their far-reaching scope, still higher points of view present themselves. Our summer joys, our aesthetic development, our poetry, largely depend on

birdlife. Has ever instrument of man equal sweet music of lark, thrush and mockingbird? If songsters were all annihilated, and their free concerts forever done, would the bellowing of hungry herds and hurdy-gurdies of locust and grasshopper compensate? How much the eye would lose that delights in grace of motion and figure and in delicacy and vividness of color! What a blank in art and literature! The dead birds used for millinery purposes are lusterless or colored, minus legs, and otherwise mutilated, with cheap, staring eyes and unnatural, sprawling positions, surely as poor and unacceptable a travesty on nature and real art, as are cheap chromos and dauby paintings.

A prominent argument in favor of bird protection is the general damage to national character arising from disregard of life. Death's awful change, only God understands; life, even in its lowest forms, He alone can give. Do children have reverence for these solemn mysteries, and will they show mercy to the aged, poor and sick, when parents contradict gentle teachings, by inconsistent actions? The boy who kills for pleasure will not make the best type of man, because it is impossible to be cruel or even inconsiderate in one line and not be selfish in other directions. Character is not divided into compartments. What occupies one portion pervades the whole. Hummingbirds and red birds are not merely killed but skinned alive, that their plumage may retain more luster.

A tender regard for life need not betoken effeminacy. President Grant, statesman and general, with a healthy admiration for fine stock, disliked the cruelty of what is called sport. When the late Mr. Forster, member of parliament and secretary, conspicuous among the leading statesmen of Europe, was asked by a friend whether he ever diverted himself with shooting, he answered indignantly: "I have never killed a fellow creature for amusement." There are at present so many games and implements, little excuse remains for hunting the innocent and pretty game of our small woods.

The continued use of birds in millinery may hinder reforms

in which women are vitally concerned. Already intemperate men plead women's pet adornment, with its involvement of selfishness and wastefulness, offset to their own pet potations with similar concomitants. A winemakers journal, published in New York, made an extended argument on such premises in an article which met my eye.

Some wings, stuffed specimens, etc., purchased by me for decorative purposes now cause regret at every sight. So, I believe no true woman, having once had her serious attention directed to this barbarity, will then become an ally of bird butchers. Like many another wrong, it has been a thoughtless and unconscious one. Perhaps our sensibilities have been dulled by the continual slaughter of other creatures going on around us, a necessary accompaniment of modern life. The world is crowded, and the inferior creation must yield us food and clothing, strength and comfort. However, we raise more beeves, sheep, poultry and silkworms, and in far better condition than characterizes a wild state. To a certain extent, we ourselves provide that we consume, and thereby gain and added right in its use.

The principal furbearing animals, too, stand on a different and lower plane from our feathered friends. The fox pounces upon wild turkeys, partridges, and pheasants in their nests. He likes to visit the farmyard in search of poultry and eggs. Lynxes and martins even climb trees in pursuit of birds. The mink feeds largely on marsh birds, also an active depredator in the poultry yard. When in them, naturalists discover virtues enough to overbalance such tricks, mercy will become our duty, though what contributes to warmth and comfort can ever take precedence of that which is decorative only.

There are numerous substitutes for birds in millinery. Silk pom-poms and ostrich plumes are graceful. Ostriches are carefully and tenderly reared. Their plucking is probably no more painful than shoeing a horse. The beautiful feather bands, manufactured from poultry down involve no additional loss of life, but utilize another product features already destined for food.

To save and restore our birds, concert of action is needed. They will be relieved from long flights under a midday sun, if some trees are left when clearing land, and others set along streets and line fences. The chokecherry and black cherry are especially beloved. Wild animals go with the soil. A farmer can claim as his property, the birds nesting on his trees, and obtain legal redress from hunters who, without permission, start and catch, within his domain, other game than noxious beasts of prey, like wolves and foxes. At least Iowa, New York and New Jersey, have new and special laws for bird protection; Wisconsin is considering more stringent measures.

A list, distinguishing valuable from injurious birds, is conspicuously posted in each French commune, as a guide to sportsmen, and the rudiments of zoology are required taught by her primary schools. Parents and instructors everywhere have a duty and an opportunity to educate children in gentleness and refinement. The American press is doing a gratuitous and noble work for birds. The Anti-Plumage League of London and the Audubon Society, in New York, are active. Branch organizations are multiplying, a recent addition to their number being at Des Moines, and headed by the governor's wife. Queen Victoria, Princess Christian, and Lady Mount Temple frown upon the use of bird plumage. On women, indeed, as chief cause of bird destruction, rests the duty of righting this wrong. As long as demand continues for bird wings, law will be evaded, and supplies will come. Only fashion's disapprobation can save our birds. As the same poetess entreats:

“Oh sisters, let our protest ring
Through all the saddened, songless land,
Lest he who notes the sparrow's fall,
Shall ask the slain birds at our hand.”

10. THE FIRST SCIENTIFIC SURVEY OF FOREST CONDITIONS, 1897

[In 1897 the state legislature formed a Forestry Commission to investigate conditions and recommend policies. They hired Filibert Roth (1858-1925), a Michigan-trained forester at the U.S. Dept. of Agriculture, to do the research. Roth spent three months in the field and prepared a 100-page report on the conditions of Wisconsin's northern forests. It was the first scientific account of the effect of the logging industry on Wisconsin's northern forests. We've selected several passages that contain summaries rather than raw data and moved Roth's conclusion from the end of the book to the start of this excerpt.]

Resume

Briefly stated, the present conditions are as follows:

The State of Wisconsin, with a population of about 2 million, a taxable property of about 600 million dollars, has a home consumption of over 600 million feet B. M. of lumber, besides enormous quantities of other wood material, which, if imported would cost the State over 25 million dollars. Of its northern half, a land surface of over 18 million acres, only 7 percent is cultivated, the rest forming one continuous body of forest and wasteland. From this area there have been cut during the last 60 years more than 85 billion feet B. M. of pine lumber alone, and the annual cut during the past ten years exceeded 3 billion feet on the average per year.

The industries exploiting this resource represented in 1890 one-sixth of the total taxable property in the State, paid to over 55,000 men the sum of over 15 million dollars in wages, and the value of their products was equal to more than one-third the entire output of agriculture. Of an original stand of about 130 billion feet of pine, about 17 billion feet are left, besides about 12 billion feet of hemlock and 16 billion feet of hard woods. The annual growth, which at present amounts to about 900 million feet and of which only 250 million is marketable pine and over

500 million feet hardwoods, is largely balanced by natural decay of the old, over-ripe timber. In almost every town of this region logging has been carried on and over 8 million of the 17 million acres are "cut-over" lands, largely burned over and waste. The wooded area proper is steadily being reduced by logging and to a smaller extent by clearing.

At present nothing is done either to protect or restock the denuded cut-over lands of which fully 80 percent are now unproductive wasteland and probably will remain so for a long time. This policy causes a continuous and ever growing loss to the commonwealth, which at present amounts to about 800 million feet per year of useful and much needed material, besides gradually but surely driving from the State the industries which have been most conspicuous in its development, depriving a cold country of a valuable factor in its climatic conditions and affecting detrimentally the character of the main drainage channels of the State.

To remedy this matter and stop the great loss, it will be necessary to adopt active measures both to protect and restock. Both these processes are adaptive and may be done with a variable degree of thoroughness and consequent outlay.

Introduction

The territory covered is that part of the State lying north of a line from Green Bay to the mouth of the St. Croix river, with the counties of Portage, Wood, and Jackson as southern projections; it involves 27 counties with a total land area of about 18.5 million acres or about 53 percent of the entire State, and contains almost all of the present supplies of lumber sized timber of both pine and hardwoods remaining in Wisconsin.

Topography—Over 90 percent of this territory is a broad slope, which rises gently from the southeast, south, and south west to a flat divide running near to and parallel with the south shore of Lake Superior; about 9 percent is occupied by the more abrupt slope from this divide to the lake...

The climate is cold, the winters are long, springs almost wanting, summers short but warm and the fall long, cool, and delightful. To illustrate the climate it may be said that the black walnut and hickories are wanting, the timber oaks, both white and red oaks, are replaced by birch in all but the southern and southwestern part of this territory. Corn is raised with difficulty except in the south and the drier western part, while fruit trees, even apples, do not prosper in the greater part of North Wisconsin. The precipitation over the State is about 32 inches per year of which 60 per cent falls in summer and autumn. The territory under consideration is well supplied with streams and has a far better drainage than is generally supposed...

Ownership—Of the 18.5 million acres of land contained in this north half of Wisconsin a little less than 7 per cent. is improved; 24 per cent. is held by actual settlers, the greater part of which falls to the counties along the southern and southwestern edge of this district; the United States hold about 5 per cent. (2 per cent. being Indian Reservations), the State holds less than 2 percent, the railways little over 5 percent, the counties about 1.5 percent in tax deeds, and about five times this amount conditionally on tax certificates. Of the 63 percent owned by private non-residents, fully 80 percent is held by lumbermen. This amounts to 50 percent of the total area under consideration or 25 percent of the land of the entire State.

Forest Conditions of the Past

An uninterrupted forest, extending from Michigan through Wisconsin into Minnesota, originally covered almost the entire surface of these 27 counties. Along the southern and southwestern border, this forest faded into oak and jack pine “openings” and in places gave way to regular prairies. It was generally a mixed forest of white pine and hardwoods on all loam and clay lands; it approached to the regular pinery on the tracts of sandy loam and the red clays of Lake Superior, and on all sandy and loamy sand

districts, it was invariably pinery proper, generally a mixture of white and red (Norway) pines. This great forest changed in character along a line extending approximately through Range 7 W. from Lake Superior to Town 31N., from here to the southwest corner of Marathon county and thence east to Green Bay. To the east and north of this line the hemlock joined the hardwoods and pine on all gravelly clay and loam lands; the birch (not white birch) disputed precedence among hardwoods, so that we may designate the forest as birch forest with admixtures; the red oaks were thinly scattered and the white oaks practically wanting. To the south and west of this line, the hemlock generally did not grow at all, the birch became scattering, white oaks were abundant, and the oaks gave character to the hardwood mixture, making the bodies of pure hardwoods distinctly oak forests. These bodies of hardwood were much more common on this side of the line. Along the edge of the forest to the south and west the dense cover of a variety of tall hardwoods and conifers gave way rather suddenly to monotonous brushwoods, composed of scattered, bushy oaks, either alone or mixed with jack pine.

In almost all parts of the mixed forest of the loam lands, the hardwoods formed the body of the forest and the conifers the admixture. The hardwoods were represented by trees of all sizes, from the seedling or sprout to the mature timber tree. They formed nearly all of the undergrowth and this hardwood forest showed every indication of thrift and permanence. The white pine (red or Norway pine did not grow on these loam lands) and hemlock were represented almost entirely by mature, old timber, standing isolated among the hardwoods, or at most growing in groups or small bodies. Saplings, bushy young trees, and seedlings, were comparatively scarce. Active reproduction was evidently not going on, and there is every reason to believe that both pine and hemlock were losers in a long-fought struggle for possession of the ground, in which a change in the general conditions of moisture probably had something to do with their defeat.

As regards white pine, this was most conspicuous in the southern counties and on the heaviest soils (Marathon, Langlade, and Dunn counties), where in many places the hard woods had succeeded in crowding out the pine entirely, but wherever sand or gravel discouraged the hardwoods (Wood, Barron, Price and Sawyer counties), the pine held more nearly its own, and formed a fair proportion of the sapling timber. The thinly scattered balsam and the less frequent spruce appear to be in the same position as the pine and hemlock, but they were much less important trees and naturally their sparseness was less conspicuous.

In the regular pinery of the sandy soils the pines predominated, the hemlock was entirely wanting and the hardwoods were scantily represented by small white birch, aspen, and maple, which were mixed with the young pine. In the dense stands of mature timber these deciduous trees were killed out but reappeared where the superannuated pines were dying off and the cover of their shading crowns was broken. (Oneida, Vilas, Marinette, and Bayfield counties.) On the better loamy sands the pine forest was a mixture of white and red (Norway) pine, with occasional patches (perhaps temporary) of jack pine (Vilas, Oneida counties) but on the poorer sands the red (Norway) and jack pine often stood alone as a pure growth. Either one or both together formed forests of considerable extent, usually with hardly any undergrowth and mixture save some scattering scrub oak. (Barrens of Bayfield county and in Douglas, Marinette, and Portage counties.)

The greater part of the swamps in North Wisconsin were well stocked with dense thickets of tamarack, cedar (*arborvitae*), and some scattering spruce. The cedar (*arborvitae*) prevailed in those of the eastern part, especially the swamps of the sandy loam lands along and near Green Bay, the tamarack had undisputed possession of those of the southern and southwestern part and also covered part of the swamps of the openings. The swamps of the central, northern, and northwestern part were stocked without regularity, some with tamarack, others with cedar, and in

many of them both trees occurred together. The spruce as a very runty shrub or half tree covered many open bogs and otherwise occurred scattered in the swamps, especially within the moister hemlock area.

Forest Conditions of the Present

At present these forests are materially changed. More than one million acres have been cleared and put in cultivation. During forty years of lumbering nearly the entire territory has been logged over. The pine has disappeared from most of the mixed forests and the greater portion of pineries proper has been cut. There is today hardly a township in this large area where no logging has been done. In addition to this, the fires, following all logging operations or starting on new clearings of the settler, have done much to change these woods. Nearly half this territory has been burned over at least once: about 3 million acres are without any forest cover whatever, and several million acres more are but partly covered by the dead and dying remnants of the former forest.

In the better hardwood areas (Taylor, Marathon, Langlade counties) the least change has occurred; the former existence of the pine is scarcely noticed and the forest is damaged by fire only where it borders on "pine slashings" or spots where quite a body of pine occurred and has been removed. On the lighter, gravelly loam and sandy loam soils, where the pine formed a heavier admixture, the remaining hemlock and hardwoods are badly damaged and often entirely killed over extensive tracts (part of Price, Chippewa, Sawyer, Washburn counties.)

In most of the pinery areas proper, the repeated fires have largely cleared the lands of all the heavier debris in slashings (Oneida, Marinette, Washburn counties, near Lake Superior at Ashland and Bayfield and in Douglas counties.) Here are large tracts of bare wastes, "stump prairies," where the ground is sparsely covered with weeds and grass, sweet fern, and a few

scattering runty bushes of scrub oak, aspen, and white birch. These alternate with thickets of small pine (often jack pine) which in spite of repeated fires have escaped destruction or have re-established themselves.

Nor have these changes been restricted to the upland forests. The swamps, too, of every county have suffered from fires. Some of the worst forest fires have started in the dense tamarack and cedar swamps of the sandy areas, where the most complete destruction has taken place (Oneida, Price, Chippewa, Marinette counties.)...

Coniferous Supplies

The conifers, particularly the pines, formed solid, almost pure, forests over more than 30 percent of the area under consideration besides hundreds of groves of smaller extent scattered throughout the entire area of mixed forest. In addition, they formed the most conspicuous part of these mixed forests themselves so that the name of "pinery" was applied to the entire forest once covering this area. The conifers covered especially the poorest land, stocked the barrens, the light sands, the roughest gravel lands, and clothed the swamps wherever these permitted of any tree growth. Besides forming the bulk of the forest growth, the chief conifers, white and red (Norway) pine and hemlock grew to larger size and better shape than the hard woods; they yielded more material and were easier logged, transported, and sawed, and their product found a much more extensive market. In total amount of saw timber, the conifers originally excelled the hardwoods about as five to one, but at present all the conifers combined furnish only about twice as much material as the hardwoods...

Forest and Wealth

The importance of the forest to the State of Wisconsin as a factor of wealth is very great. The statement that "the wood industries have built every mile of railway and wagon road,

every church and schoolhouse, and nearly every town, and that in addition they have enabled the clearing of half the improved land of North Wisconsin," is by no means extravagant exaggeration. Between 1873 and 1898 more than 66 billion feet of pine alone were cut from this forest and even then the lumber industry was in a flourishing condition on all the streams and had built up La Crosse, Eau Claire, Chippewa Falls, Grand Rapids, Wausau, Fond du Lac, Oshkosh, Green Bay, and many other places...

The value of these materials according to the State Census of 1895 exceeded in that year the enormous sum of 53 million dollars for "lumber and articles of wood" alone. This sum amounted to more than one-third the entire value of the products of agriculture. Besides these materials there were large quantities never recorded by the census and still larger amounts were used in home consumption as fuel, fencing, construction material, etc., which may safely be valued at 10 million dollars.

In 1890, according to the very incomplete federal census of that year, the value of the rough lumber, cooperage, and wagon stock, ties, poles, posts, piling, and all products of the wood industries as they leave the first hand, amounted to 40.4 million dollars. If to this is added the value of pulp and tanning material, of mining timber, and that of the large home consumption, it brings up the total to fully 50 million dollars for these products at first hand and shows them, like the census figures of 1895, to exceed one-third of the value of all farm products of the state. And to these farm products alone are the simple forest products comparable, for in most other industries the same article often highly finished and costly, appears with little or no modification as a product of several branches of the same industry...

Besides their own value, the products of the woods stimulate secondary manufacturing industries, supply planing and pulp mills, furniture, cooperage, and wooden-ware establishments, wagon and car shops, whose aggregate output in wooden articles amounts to over 20 million dollars.

In 1890 there was invested in the saw milling industry alone, according to the census of that year, fully 84.5 million dollars, or a sum equal to one-third of the assessed value of all land in the state, or about one-sixth of the value of all real estate and over one-eighth of the assessed value of the entire wealth of Wisconsin. Of the 84 millions, over 13 fall to the milling plants and machinery, 11 millions to logging equipments, logging railways, etc., including also logs on hand at the time, and over 31 millions to timberland, tributary and belonging to the saw-mills. These same establishments paid during that year nearly \$700,000 taxes, a sum equal to the total state taxes of Wisconsin; they paid over \$3,000,000 for running expenses aside from wages; about 15 million dollars for wages and logging contracts and over \$700,000 for the keep of animals alone.

The lumbering industry gave employment in a regular way to over 55,000 men (not women and children), besides purchasing several million dollars worth of logs. Of those persons employed in these operations a large per cent are settlers who through this industry alone are enabled to support themselves until their slowly growing clearings furnish sufficient harvest. It is the taxes on timber land (not waste land, however,) and its industries which furnish the "road money" and it is this same fund which builds, equips, and largely maintains in the thinly settled backwoods of Wisconsin, schools equal if not better than those of the country districts of any other state. It is this same industry which for years has made farming in the backwoods more profitable, and the farmers more prosperous than those of some other states with milder climates and equally fertile soil...

11. THE STATE FORESTRY COMMISSION PONDERES THE FATE OF CUTOVER LANDS, 1898

[The state Forestry Commission that hired Filibert Roth in 1897 (see previous item) issued its own report the following year. We have excerpted here its short section in which they addresses the future of the cutover lands which had been stripped bare of their trees. They admit that, despite the marketing campaigns of developers, these devastated areas could not support farming and were unlikely to be reforested for decades.]

The Denuded Lands

By far the most difficult part of the forest problem in Wisconsin is the question as to what shall be done with those large tracts now existing which have been denuded of the pine formerly growing on them, and now lie idle, subject to the ravages of the fire. The present condition of these tracts and their prospects for the future are ably treated in the Report on Forest Conditions [by Filibert Roth, excerpted above]. It appears that in their present uncared-for situation they are liable to a progressive deterioration of the soil. That most of them are capable, however, of restocking themselves with pine without expensive silvicultural operations, provided fires are kept out, is just as certain. Some parts of these lands, of considerable extent in the aggregate, but small in proportion to the whole area, have already begun to restock themselves in this manner. The opinion which formerly widely prevailed, that white pine did not reproduce itself on areas where it has been cut off, but gave way to poplar and other inferior species, has been proven erroneous by observations both in this state and elsewhere.

While it is perfectly feasible to restock these lands with pine, it is quite as undeniably true that the bulk of them will not be so restocked as long as they are left to themselves. If no steps are taken towards a proper care these millions of acres will become

wildernesses of scrub, covered according to circumstances with crippled aspen, runts of jack pine, dwarf oak, or even merely coarse grass and sweet fern. That condition they will remain in for an indefinite period. This is no mere assumption, but precisely what has happened in other states where similar conditions have prevailed. In all parts of the East, from Massachusetts to the Carolinas, immense tracts exist which formerly were covered with heavy timber. The forests were cut and, the lands left to themselves in the same improvident manner which we have heretofore followed. Now these tracts, although they are still called woodlands, do not produce a single stick of saw timber, nor even firewood, that could be sold at a reasonable price per cord. This condition has existed in some cases for a hundred years and there is not the slightest prospect for improvement. These lands might as well not exist as far as the prosperity of the community is concerned in which they are situated. Similar tracts can be seen within ten miles of Chicago.

Some people may think that these cut-over lands will in time become of agricultural importance. They cite the fact that here and there a settler makes his home in such places, because he can buy the land for almost nothing, or because he has been misled by ignorance and inexperience. By taking advantage of every depression, where the wash from the adjacent slopes may have improved the soil a little, he manages to raise a pitiable crop. But what can such isolated attempts amount to when the entire area of this character comes into play? On other tracts with slightly better soil it may be possible to raise potatoes with profit. But the prosperity of a whole community cannot be based on a single crop. If lands of this character had any prospects of agricultural use one would think that the large sand tracts along the Wisconsin river, in Adams and other counties which have long been settled, would not remain idle as they do. Moreover, the settlers on such lands, as far as there are any, are usually immigrants who bring from their native countries very low standards of living. By dint of having very few needs as

compared with farmers of native American, German, British or Scandinavian nationality, they manage to make a living where those others would starve. But they remain miserably poor all their lives, ignorant and unambitious. It certainly cannot be in the interest of the state of Wisconsin to people large portions of its territory with "crackers."

There is consequently no prospect that our denuded lands will be put to agricultural uses. The only way, therefore, in which they can be made useful is to restock them with the timber which formerly covered them and for which they are peculiarly adapted. But we have already seen that it is improbable that any considerable number of private parties will find it profitable to take the steps which are necessary to reach this end. Yet most of these lands are owned by private parties, principally the lumbering concerns which have cut the pine. It seems therefore that it would be necessary for the state to first obtain title to these lands.

Other states, notably New York and Pennsylvania, have within a few years appropriated very large amounts of money for the purchase of lands on which state forests are to be maintained. Wisconsin is hardly in a position, at present, to take a similar step. As these lands may, with proper management, be made to pay some revenue in thirty years, it would be simplest to purchase them with scrip payable after thirty years. The lands would then practically pay for themselves. Unfortunately the state constitution prohibits the incurring of a state debt for such a purpose...

At the same time, some portions of the cut-over lands are in such condition as to be dealt with more easily. Over 250,000 acres are held by counties on tax deeds; considerably more than this is encumbered with outstanding tax certificates held by the counties. There is no reason to expect that any appreciable amount of these certificates will ever be redeemed. The owners have simply abandoned these lands as worthless after taking off the pine timber. The present policy of the counties is to rid themselves of the lands so held at any price whatsoever.

Large tracts are often sold at a nominal price. The revenue so obtained is so exceedingly small, that it need hardly be taken into consideration. Even after the lands are sold the assessed value is so low that the annual tax derived from them is almost nothing. If these tracts, on the other hand, were held permanently by the counties and properly cared for they would soon become of value. After twenty-five or thirty years they would be productive of some revenue, enough to make up for the small loss in taxes, and after a somewhat longer period they might in some cases be sufficient to pay from their annual revenue the greater part of the county expenses. In the meantime they would furnish employment to numerous people and greatly enhance the prosperity of the whole community. It is therefore eminently proper to authorize counties to hold such lands permanently and provide for their management in conjunction with the state forests.

It has been intimated to the commissioners by several large owners of cut-over pine lands that they would be willing to cede considerable tracts of this character to the state provided the latter would take steps to restock them. The state ought certainly not to refuse such generous offers, and provision is made in the bill herewith submitted for the acceptance of such gifts.

12. William Hornaday on Vanishing Wisconsin Wildlife, 1898 and 1912

[In 1897, William Hornaday (1854-1937) of the New York Zoological Society collected nearly 200 questionnaires from observers around the country and concluded that, nationwide, nearly half of all American birds had perished since 1882. These are comments by his informants in Wisconsin (elisions are in the original). Fifteen years later, in 1912, Hornaday performed another survey and found that the following birds and mammals had gone extinct in Wisconsin: whooping crane, passenger pigeon, American egret, wild turkey (since restored), Carolina parakeet; bison, moose, elk, woodland caribou, puma, and wolverine. He recommended that the provisions specified at the end of this excerpt should be enacted in Wisconsin law as soon as possible.]

[1897] Milwaukee, Prof. H. Nehrling, "Birds are decreasing fearfully in this locality... Where, in the days of my boyhood, thirty-five years ago, orchards and woodlands were ringing with bird music, silence seems to reign supreme in these last years of the century... Of many of the birds named [our finest song and game birds] scarcely 1/4 are to be found now, while of numerous other species scarcely 1/10th, or even 1/50th, are to be met with to-day."

Milwaukee, Prof. R. M. Strong, "Birds have decreased very greatly... Shooting by men and boys is a very destructive practice, and one that might be stopped."

Milwaukee, John A. Brandon, "Birds are decreasing, apparently decidedly so."

Fox Lake, Geo. A. Morrison, "One-half as many birds as formerly. Indiscriminate shooting, both spring and fall, has caused a great decrease in upland game birds and ducks. Spring shooting should be stopped."

Waukesha, Clarence P. Howe, "Have noticed a marked decrease in the bird fauna around Waukesha within the last 5 years."

Ripon, E. Morgan Congdon, "Only game birds decreasing perceptibly."

Delavan, N. Hollister, "A favored locality! Very little decrease, save of a few conspicuous species. No milliner's hunters, few sportsmen and hunters, boy egg-collectors few and far between, only one ornithologist: good breeding grounds."

Milton, Prof. Ludwig Kumlien, "I could not give the percentage of decrease for the state as greater than 30% in 15 years; locally it seems greater. If one goes back 25 to 35 years, I should say it might amount to 50%, for settled portions of the state. The shore birds have decreased more than any other order. Ducks have held their own fairly well, considering that they may be legally slaughtered in spring, after they have mated, (up to May 1); in both Wisconsin and Illinois... Ruffed grouse have suffered, no doubt, to an extent (locally) of 75% and more... Laws have forbidden hunting prairie chickens with dogs, and this, with drier weather in May and June, has been favorable to them... A very few passenger pigeons still linger - a "mere trace." Gulls and terns have decreased very markedly.

[1912] New Laws Needed in the States

Wisconsin: In spite of the fierce fight made in 1910-11 by the saloon-element game-shooters of Milwaukee for the control of the wild-life situation, and the repeal of the best protective laws of the state, the Army of Defense once more defeated the Allied Destroyers, and drove them off the field. Once more it was proven that when The People are aroused, they are abundantly able to send the steamroller over the enemies of wildlife.

Alphabetically, Wisconsin may come near the end of the roll call; but by downright merit in protection, she comes mighty close to the head of the list of states. Her slate of "Work to be done" is particularly clean; and she has our most distinguished admiration. Her force of game wardens is not a political-machine force. It amounts to something. The men who get within it

undergo successfully a civil service examination that certainly separates the sheep from the goats. For particulars address Dr. T.S. Palmer, Department of Agriculture, Washington.

According to the standards that have been dragging along previous to this moment, Wisconsin has a good series of game laws. But the hour for a Reformation of ideas and principles has struck. We heard it first in April, 1911. The wild life of America must not be exterminated according to law, contrary to law, or in the absence of law! Wisconsin must take a fresh grip on her game situation, or it will get away from her, after all.

Not another prairie chicken or woodcock should be killed in Wisconsin between 1912 and 1922. When any small bird becomes so scarce that the bag limit needs to be cut down to five, as it now is for the above in Wisconsin, it is time to stop for ten years, before it is too late.

Wisconsin should immediately busy herself about the creation of bird and game preserves.

For goodness sake, Wisconsin, stop killing squirrels as "game!" You ought to know better — and you do! Leave that form of barbarism for the Benighted States.

And pass a law shutting out the machine guns. They are a disgrace to our country, and a scourge to our game. Continually are they leading good men astray.

Extend the term of your State Warden to four years.

III. THE ERA OF CONSERVATION

13. JOHN NOLEN ON THE NEED FOR STATE PARKS, 1909

[Realizing that huge swaths of Wisconsin wilderness and dozens of species had been decimated by industrialization, state policy makers began considering remedies in the early 20th century. The first State Park Board was appointed in 1909 to investigate and make recommendations for the development of a park system. Noted landscape architect John Nolen (1869-1937) was hired to draft the plan. His report, excerpted here, gave justifications for such a system and recommended four sites for Wisconsin's first state parks.]

No question before the American people today is of greater importance than the conservation of our natural resources and the preservation of all those means of health and happiness which through selfishness or thoughtlessness are so likely to be destroyed. "We declare our firm conviction," said the Governors of the States in the recent White House Conference, "that this conservation of our natural resources is a subject of transcendent importance, which should engage unremittingly the attention of the Nation, the States and the People in earnest cooperation. These natural resources include the land on which we live and which yields our food; the living waters which fertilize the soil, supply power and form great avenues of commerce; the forests which yield the materials for our homes, prevent erosion of the soil, and conserve the navigation and other uses of the streams; and the minerals which form the basis of our industrial life and supply us with heat, light and power."

On the economic side Wisconsin is fully awake to the importance of these questions. It is quite natural, therefore, that the State should now show itself equally ready to consider natural resources on other sides, — those related even more directly to the physical and moral health and the happiness of the people. The White House Conference appreciated this aspect of our natural resources as well as the economic, and declared, "we agree that the land should be so used that the beauty, healthfulness and

habitability of our country should be preserved and increased; that sources of national wealth exist for the benefit of the people and that monopoly thereof should not be tolerated.” ...

Our National Parks are great tracts in the far West set aside by the Federal Government because of their uncommon interest and beauty. From the comparatively small area in the Yellowstone, proclaimed by President Harrison in 1891, we now have five great National Parks, the Yellowstone, the Yosemite, General Grant, Sequoia, and Mt. Rainier, which include within their boundaries more than 40,000,000 acres. Because of their immense size and of the interest of the whole country, rather than of one locality in their preservation, they have become National rather than State Parks. “The wildest health and pleasure grounds” says John Muir, “accessible and available to tourists seeking escape from care and dust and early death, are the parks and reservations of the West. There are five National Parks, the Yellowstone, Yosemite, General Grant, Sequoia, and Mt. Rainier, all within easy reach, a magnificent realm of woods, most of which by railroads and trails and open ridges is also fairly accessible, not only to the determined traveler rejoicing in difficulties, but to those (may their tribe increase) who, not tired, not sick, just naturally take wing every summer in search of wildness.” In addition to these parks the fifty-nine forests possessed by the Government occupy more than 150,000,000 acres, — an illustration of the extent to which the Nation at large believes in both forests and parks...

State Parks for Wisconsin

If other States have found it desirable and advantageous to have State Parks, why should not Wisconsin? Has the State nothing worthy of preservation? Is Wisconsin too poor? Does it not expect increase of population?

Has Wisconsin nothing worth while — a State with an area of 35,000,000 acres; a coastline of 500 miles, parts of it rivaling in picturesqueness and beauty the coast of Maine; with precipitous

and romantic bluffs on the banks of rivers and lakes; with an inland lake much larger than Winnepesaukee in New Hampshire; with 2,000 or more minor lakes; with some still remaining illustrations of the original heavy forests of oak, maple and hickory, pine, hemlock and spruce; with hills, peaks and ridges comparable to the Berkshires; and with unmatched and unique river scenery, culminating in the bluffs of the Mississippi and the Dells of the Wisconsin. Wisconsin, surrounded by prairie states and states monotonous in topography, has in its beautiful and refreshing scenery and in its invigorating climate, resources that it can ill afford to neglect.

Is Wisconsin too poor — a State that has a property valuation of over \$2,478,561,786.00 and no bonded indebtedness; that has \$400,000,000 invested in manufacturing; that spends over a half-million dollars a year on its normal schools, more than a million on its great University, that disburses in all nearly \$10,000,000 annually. No, the State has ample wealth to supply any feature that is needed for the present or the future.

Has Wisconsin no future to provide for — a State with a population of but 30,000 in 1840, a million and a half in 1890, two million in 1900, and at least two and a half million today; that can support, even with the present system of agriculture, six and a half million people; that has the geographical position, the natural resources, the climate, the enterprise that must inevitably attract a large population. It seems certain that the State will win to its borders even more than its share of the natural and normal increase of the country at large.

The question resolves itself into this: Is Wisconsin going to follow the example of the more populous Eastern States and wait until action is difficult, if not impossible, or is it going to learn from their mistakes? ... While the State of Wisconsin is large, the amount of natural scenery suited in character, location and extent for public parks is relatively limited and the best is apt to be taken first by private individuals. The population is steadily increasing; attractive open spaces are as steadily decreasing in

number and increasing in value; therefore, unless action is taken in time, there is a grave danger of what may be called physical and moral suffocation...

Briefly summarized the recommendations of this report are as follows:

- I. To authorize the State Park Board to secure as soon as may be the refusal of such property as would constitute the most attractive reservation in connection with the Dells of the Wisconsin, and to do all that is possible to check any further action that would impair the beauty of the Dells for park purposes.
- II. To empower the State Park Board to make an official investigation of the Devil's Lake region with authority to acquire all the wild land up to, say, 5,000 acres, at a rate not to exceed an average of \$25 an acre, and as much of the level land around the lake as possible at a rate not to exceed \$100 an acre, provided that the total area available on these terms will, in the judgment of the State Park Board and its landscape adviser, form a complete and valuable park. In case of favorable action at Devil's Lake, the State should also obtain through condemnation proceedings rights and easements over the property not purchased, as has been done by the national government in the military parks of Chickamauga and Shiloh, so as to prevent the establishment of disfiguring and offensive industries, to protect the trees from destruction, and thus insure success to the State's action.
- III. To authorize the State Park Board to acquire the lands in Door County near Fish Creek, now under consideration, on the general terms named in this report.
- IV. To authorize the State Park Board to acquire the lands in Grant County near Wyalusing, as outlined, on the general terms quoted in this report.

These four parks and others that may be obtained later by public purchase or private gift — for such gifts can reasonably be expected — should ultimately be connected by great State roads or parkways, binding the State lands into a system. Such roads are being rapidly built on a large scale by other States and Wisconsin cannot afford to lag behind in work so closely related to progress and public welfare. A State road of such a character as to provide adequately for automobile travel from, say, Green Bay to Prairie du Chien, following the historic route along the Fox and Wisconsin Rivers; another diagonal connecting St. Paul and Minneapolis with Milwaukee and Chicago, and a third road along the Wisconsin shores of Lake Michigan and Lake Superior, would prove an investment, the return from which would leave the State no room for regret.

The issue appears plain. Is Wisconsin going to look upon its bay and lake shores, its rivers and bluffs, its dells, its inland lakes, its forests, as natural resources to be conserved and some portion at least acquired and held for the benefit of all the people — both for present and future generations? Is the State to display foresight and act in time in this important matter, recognizing and providing for the increase of population and steadfastly relying upon the increase of wealth?

In conclusion the specific justification of State Parks for Wisconsin may be summed up as follows:

- (1) They would, in common with the forest reservations, the great economic value of which is now unquestioned, preserve and protect just so much more of the woodland of the State and the stream flow dependent upon it.
- (2) They would provide the best method of preserving places of historical and scientific interest.
- (3) They would secure a necessity of modern life before it is too late...Wisconsin should no longer delay. Expenditures for State lands do not represent an expense in the ordinary sense but an investment, one that will

increase in value and yield even larger returns to succeeding generations.

- (4) State Parks would give an economic return from tourists and visitors... At the Dells of the Wisconsin tourists spent \$50,000 in 1905 and the Vice-President of the Chicago & Northwestern Railway Company has written that the tourist travel into Wisconsin constitutes now “a valuable traffic and is susceptible to a very large increase.” No further argument should be necessary on the business side, and in the case of a relatively sparsely settled state with great and undeveloped resources, it should be kept in mind that tourists often become permanent settlers.
- (5) State Parks are the only means of preserving, protecting and appropriately improving places of uncommon and characteristic beauty. Even forest reservations — useful and indispensable as they are — will not answer this purpose. Land for forests is selected on a different principle and is afterwards developed and maintained in a manner radically different from that called for by parks.
- (6) Finally, these parks would make, as no other agency can, adequate and permanent provision for wholesome outdoor recreation and pleasure.

If it is right for the State of Wisconsin to spend a million and a quarter dollars on charitable and penal institutions, as it did in 1908, made necessary in part at least by unfavorable physical and social conditions, is it not wise and good to spend something on preventive measures which would make such institutions less necessary? Who questions nowadays that simple recreation in the open air amid beautiful natural surroundings contributes to physical and moral health, to a saner and happier life? These parks are the only security that the future holds out for people of small means. In them worn-out workers of the family and the little children could camp as they do in the Interstate Park of the Hudson' Palisades. “A mere autumn walk on a wooded hillside”

writes Frederic Harrison, “nourishes brain, spirit, and body at once; and opens up to us from all sources together new well-springs of life.”

Here are six sound reasons for establishing a series of State Parks in Wisconsin, the nucleus of a future great system covering the entire state. Suppose they cost three or four hundred thousand dollars. Could not Wisconsin afford to make the investment and would the state not find them worth more than their cost?

14. ALDO LEOPOLD CONDUCTS A GAME SURVEY, 1931

[Aldo Leopold (1887-1948) is Wisconsin's best-known environmental thinker. His Sand County Almanac (1949) is one of the nation's most influential books on the relationship between humans and nature. After graduate work in forestry at Yale, Leopold joined the U.S. Forest Service in 1909 and came to Madison 15 years later to work at the U.S. Forest Products Laboratory. In 1928, he was hired to research and write a long report on the state of game animals in the upper Midwest, from which this brief section is taken. Its 300 pages discussed the populations and health of many different species; we present here only his preface and selections from the chapter on the "game cycle" in Wisconsin. The latter reveals the careful methods of data collection and cautious reasoning that were hallmarks of his work. Two years after writing this report, in 1933, Leopold was named professor of wildlife management at the Univ. of Wisconsin, a post which he held until his death.]

The purpose of this survey is to appraise the chance for the practice of game management as a means to game restoration in the north central region. It attempts to describe game conditions as they exist, the opportunities which those conditions offer, the human machinery available for acting on them, and the probable consequences of their further neglect.

The survey is financed by the sporting arms and ammunition industry. The motive hardly requires explanation: success in game restoration means continuance of the industry; failure in game restoration means its shrinkage and ultimate liquidation.

The method of survey was to compile and interpret the observations and experience of sportsmen, naturalists, scientists, officials, and landowners. Time permitted of only such original field investigation as was necessary to understand and appraise the significance of work already done by others. Methods had to be developed by trial and error, hence the states surveyed last are described best.

The survey concentrated on farm game, because the crux of the game problem is on the farm. Our legislatures decree game conservation; our sportsmen and nature-lovers resolve we shall have it, but our landowners do not practice it, nor are they yet offered any inducement or motive, other than altruism, for doing so.

At the same time the public expects the free run of their lands, and of such game as may accidentally persist thereon. Such is our present impasse. Some more tenable relationship between the landowner, the game, and the public is obviously needed. The farm seemed the place to seek light on what it should be.

The survey began July 1, 1928. Map 3 [not included here] shows routes and dates of travel. Reports on the progress of the survey have been given from time to time before the American Game Conference, Izaak Walton League conventions, and other public meetings, and published in their proceedings.

No single statement in this report is offered as final or sufficient fact. (This qualification is needless for those who realize there is no such thing.) On the contrary the whole thought and purpose is to show how much and what interesting work remains undone, and what services to conservation may result from its competent performance. The success of the survey will lie not in how long its findings stand, but rather in how quickly they are superseded by more thorough work.

Many cooperators in many fields have generously contributed their time, thought, and the accumulated results of their own labors. Their names are listed in the Appendix. [omitted here]

As a means of stimulating action on some of the unanswered biological questions disclosed by the survey, the institute has financed fellowships for their study at the universities of Minnesota, Wisconsin, and Michigan. These are under the advisory supervision of the U. S. Biological Survey. A further purpose of the fellowships is to demonstrate the possibilities of professional training in game management.

A companion volume to this report, defining terms and outlining principles of game management, is shortly to be

published. This will incorporate a series of lectures delivered by the author at the University of Wisconsin in 1929...

Investigation of the Game Cycle

Certain game species in the north central region and elsewhere are subject to extreme fluctuations in abundance. It has only recently been generally realized that these fluctuations take place more or less simultaneously over large areas, and that they have a more or less uniform period or length. This fluctuation is common to all cyclic game, and is now coming to be known as the game cycle.

It is necessary, before an analysis of the separate species can be attempted, to first describe the cycle which affects all of them. This chapter describes their common cycle. Subsequent chapters will describe the several species.

Very little is known about the behavior of the game cycle, and still less about its mechanism and causes... When the game survey was started in 1928, it was apparent that it could not undertake to add anything to these detailed scientific studies of possible causes. Such studies require highly specialized experts, working through long periods of time. It seemed probable, however, that the experts could make a better guess as to what to look for, and could better interpret the meaning of what they found, if the game survey compiled the available evidence on the general behavior of cycles with regard to species, geography, and time.

It was believed that many observing sportsmen and game wardens would recollect certain facts and dates concerning behavior in their respective localities, which when compiled and analyzed, might enable administrators to predict recurrences, and also enable scientists to eliminate certain causes as inconsistent with behavior, and thus concentrate their labors on the remainder. Until science discovers the cause and mechanism of the cycle, all efforts to manage and conserve the cyclic species must necessarily grope in darkness.

The detailed study of behavior of the game cycle was confined to Wisconsin. It is hoped that similar studies of behavior will be made in other states... None of the conclusions are offered as final. The whole purpose is to stimulate more thorough thought and effort, not to supplant it.

What Species are Affected?

Ruffed grouse, pinnated grouse, sharptail grouse, and snowshoe rabbits now fluctuate violently, and to a large extent simultaneously, throughout their Wisconsin range, and apparently throughout the lake states.

The spruce hen, the only other present representative of the grouse family, seems to follow the same cycle, but it is rare in Wisconsin, and the information on it too meager to be conclusive.

The cottontail, the only other representative of the true rabbits, suffered severe mortality in northern Wisconsin during the last "low," and more moderate mortality in western Wisconsin at the same time. In eastern Wisconsin cottontails were sick, but apparently did not die. The jack-rabbit, the only other representative of the hares, was not studied. It showed severe fluctuation in certain localities about 1880... [*Omitted here is a long and meticulous discussion of data based on:*] the recollections of selected sportsmen and game wardens. The recollection of good and poor hunting years was found to persist for a long time. The dating of those years was usually accomplished by cross-questioning the observer and leading him to associate them with some personal experience or public event of known date. Such "association datings" undoubtedly carry a probable error of one or two years, but this error probably does not increase greatly with the lapse of time...

Of the total of 119 observers, 17 based their observations on shooting journals, personal records as ornithologists or taxidermists, or published works. This constitutes about one sixth of the total. The remainder, comprising about half of the

total, are based on mere recollection. Such observations were not accepted, however, without checking the observer's statements against each other. It was found that many country people maintain a surprisingly complete mental chronology, based not on years, but on the number of years ago. The probable error in such recollections of course increases with elapsed time.

15. ALDO LEOPOLD URGES A NATIONAL CONSERVATION PROGRAM, 1934

[In 1933, President Franklin Roosevelt appointed a "Committee on Wild-Life Restoration" consisting of Aldo Leopold, Thomas Beck, and Jay Darling to recommend ways to repair damage done to wildlife over the last century. Beck, a hunting proponent, favored restocking game while Leopold and Darling argued for large-scale habitat protection. Their final report recommended securing an initial 5 million acres of "submarginal" lands for restoration and called for new federal conservation expenditures of more than \$50 million. In the words of Leopold's biographer, Kurt Meine, Darling's implementation of the report's recommendations "would redirect the force and course of wildlife conservation in America."]

There is incontrovertible evidence of a critical and continuing decline in our wildlife resources, especially migratory waterfowl, due to the distraction and neglect of vast natural breeding and nesting areas by drainage, the encroachment of agriculture, and the random efforts of our disordered progress towards an undefined goal.

We found no evidence of the existence of a comprehensive or coordinated plan the effort to correct the situation, which is patent to all informed persons. Therefore, the need for a national program seems too apparent for extensive comment.

At present, as in the past, authority over wildlife is scattered through several departments and bureaus to the great disadvantage of orderly progress in conservation and restoration.

The President has ample authority under existing law to consolidate and coordinate these scattered responsibilities.

Nothing included in this report, so far as we know, requires any immediate legislation and, therefore, the proposals, if approved, maybe put into execution promptly...

Conclusions and Recommendations

A national wildlife restoration program is economically justifiable and immediately practical by utilizing sub-marginal and commercially unprofitable agricultural lands now contributing so largely to the surplus of agricultural products.

Projects comprising about 5,000,000 acres have, at this writing, been selected and are herein submitted for immediate consideration.

A much larger acreage may be utilized upon further study, but circumstances which constitute an emergency requiring immediate action prompt this Committee to submit a partial list of projects at this time.

Our program for nationwide wildlife restoration divides itself naturally into five parts:

1. Migratory waterfowl and shore birds, such as ducks, geese, swans, snipe, and plover, which demands immediate action if it is to have any beneficial effect on this year's population.
2. Upland game, including wild turkey, quail, ruffed, pinnated, and sharptail grouse, rabbit, and all other native species.
3. Song, insectivorous, and ornamental birds, many species of which are becoming scarce and all of which are either of great economic value in insect control or of major importance because of their spiritual, recreational, and spectacle values.
4. Mammals, including big game and fur-bearers, which heretofore have had but little consideration notwithstanding enormous possible values in meat, wild hides, and fur.
5. A new administrative set-up designed to insure continued, coordinated, and businesslike execution of the plan for the nationwide restoration and conservation of our wildlife resources.

After full consideration, this Committee recommends:

1. The immediate acquisition of 4 million acres potentially or actually suitable for migratory waterfowl and shore-bird breeding and nesting grounds. To insure immediate possession and control and still provide time for careful surveys, proper selection, and construction work, we suggest 1-year leases (5 percent of purchase price) with option to buy at an agreed price any time during the lease period. Areas thus acquired to be inviolate. (Confidential list of projects submitted separately.)
2. The purchase of 5,000,000 acres of sub-marginal land suitable for development and management as upland game areas. At such time as the game population of these areas becomes sufficient, the surplus may be used for stocking other areas, or the granting of trespass rights may permit regulated shooting under State supervision. The acreage for upland game should be extended to include at least 10,000,000 acres, as rapidly as suitable tracts are found for withdrawal from unprofitable agricultural production.
3. The purchase of at least 1,000,000 acres of areas known to be used as breeding and nesting places and rookeries by such species of song, insectivorous, ornamental, and nongame birds as are becoming scarce and of which, sufficient seed stock still remains.
4. (a) Acquisition of 2,000,000 acres needed for the restoration of big game, fur-bearers, and other valuable mammals. This should include the purchase of outlying farms or ranches where grazing privileges interfere with the protection of wildlife ranges and deplete the soil conditions.
(b) The withdrawal of grazing privileges on extensive tracts of public domain, and in the national parks and forests where the acreage necessary to graze a head is too great to permit of any profit, and the repurchase of the water rights in such areas.

- (c) The taking of title, by the Government, to all reversion land in the public domain and its retention for the restoration of wild life and improvement of soil conditions.
5. That subsistence farm homes in sufficient numbers be established on all areas acquired, the farmers to serve as caretakers and maintenance men under the direction of trained district supervisors. Farmers with satisfactory housing now reside on most of the areas and will be available for this work.
- Subsistence maintenance cost for the first year should be provided out of emergency funds and thereafter from the following sources:
- (a) Duck stamp revenue.
 - (b) Part of the funds to be made available under the Migratory Bird Conservation Act.
 - (c) The proposed tax on arms and ammunition already agreed to by the parties interested.
 - (d) Appropriations of public funds, such as are made for forests and parks.
6. For Presidential approval, a new coordinated and comprehensive administrative set-up, including the creation of a wild-life division out of existing personnel, and the appointment of a director competent for the execution of this program of national wild-life restoration and future conservation...
7. That if the conclusions set forth in the above paragraphs prove to be justified by the analysis of the facts hereinafter stated, that \$500,000 be immediately allocated by the C.W.A. for the work of technical examination of the areas listed, for the purpose of securing data not now available upon which final approval of taking title must depend...

8. The "ear marking" and use of \$25,000,000 to start the acquisition program by the purchase of areas scheduled to such an extent as the above sum will cover.
9. And finally, that \$25,000,000 of P.W.A. and C.W.A. moneys be allotted for restoration and improvement of the lands acquired...

Proposals...

- (1) Restoration of migratory waterfowl nesting areas by purchase (1-year lease with option to buy, to hasten possession and guard against error) of a large number of such areas in the states where these birds naturally multiply if given proper environment and food.
- (2) A nationwide upland game restoration program, with specific projects.
- (3) A nationwide plan for action involving the acquisition and restoration of areas suitable for facilitating a prolific nature in increasing the population of all wild life, especially those species which are, or are becoming, rare.
- (4) A proposal for a much-needed coordinated and businesslike administration set-up to carry the plan into successful execution if or when the report is approved by the President...

16. JAMES COLBY ON THE STATE CONSERVATION COMMISSION'S WORK, 1935

[The stock market crash of 1929 impoverished most of the nation as businesses failed, banks closed, and workers became unemployed. When the economy failed to right itself, federal and state governments stepped in to provide jobs, many of them in conservation programs. This short article by Milwaukee Sentinel reporter James Colby describes those efforts in Wisconsin at the height of the Great Depression.]

Disasters of the drought and the depression, tax delinquencies, school problems and unemployment relief, have given a new meaning to conservation in Wisconsin.

Looked upon for years as a movement designed principally to provide game and hunting grounds and fish and fishing grounds for the sportsman, the conservation program today has been so widely expanded that it has, in fact, become a movement for the rehabilitation of the north and other sections of the state.

As a result, it was indicated yesterday by conservation department chieftains, the next legislature may be asked to support the expanded program with an appropriation that will match the revenues of the commission, estimated at \$430,000 for 1935.

Boomed North Woods

In the years of plenty, conservation was taken as a matter of course, with the department going about its business of restocking streams and lakes, fighting forest fires and planting some trees in reforestation projects. Northern Wisconsin was the "vacationland" of the nation; its highways were black with tourists' automobiles; the northern counties were struggling along – poor, but somehow or other making both ends meet.

And in those years speculators "boomed" all sections of the north as the "heaven on earth" where a cheap 40 or 80 acre tract,

no matter how far back in the wilderness said tract was located, would provide a comfortable living for a family tired of the noise and tumult of the city.

Ditch diggers had gone into the far corners of the state and had reclaimed for agriculture untold thousands of acres of marsh lands with vast systems of drainage districts; by setting up school aids ensuring an education for every youngster in the backwoods and by making it possible for every settler owning 40 or more acres to have a road to his doorway, even though that doorway was located in the tall timber.

Then Tide Turns

The settlers aided in the destruction of the north. They straightened out the trout streams so the water would run off their land faster than it had ever run before. They cut away the cover from streams; the fish died out. Streams dried up; lake levels dropped; fire turned the green woods black; much of the beauty and many of the attraction that lured tourists were gone.

Then the tide turned. The conservation department tackled the drought situation to prevent, if possible, the creation of a great desert in Wisconsin and, at the same time, to rebuild the sportsmen's paradise of old. With the cooperation of county officials and the University of Wisconsin the commission set about to conserve water.

The major project in this movement that is undertaken and started is revolving around what is known as the central counties marshland area, centering about Jackson, Wood and Juneau counties; in the Dandy creek, the Little Yellow river and Cranberry creek territory. Here close to 300,000 acres are to be reclaimed.

Here scores of dams are being built; the feeding grounds of game birds are being restored and already the district has seen more ducks than have been seen in more than a decade. And great reservoirs of water are being created as a protection against the day when another drought descends upon this state.

In many places throughout the north similar projects, though smaller, are being carried out. Drainage districts are being plugged because the farmlands created are of little, if any, value. Old dams are being rebuilt: the water that once rushed on its way to the major rivers is being held back.

Start Zoning Program

Again, in co-operation with county governments and the university, the commission entered into a zoning program for the northern tier of counties. Lands are being set aside for agricultural purposes, for recreation and for forests, just as cities set aside districts for residence, business and industrial purposes. In those counties where zoning laws are in effect, it will be impossible in the future for land speculators to place a settler on a farm far back in the wilderness.

Here it is that the effort to reduce the tax load on the counties and school districts is centered. The program calls for removal of the backwoods settlers into more thickly settled communities: bringing the settler closer to schools, converting his backwoods farm into forest lands, and eliminating the necessity for maintaining a road that leads nowhere.

Settlers Shifted

This removal of settlers, also, is looked upon as a safety measure against fire because these settlers, seeking the easiest way to clear their stump and cut-over land, turn to fire as an aid no matter what the risk.

Nine counties had adopted zoning ordinances up to Nov. 1 and nine others were to approve such ordinances at the regular county board meetings, now in progress.

In the year just passed, the department, under the direction of Adj. Gen. Ralph M. Immell, chairman of the commission and for some months acting director, reorganized its forest fighting crews, establishing patrols of organized and experienced crews in each district and keeping a close check upon those using the woods.

Huge Fire Blight

The department report of yesterday showed the results of this reorganization, which followed the disastrous results of 1933 when much of the north was blighted by fires and when, in Lincoln county alone, more than 50,000 acres of land were burned over

The report showed that only 43,000 acres of timber land, cut-over and marshland were burned over up to Nov. 1 and that the cost of prevention and suppression was \$83,693, as compared with \$328,817 spent up to Nov. 1 of 1933. Of the 43,000 acres that were burned, approximately 19,000 were burned over on the day of the dust storm which made it impossible for fire wardens and tower watchmen to “spot” the fires.

CCC Crews Praised

The report showed, too, that there were 513,000 acres burned in 1930, 640,000 acres in 1931, and 119,000 acres in 1932. The department, giving full credit to the CCC [Civilian Conservation Corps] boys who aided in suppressing the forest conflagrations, says the record was made in the driest year Wisconsin has seen in many years.

“It would seem reasonable,” said General Immell, commenting upon the forest fire problem, “that, if the department can cope successfully with the problem of forest fires and forest protection during a year that has been marked by severe drought, the policy now in force can be counted on for successful control under normal conditions.”

Streams Improved

Then, in addition to restocking the streams with fish, the department, under the direction of Sid Gordon, began a program of stream improvement, installing deflectors and furnishing cover – restoring the natural conditions which man destroyed. Work was done on the Tomorrow, the Pike, the Brule, the Thunder,

Roche Cri and Fish Creek and the department today is obtaining the cooperation of private individuals and clubs and associations in the movement to bring back good old fishing days by giving back to the fish the conditions under which they thrived.

These are just the high spots of the conservation department program.

Millions of trees have been planted by the state and federal crews, by counties and by private interests. Soil erosion problems have been tackled, wind erosion problems have been studied and work started: water levels have been restored in marshes and lakes, slash has been cleared away from the roadsides, where a carelessly tossed cigarette might start a fire, and the rebuilding of the North is actually in progress.

Much of the work was done with relief funds and with CCC labor. Much of the work is still in progress and it is to make possible completion of the projects started that the commission and its aids will ask the aid of the state with an appropriation to a department that is now self-sustaining and kept up by the fees that come to it in the course of the year.

17. TREES FOR TOMORROW EDUCATES THE PUBLIC ABOUT CONSERVATION, 1944

[Trees for Tomorrow, Inc., of Eagle River, is a non-profit conservation and environmental education organization whose mission is to deliver balanced, objective information on the management and use of trees, forests, and other natural resources. Established in 1944 through member subscriptions from 17 Wisconsin paper and utility industries, "Trees" initially worked with state and county agencies in reforesting the cutover region of northern Wisconsin. The focus of the organization has changed over time but major components have included tree planting and distribution, forest management services, and conservation education. The pamphlet excerpted here, published in 1951, describes its earliest years.]

This booklet is dedicated to 7,000 members of youth, college, and adult groups—the first 7,000 to attend conservation workshops at the Trees for Tomorrow Camp, Eagle River, Wisconsin. These pages also document the function of the camp, and sum up six years of experience in this new approach to conservation education in Wisconsin.

A Way of Life

Our nation's stockpile of renewable natural resources has provided us with countless benefits. From this storehouse have come the raw materials which our inventive genius and industrial might have converted into a standard of living never before enjoyed by man. These same resources supply the sinews that protect our freedom in time of war.

This country's natural resources stockpile is a rich one, but it is not inexhaustible. The wealth that stems from soil, forests, water, and wildlife management can be used and renewed only through sound conservation practices

Conservation affects us all, directly or indirectly. It is tied up intimately with our struggle for existence. Conservation is closely

concerned with our present economic well being, and with our future happiness. It is of the present, but prepares for the future.

Careful management of nature's resources is a way of life that finds encouragement in the program of Trees for Tomorrow Inc., and in the functioning of the conservation camp at Eagle River, Wisconsin.

An Idea Is Born

The Trees for Tomorrow Camp has become a center of conservation activity in northern Wisconsin. It was built by U. S. Forest Service and was used originally in the training of foresters during the CCC days. Today the camp provides a field headquarters where a cross section of the state's citizens can meet and deal first-hand with facts pertinent to the full development of natural resources. Technicians who head the various phases of the camp program are drawn from industry, federal and state agencies, colleges and high schools.

Trial Workshop Held in 1945

The camp came into being under its present management as a result of a trial workshop for 40 Wisconsin Valley educators in the summer of 1945. The schoolmen tramped through managed forests, visited nurseries, saw forest fire equipment in action and visualized how their experiences in the field could contribute to the progress of conservation in the classroom. They suggested in a resolution that the camp be activated as a conservation headquarters, and that the schoolmen annually plan a workshop at Eagle River.

Following this successful initial experience, Trees for Tomorrow entered into an agreement with the U. S. Department of Agriculture to operate the camp on a non-profit basis.

Modern Camp Facilities

The camp is located on the outskirts of Eagle River on the largest chain of inland lakes in the world—nearly 2,000 feet above sea level, in the heart of Wisconsin's forest and recreation area.

Its facilities include a combination administration building and lecture hall, two dormitories and an annex, dining hall, and forest products exhibit building. The administration building is the planning headquarters for all camp activities. Groups register here before assignment to quarters.

The lecture hall is used for meetings, classes, and the showing of movies. The two dormitories, with fireplaces and red leather upholstered furniture in the lounges, accommodate 42 persons. Sturdy maple furniture, hot and cold running water, inner-spring mattresses, showers, and steam heat are part of the regular conveniences in the dormitories. An annex building is available, also, for groups numbering up to 60 persons

The pine-paneled dining hall overlooking the Eagle River channel, highway of excursion and speedboats, is staffed by an expert chef and his assistants. Trees for Tomorrow employs a graduate forester to direct camp operations and a staff of six.

There are facilities on the grounds for volleyball, badminton, horseshoe pitching, archery, softball, croquet, and table tennis. Boats are available for fishing. The municipal swimming beach, with shower house, is located a block and a half from camp. A popular place for songfests and outdoor gatherings is the campfire ring along the banks of the Eagle Chain.

Forest Products Exhibit Building

The forest products exhibit building at Trees for Tomorrow Camp is a veritable north woods museum. Planned as a means of helping to dramatize the wealth that flows from a well managed forest, it houses botanical and zoological exhibits, murals, and panel displays associated with the growing of trees and the end use of the raw material, wood. Forest products are shown against a mural background, and leaf specimens are mounted along the walls as aids in tree identification. Chemical processes used in the production of by-products are symbolized by a flow chart blown in glass, filled with actual raw materials.

Attention is directed to various phases of good forest practices through illustrations showing children planting trees, a well-managed forest, and timber harvest operations.

A miniature machine demonstrates the making of paper-base plastics. The life story of a tree is illustrated where seeds, cross sections of cones, and seedlings from one to three years are suspended in plastic blocks.

Demonstration Forest

The heavily wooded 156-year-old demonstration forest which borders the camp offers unusual opportunities for nature study, and for practical instructions in basic conservation. It is a focal point where the interdependence of human beings and the world of other living things can be closely observed under natural conditions.

An inventory plot, soil test pit, a tree planting demonstration area, and a nature trail have been set up in the forest. Here the rudiments and the importance of forest research enter the picture. It becomes apparent that a tree does not exist as an individual, but as a unit in a forest community, and should be treated as such. High school students and directors of school forestry and conservation clubs learn to use the cruiser's stick, increment borer, abney level, and diameter tape.

The tract contains practically every species of tree native to the Lake States region.

The Workshop Technique

Each year, April to November, Trees for Tomorrow Camp is the scene of conservation workshops that have this three-fold objective:

1. To provide, in a brief period, learning experiences that many persons do not receive during a lifetime.
2. To bring about, as a result of these experiences, a more specific understanding of the social and economic

significance of resource management.

3. To afford an opportunity for living experiences in the field of human relationship.

Combining both indoor and outdoor activities, the workshop program is planned to make conservation a real and living thing for participants. Lectures, movies, and discussions are supplemented with actual observation of northern Wisconsin's resource management in operation. The underlying purpose of each workshop session is to provide a knowledge of sound conservation practices which those who take part can carry over into their everyday living.

In the Field Studies

In order to give workshop groups a comprehensive knowledge of resource management problems, arrangements have been made for a number of in-the-field study stops. Industry, and federal and state agencies cooperate by furnishing trained personnel at the various stops for lectures and demonstrations that point up man's work in behalf of nature. Private landowners assist, also, by allowing group studies on their properties.

The typical field study schedule for each workshop period takes in about five or six stops, and every schedule is planned to provide a well-rounded program based on wise land use. Field study programs are made up from the following list of four stops:

A problem farm, for soil and soil problem studies.

Northeast Area Fisheries headquarters at Woodruff, where fish hatching and rearing operations and biological studies are explained.

Trout Lake or Rhinelander high school forest, where forest fire fighting demonstrations are staged.

Hugo Sauer or Trout Lake Nursery, for tree planting and nursery practices.

Star Lake Plantation, Nicolet National Forest, Gagen Experimental Forest, or industrial plantations, for forest management studies.

U. S. Forest Service ranger station and nursery at Watersmeet, Mich., for forestry and nursery operations.

Rainbow Flowage, for a study of water control in the Wisconsin river valley.

C.M. Christiansen sawmill in Phelps, where modern wood utilization is demonstrated

Northeast Area game management headquarters, Woodruff, for data on wildlife.

The Inherent Desire

The desire to learn as much as possible about our natural resources is present in young and old alike. This desire is carefully nurtured at Trees for Tomorrow Camp, where each daily program is designed to further the public's knowledge of sound conservation practices.

Many clubs, associations, and adult groups generally, have conservation committees actively functioning because of the sustained interest resulting from participation in camp workshop sessions.

Conservation workshops at Eagle River have been arranged by organizations as the ideal means of getting together each year for study and discussion of resource management...

High School Workshops

In the spring of 1949, conservation workshops on school time for Wisconsin high school students were made part of the camp program. The progressive heightening in interest shown by pupils and faculty members alike is reflected in the attendance increase from 197 pupils in 1949, to 504 in 1950, and then to 728 students from 55 schools in 1951.

A good deal of the success of the high school workshops is attributable to the educators, and representatives of federal and state agencies who cooperate in handling the student sessions as workshop directors and consultants. Staffs for the high school

workshops are made up of personnel from U. S. forest service, Wisconsin conservation department, U.S. soil conservation service, University of Wisconsin extension service, department of public instruction, industry, and the state teachers colleges.

The objective of these workshops is to capture the enthusiasm and direct the thinking of boys and girls in school today who will be in an informed position to manage our natural resources tomorrow...

Trees for Tomorrow Inc.

Trees for Tomorrow Inc., is a non-profit organization sponsored by eleven paper mills, three power companies, and an improvement company. It was founded in February, 1944, to help build a sound forest economy and a storehouse of natural resources in northern Wisconsin.

The Trees for Tomorrow program revolves around assistance to private forest landowners, and education directed particularly to youth groups who will be custodians of our natural resources of the future.

Each spring 500,000 trees are distributed free to landowners. Planting sites are checked, and survival counts made to insure quality as well as quantity reforestation. A mechanical tree planting machine is available to landowners, along with the technical services of Trees for Tomorrow foresters. There are three foresters on the organization's staff. The preparation of forest management plans is also offered as a free service to develop the full potentiality of private woodlands.

A \$1,200 high school scholarship and a \$200 4-H Club scholarship are awarded annually by Trees for Tomorrow. Conservation seminars and field institutes are conducted for educators, in cooperation with public agencies. Also, in addition to operating Trees for Tomorrow Conservation Camp, the organization aids in establishment of school and memorial forests. It produces sound movies and publishes a monthly bulletin in the interest of conservation.

During the past seven years, Trees for Tomorrow Inc., has distributed four million free trees to landowners, and prepared forest management plans for 81,000 acres of woodlands. It has awarded \$12,400 in forestry scholarships, and has helped establish 34 school forests and 10 memorial forests.

Great progress has been made in creating a more widespread understanding that our way of life is closely allied to sound resource management. However, there still is a big job ahead. It is a complex undertaking. On any level the work is of prime importance to communities, to industry, and to the nation as a whole. It should and can be accomplished in a minimum period of time by action programs and by coordinated efforts. This is the voluntary task to which Trees for Tomorrow Inc. is dedicated.

18. STATE OFFICIALS EDUCATE SCHOOLCHILDREN ABOUT CONSERVATION, 1949

[In 1935, the Wisconsin Legislature passed the nation's first statute requiring the teaching of conservation in public schools. In 1948, the Department of Public Instruction created a Conservation Curriculum Committee comprised of representatives of various state and educational agencies to come up with conservation education guidelines and organize workshops for teachers. Their guide, produced in 1949 and excerpted here, provided resources and suggestions for teachers to help implement conservation lessons in the classroom.]

Foreword

Natural resources, both physical and human, are the most precious possessions with which any nation is endowed. Instructional work which involves a careful analysis of "wise use" and the development of necessary skills, attitudes and appreciations essential to its effective application is a major responsibility of every teacher... it is the teachers, and the teachers only who can most effectively emphasize the rich lessons of conservation to the youth of our land.

In keeping with this vital need, as well as with the mandate of the legislature expressed in 1935 and reaffirmed successively since that time through biennial appropriations, I urgently advise that conservation values be redefined and re-emphasized in every Wisconsin school to the end that each child will recognize his obligation as well as his opportunity in this rich and inviting field.

The Importance of Conservation

It should be clear to all of us that man is absolutely dependent upon the resources which he can find upon this planet. The everyday needs of his life can be supplied only by drawing upon these resources. Some of them are renewable, but some cannot be replaced as man uses them. Upon their quality and abundance depends the social as well as economic well-being of man.

During the centuries in which our civilization has been developing, the rapid and intensive utilization of natural resources has been the source of the economic power of the nation. History has shown us that the downfall of other and powerful civilizations may be attributed to the exhaustion of their natural resources. Here in the United States, the original abundance of natural resources led to a frame of mind that deemed the storehouse of our treasures inexhaustible. It is only comparatively recently that we have been forced to realize that the forest is not endless, the fertility of the soil is not boundless, the replacement of slaughtered game is not limitless, and the purity of our streams and lakes is not inviolable. The complete loss of some of our resources and the accelerated rapidity with which others are disappearing or disintegrating make it imperative for us to urge proper conservation more forcefully than ever. We need to develop an awareness of this emergency, and to inform those who do, or will, determine future policy of the best known solutions of the problems which beset the utilization of our resources.

The welfare of ourselves as well as of those to come hangs in the balance. It is only through a wise use of our natural resources that we can maintain a happy, prosperous nation. To meet the challenge of teaching this wise use should be the aim of conservation education. From the earliest grades and extending through the high school, conservation education should be carried through the entire curriculum...

How Conservation Values Can Best Be Learned

1. The Learnings Should Begin With the Here and Now. A careful survey of school and community conservation needs and resources should be made by teacher and pupils. This survey, if carefully planned, will not only reveal areas for conservation experiences, but will yield much information about individual pupil's backgrounds.

To carry out the survey, the teacher may begin by listing

the important areas of conservation. According to the interest of pupils, the class may then be divided into as many committees or groups as there are conservation areas represented in the community. Through various forms of community research, contact with individuals, organizations, field trips, etc., each committee will catalogue the community conservation resources available for more intensive study.

2. The Learnings Must Grow Out of the Purposes of Boys and Girls. Recent experimental studies in learning show that unless the pupil has a need for something and directs that need toward satisfaction (his purpose), learning does not take place. For learning to be purposeful to the learner, he should have a part in planning his learning experiences (teacher-pupil planning).

A survey of interests of pupils in the class may reveal a strong but divergent interest in various forms of wildlife. Through teacher-pupil planning individual pupils or small groups may select forms of wildlife for study in which they have a special interest. The form of study with which individuals or small groups wish to begin their study will be worked out from alternative possibilities provided by the teacher. For example, some groups may be able to study their selected wildlife in natural habitat, some in zoos, and some in individual collections.

3. Learning Experiences Should be Concrete. If we follow pupil's needs revealed through purposes and begin our study at home with local school and community needs, then the experiences are quite likely to be concrete, specific and individualized. Since, however, it is so easy in school learning to become abstract and verbal, constant vigilance should be directed toward making learning concrete and practical. Field trips and conservation projects involving such activities as exploring, growing, rearing, collecting and constructing should take precedence over regular book learning activities. The latter, when necessary, will be incidental...

4. Cooperative Planning and Pupil Purposing Should Take Into Account Concept Development and Concept Values.

The acquisition of rational concepts and broader and broader understandings are a major purpose sought by our most successful present-day teachers.

The desire to facilitate learning which embodies these cumulative concepts prompted the listing of these which have been carefully chosen, and which appear at the beginning of each of the six divisions developed in this bulletin. These significant concepts should prove helpful to the teacher in his choice of desirable aims for achievement as well as in the selection of appropriate content for the learning desired.

The following suggestion is offered: Concepts should be taught in a cumulative fashion, each growing naturally out of the learning process.

5. All Related Community Agencies Should Be Surveyed and Made Available as Resources. The discovery of these agencies should naturally grow out of the original school and community survey. Farmers groups, local conservation agencies, park groups, service organizations, federal organizations and others should all be drawn into cooperative working relationship with the school. The pupils will then have not only the satisfactions of fruitful learnings but also gain the social reinforcement growing out of actual contributions to the community.

6. All Available Teaching Aids Should be Exploited. Though it is desirable to make the learning experience as direct and concrete as possible, there will be of necessity some indirect learnings. These should always be related to direct learnings and made as vivid and real as possible. Visual and auditory aids will be helpful here. Motion pictures, slides, film strips, opaque projections, recordings, pictures and charts will and should supplement reading research. A good library should contain as much of the above types of materials as possible as well as suitable books, magazines and pamphlets.

19. SIGURD OLSON DEFINES CONSERVATION, CA. 1955

[Sigurd Olson (1899-1982) was raised in Ashland, Wis., and educated at Northland College and the Univ. of Wisconsin. He lived most of his life north of Superior in Ely, Minn., where he taught biology at Ely Junior College. During the 1920s and 1930s, Olson spent his summers as a guide for canoe expeditions into the Quetico-Superior wilderness and northern Ontario, about which he wrote articles for American nature magazines that he later collected in popular books. After World War Two, he spent two decades as an advisor to the National Park Service and to the Secretary of the Interior, and served variously as president of the Izaak Walton League, the Wilderness Society, and the National Parks Association. Few nature writers since Muir have expressed a spiritual reverence for the environment as well as Olson did: God appears regularly in his reflections, alongside the discoveries of modern science. The short piece given here, an unpublished abstract of an article or talk, probably dates from the mid-1950s.]

Conservation is one of the most misunderstood words in the language. When it is mentioned, people immediately think of the planting of fish, trees, gamebirds, or cover crops, of game wardens making sportsmen observe fish and game laws, or any of the practical demonstrations of much-publicized government programs. While it is true that all of these things have to do with conservation, there is little understanding of the overall picture and how such practices affect the land and our welfare.

Aldo Leopold, one of the nation's greatest conservationists, once said, "Conservation is man living in harmony with the land." By this he meant that unless man understands the land and all that it implies, he is at odds with it and cannot live happily or successfully.

He also said that unless man develops an ecological conscience he will not preserve his environment. Ecology has to do with the close integration of all facets of nature and the realization that no

aspect, no matter how minute, is unimportant. When questioned recently as to the meaning of ecology, Louis Bromfield said, "Ecology is the study of how man can live with nature and the universe to the greatest possible advantage." In short, all of us must become practical ecologists in order to understand the land and to work with it. Unless we develop respect for it and realize the part we must play, we cannot approach conservation intelligently.

We are still dominated by the pioneer complex of our forefathers who considered our natural resources as inexhaustible. We have only to remember that in the short space of little more than a century, we have lost a third of our topsoil to unwise farming methods; that we have not only polluted rivers and streams but dropped our water table alarmingly all over the continent; and we have cut off the bulk of our forests and are today harvesting 50% more than we are growing; that we may be approaching the end of free fishing and hunting as Americans understand it. The outmoded philosophy of our pioneer days is still with us and there are forces today that make it necessary to exercise eternal vigilance if we are to save our natural resources.

Conservation is also a way of life, an attitude toward the land and all living things. This attitude implies an understanding of the close interrelationships of all life, their dependence on each other and the land itself. It implies a sense of ownership, responsibility, and stewardship which will not tolerate the exploitation and destruction of any resource for personal gain. This is what is meant by having an ecological conscience and living in harmony with the land. With this realization, conservation becomes far more than a series of practical demonstrations. It becomes a part of daily thinking and doing, a workable philosophy of life.

IV. THE ENVIRONMENTALIST ERA

20. SIGURD OLSON LOBBIES CONGRESS TO PROTECT WILDERNESS AREAS, 1961

[As the president of various environmental groups and a long-term advisor to the U.S. Dept. of the Interior and the National Park Service, Olson offered this expert testimony at a 1961 meeting of the Congressional committee drafting a bill that would later become the Wilderness Act of 1964.]

My name is Sigurd Olson. My home is at Ely, Minnesota, in the Superior National Forest, the gateway to the famous wilderness canoe country known as the Quetico-Superior.

For five years I served as president of the National Parks Association and at the moment I'm a member of the advisory board to the Secretary of the Interior on parks and monuments. I serve as a consultant to the President's Quetico-Superior Committee, whose goal since its creation by presidential executive order in 1934, is the protection of the wilderness values of this area and the development of a program of sound resource use and management in cooperation with Canada. I am also affiliated with the Izaak Walton League of America as a consultant on wilderness preservation in the United States. I am a writer of books and articles on wilderness travel and experience. I am a member of the Council of the Wilderness Society.

As a young man I was a guide in the lake and river country of Minnesota and Ontario and the Hudson Bay, and traveled many thousands of miles through rather remote country. Of late years I have been on a number of expeditions by canoe into the far north and northwest, retracing the roots of early exploration as far as the tundras along the Arctic coast. In my work, I have familiarized myself with wilderness regions all over the continent.

Since my early days I have been much involved in the protection of wilderness and have become convinced that its preservation is a cultural matter, and that what Henry David Thoreau said over

100 years ago is the truth, that in wilderness is the preservation of the world. [sic] He was talking of some spiritual values which are found at their best in wilderness and without which mankind is lost. In all of my travels over the continent with people in all walks of life, I have seen what it means, particularly of late years, to get away from the tensions of city life and urbanism.

Almost 70 million people visited the national parks and national forests last year, a number that is steadily growing. While the vast majority of these people did not stray far off roads or paths and while most of them saw the wilderness only from their campgrounds, cabin, or hotels, the fact remains that it was the wilderness they came to experience. Without a primeval background, the developed areas where they stayed would have been without real significance.

It is the wilderness around Yosemite, or Mammoth Hot Springs, or Grand Canyon Village that gives meaning to the areas. Without it, these places would be merely resorts no different from thousands of others. That is why the National Park Service has limited its development areas to less than 10% of the whole. The early realization that wilderness was what counted most has made this the major objective of their administration.

We have entered a new era, and are now in a position to destroy with our earth moving machinery and our insatiable appetite for resource products all that remains of what we have set aside. Pressures due to our expanding population and industrial complex will be greater than anything we have ever experienced.

While the Forest Service, National Park Service, and the Fish and Wildlife Service will try to preserve what wilderness they can, it is very doubtful if they can do this without congressional sanction and approval for their programs of protection.

Unless they have such assurance, there is no stability, and the future for all wild country remaining looks bleak indeed. That in the last analysis is the real reason for the Wilderness Bill, to strengthen the hands of the agencies concerned. Without such support for a wilderness system, it may be impossible to assure its continuance.

As your chairman, Senator Anderson, stated so eloquently, among many things, when he introduced S. 174, the bill we are considering today, it is five years since the first bill was introduced, four years of hearings and constructive revisions in which every possible adjustment has been made without sacrificing the ultimate purpose of the measure, which is the protection of the wilderness itself.

Adjustments have been made for many different types of use. Typical of the thoughtful consideration for special areas have been the studies of the bill with respect to the Boundary Waters Canoe area of the Superior National Forest, near my home... We feel now that nothing has been overlooked that might lead to misunderstanding. The amazing thing is that in spite of many changes and revisions, the bill still maintains its original purpose and will, if enacted, do what was originally intended.

This Congress has a great opportunity to enact legislation without further delay that will insure the perpetuation of our remaining wilderness. Should it do so, the action will go down as one of the most worthwhile achievements in conservation and for the general welfare and happiness of the people. Such an action would be far more than preserving lakes and mountains and forests, or any of the physical attributes of terrain. It would be an investment in the American spirit and character, an assurance in a materialistic world that there will always be places of solitude, contemplation, and beauty to which men can repair to find balance and serenity.

Should Congress fail to do this, I am afraid this opportunity will be gone forever. It will not be long, in view of the way our country is growing, when it will be impossible to set aside or preserve any further areas for public use. Time is running out. We must act now or forget our long involvement with the frontier, forget that wilderness molded us as Americans and can still mold us for generations to come, forget that open space, unchanged horizons, and simplicity are beyond price.

I am confident that this will not happen, for Congress means the people, and I know the people all over the nation, if polled, would be overwhelmingly in favor of S. 174, the new wilderness bill...

S. 174 is a vehicle for determining through a weighing of values what is the highest land use for these areas under consideration. I believe that wilderness fulfills a human need today, a need far more important than timber, grazing, or mining, and that providing for recreational opportunity is vital to our sanity and balance as a people. We must save places of beauty and silence, or we as a people will lose. We have no right to deprive the people of tomorrow of the privilege of knowing a small part of the America that used to be.

Sixty years ago Lord Bryce of England said, "Any people who has no concern for preservation of the natural scene is doomed to brutishness," which is just another way of saying if we have no regard for the values inherent in wilderness, then we are losing our souls. Our greatest resource is our people, a people who have wisdom and perspective and who have a spiritual strength able to withstand the tensions of the days to come. Wilderness can make a great contribution. Thank you.

21. GAYLORD NELSON DESCRIBES "AMERICA'S LAST CHANCE," 1965

[Gaylord Nelson (1916-2005) is best known as the founder of Earth Day. He advanced an environmental agenda as Wisconsin's governor (1958-62) and as senator (1963-1980). In this speech to the State Bar of Wisconsin on February 19, 1965, he focuses on pollution in the Great Lakes and urges support for President Johnson's environmental agenda.]

A great new surge of interest in the conservation of natural resources is making itself felt in our country. The outstanding development was President Johnson's message to the Congress on natural beauty. This gave us what we have long needed—the leadership and inspiration of the President to summon all of America to save something of the land of beauty handed down to us by our forefathers.

The President's commitment of his Administration to the cause of conservation comes on the heels of a number of other encouraging developments. The last session of Congress, which enacted the Land and Water Conservation fund, the Wilderness Act, the Clean Air Act and many related measures, is being justly hailed as the "conservation congress"—the session with the greatest achievement in this field since the days of Theodore Roosevelt.

The newspapers, the magazines and the television industry have discovered conservation as a subject with broad popular appeal, and they are giving it attention it has not had for a long, long time. This reawakening of the Nation to what Secretary Udall has called "the quiet crisis" was helped greatly by the late President Kennedy's decision in the fall of 1963 to make a nation-wide tour devoted entirely to the urgent problems of natural resources.

I welcome these heartening developments. They are long overdue—and are of priceless value. They give us a new chance to save our land.

But I want to warn you that this may be our last chance.

I want to warn you that this fight to save our beautiful land is very nearly lost now, and America the beautiful could simply become a kind of natural ruins, like Greece, which would be remembered throughout history for what it once was.

Just take a look at our vanishing America, the land which I am sure was once the most beautiful on earth and the most richly endowed with natural blessings:

We have destroyed our rivers—whose clear blue waters once delighted swimmers and fishermen, fish and wildlife. Every major river system in America is now polluted. Waterways that once were sources of pleasure and beauty and recreation are now “forbidden to human contact and objectionable to sight and smell.”

We have plundered our forests. Much of our state and local tax problem in Wisconsin today is caused by the fact that we ravaged our northland, recklessly consumed its one good crop, ruined its soil and even altered its climate—leaving it almost destroyed for those to whom we sold it as a land of opportunity.

We are strip mining our mountains, ripping the earth to pieces with shovels as big as houses which spread ugliness, erosion and siltation on a scale undreamed of a few years ago, and once the coal is gone the land lies barren and ruined for any purpose.

We are overpopulating and overdeveloping our public parks, turning many of these last refuges of cool, green beauty into sylvan slums. We are utterly failing in our obligation to add new park space, even though our population will double by the year 2000.

We are bulldozing away most of the green spots and open spaces in our cities, for highways and interchanges and parking lots and other forms of progress.

We are pushing heavy industry into the last sanctums of natural beauty, up the beautiful river valleys in quest of sparkling water to cool our hydroelectric turbines.

We are blighting the landscape with junkyards, with buildings deliberately designed to shock the eye, and with monstrous,

electrified billboards which wage war with one another in the battle to catch the eye of the passing citizen.

We are planning a highway through the California Redwoods.

We are building a steel mill in the Lake Michigan sand dunes.

We are considering a barge canal through scenic Lake Champlain, to attract oil tankers.

We are damming our trout streams, filling in our swamps, cutting down our trees, poisoning our birds, and suffocating our fish.

We are planning to turn the Grand Canyon of the Colorado into a reservoir.

Worst of all, we are destroying our sources of fresh water—the very basis of life itself—and the source of much of our scenic beauty and our recreational pleasure. Once it seemed that we could destroy only the water in our rivers, but now we are organized, and mechanized, and automated, and now we are embarked on a systematic campaign to destroy the greatest source of fresh water on the face of the earth — the Great Lakes themselves.

At this point people are inclined to say, “That’s an exaggeration” but let me assure you that I am telling you only a tiny fraction of the problem.

A dull, gray tide of pollution is moving through our Great Lakes, following the path of human progress. I wish I had the time to describe it to you in all its shocking detail but I can mention only a few highlights, based on studies by the United States Public Health Service and our own State Department of Resource Development.

The Great Lakes are becoming progressively more polluted every year—first of all, by community sewage systems which dump raw sewage into the lake; secondly by industries which dump lethal chemicals, and third by ships which dump almost every form of waste directly into the lakes.

This has been going on for more than 50 years, with mounting seriousness, but we paid little attention because we thought these lakes were so vast that even Americans could not destroy them. Now we are finding out otherwise. It turns out that the lakes

are even more likely to be permanently ruined than the rivers, because they cannot purge themselves of pollutants as rivers can in time of high water runoff.

The southern tip of Lake Michigan is turning into a cesspool. Three steel plants, three oil refineries, several communities and thousands of ships are pouring out pollutants at an astonishing rate—human waste, industrial acids, and iron slag. A federal study shows that the organism which is the principal food for the finer grades of fish has practically disappeared, and trash fish have taken over. The study shows that pollution on the lake bottom in this area is “practically irreversible.”

In November, 1963, 10,000 gulls and loons died along the south and west shores of Lake Michigan in this area.

Closer to home, two of the city of Milwaukee's four beaches were closed completely from 1959 through 1962, and intermittently after that, and the other two have been closed intermittently since 1959.

The Fox, Oconto, Peshtigo and Menominee rivers are seriously polluted. Green Bay itself is badly polluted at its southern end, largely by the pulp and paper industry but also by waste from canneries, milk processing plants, oil, tars, chemicals and various other manufacturing byproducts. Green Bay looks from the map like a summer resort city. But its beaches have been closed by pollution for 25 years. The tide of pollution is steadily advancing up the Green Bay shoreline, towards our multimillion-dollar recreation area in Door county.

We live in the midst of this, but are we aware of the seriousness of it?

Over 250 American and Canadian cities use the Great Lakes for their public water supply. Fourteen million people—60% of the Americans living in the Great Lakes basin—depend upon the lakes for their water. They draw off 3.3 billion gallons a day for public use and 22 billion gallons for industrial use, using and reusing the water every day.

In Wisconsin 27 communities draw water from Lake Michigan—and many of these same cities dump sewage back into it.

In Milwaukee, 300,000 people are served by storm and sanitary sewers which are interconnected. During heavy rains, 252 sewer outfalls of the intercepting sewers discharge raw sewage into the Milwaukee, Menomonee and Kinnickinnic rivers which flow into the harbor and then into Lake Michigan. The Milwaukee sewage treatment plant also bypasses sewage directly into the Milwaukee river during heavy runoff. Another combined storm and sanitary sewer discharges directly into Lake Michigan during heavy runoff.

If we want an example of where we are going, we need only look at Lake Erie. Our great American system has had more time to work on this lake. It is the dumping ground for the sewage outflow from Detroit, Toledo, Cleveland, Erie and Buffalo. Among other things, it receives 2½ million tons of silt a year. Some people think it will eventually just fill up. But before it does, life will cease to exist in its waters. Studies show that the percentage of chlorides in Lake Erie—which closely reflects municipal sewage pollution—is 230% higher than in 1900. The water also shows an amazing concentration of calcium, sodium, potassium and sulfate compounds. It is no longer simply water. It is a chemical tank.

Last summer, 2, 600 square miles of Lake Erie—over one-quarter of the entire lake—were almost without oxygen and unable to support life because of algae and plant growth, fed by pollution from cities and industries.

Can you conceive of a human failure more enormous than the systematic destruction of a magnificent fresh water lake such as Lake Erie?

But don't feel too bad. American optimism is equal to a defeat of such a magnitude. It turns out that the Corps of Engineers is now planning to build a whole new lake—even bigger than Lake Erie—in Alaska.

And in our typical American way, we are prepared to do this despite the cost—in dollars or in natural resources or anything else. The new lake in Alaska would be created by building a dam 530 feet high. It would create a lake 280 miles long and 80 miles wide. The Federal Fish and Wildlife Service, after studying the proposal, said:

“Nowhere in the history of water development in North America have the fish and wildlife losses anticipated to result from a single project been so overwhelming.” In addition to costing 1 billion, 300 million dollars, this project would reduce the annual salmon catch by at least 200,000 fish a year, destroy 2,400,000 acres of duck breeding habitat, destroy the range for 5,000 moose, and eliminate the habitat used by animals which provide 7% of the total Alaskan fur harvest. But, of course, it is argued that that is the price of progress.

Well, this is our record. This is what we have done with the beautiful land given to us by our forefathers. This is how we have held in trust for the future our beautiful woods and waters and wildlife. This is how we have repaid the land which has given us the highest standard of living on earth. Now that I have told of the defeats, let me tell of some of the hints of victory which now seem possible—now that our nation seems to be rousing itself for one last chance at saving its heritage in the out-of-doors.

With bipartisan support, we have launched a fine program in Wisconsin to acquire the recreational resources we need for the future and to save some of the scenery and even some of the swamps to provide food and shelter for wildlife and to preserve some of the natural landscape as God created it.

With the nation's conscience aroused and with the support of the Secretary of the Interior we seem to have an excellent chance to save the beautiful St. Croix river and its wild tributary, the Namekagon, as one of our first “national scenic waterway” projects and as an example to be followed in other “wild river” legislation.

Making up for our default of recent years, we are moving ahead with several excellent national park proposals, and I have high hopes that we can rally the united support we need to bring Wisconsin a national recreation area in the Apostle Islands in the next three to five years.

We have just passed a bill in the Senate to centralize the water pollution fight in an assistant secretary of Health, Education and Welfare.

With the President's leadership we have hopes of controlling pesticides, helping cities build more parks, screen our junkyards, save some of our highway landscapes, clean up the foul Potomac, and build some hiking trails for the forgotten outdoorsmen—those who simply like to walk.

In the President's words, we can now make a "massive effort to save the countryside as a green legacy for tomorrow."

I hope every public official, every businessman, every bird watcher and deer hunter and ice fisherman and plain citizen, will join in this massive effort.

I hope we will each assume our responsibilities as citizens and stop our own littering and defacing of the landscape. I hope we will realize that when we take something out of our bank of natural resources we have to put something back in.

I hope our people will participate in the educational programs which are needed to spread the story of the conservation crisis far and wide. I hope they will support the legislation needed to save our land — good zoning and sanitation ordinances, reasonable regulation of industries to protect the public interest, sensible restraints on billboard construction, a significant investment in buying land and water resources for the enrichment of life in the future.

Most of all, I ask of all Americans a simple recognition of a fact of life

We can't have everything. Our land cannot be used up and still be the land of our childhood.

The great-resources of America—the soil, the timber, the minerals, the wildlife—have sustained us for hundreds of years. But now we have got to think about sustaining them. The frontier is gone. If we destroy these rivers and lakes, if we plunder these forests and rip up these mountainsides and foul this air and water, there will be no new green paradise awaiting us over the horizon. If we don't save the America we have today, I don't think we will have another chance.

22. GAYLORD NELSON URGES A BAN ON DDT, 1968

[Dichlorodiphenyltrichloroethane, or DDT, is a pesticide widely used during the mid-20th century to eradicate mosquitoes and other insects. By 1962, evidence was mounting that it also irrevocably harmed certain birds and other wildlife, and might cause cancer in humans. We have printed here Sen. Gaylord Nelson's Dec. 2, 1968, testimony before the Wisconsin Department of Natural Resources, which was considering prohibition of DDT. Its hearings lasted six months, accumulated 3,000 pages of evidence from dozens of witnesses, and resulted in a statewide ban of the chemical. The federal government followed suit three years later, banning DDT in 1971.]

It has been five years since Rachel Carson's book *Silent Spring* awakened the American public to the dangers of DDT and other persistent pesticides. Her book visibly shook a country that had become complacent about the indiscriminate spreading of these long-lived poisons. Though a large number of scientists attacked her thesis on the grounds of inadequate proof, it is becoming frightfully evident that she may very well have understated the case.

Massive accumulating evidence supports her thesis at every point. Dangerous environmental contamination is occurring at a rapid and accelerating pace. We are literally heading toward environmental disaster. It is no longer the question—will it happen? It is happening now. The question is—will we temporize with this issue until it is too late? Until, in fact, the land, the water and the air are polluted and all the living creatures in it are dangerously compromised. That is the issue we face.

This hearing affords an opportunity to take a significant step that may well have historic consequences. The specific question before us is whether the overall benefits of DDT are offset by the damage it does. This is a matter that must be measured in the long range not the short. I think the evidence is clear that the damage is far greater than the benefit.

Many researchers have been concerned about DDT since its initial use in the 1940's to control mosquitoes, flies and other disease carriers. Its use has since spread extensively to farms and forest lands. The main source of their concern was and continues to be the fact that DDT is one of the most persistent chemical pesticides that exists today—it remains toxic for ten years or more after application.

Today, 10,000 manufacturers are producing more than a billion pounds of pesticides annually in the United States. Included in this total is more than 100 million pounds of DDT, a half pound for every man, woman, and child in the United States. Last year, sales of pesticides increased 12% of the previous year and, by 1985, it is estimated that they will increase another six-fold. Reports indicate that about one acre in every ten in America is treated with an average of nearly four pounds of pesticides every year.

Through this massive, often unregulated, use of highly toxic pesticides, such as DDT and dieldrin, the environment has been polluted on a worldwide basis. In only one generation, these persistent pesticides have contaminated the atmosphere, the sea, the lakes and the streams and infiltrated the tissues of most of the world's creatures, from reindeer in Alaska to penguins in the Antarctic, including man himself.

I am sure that this widespread contamination will be documented in depth during the coming days. However, I would like to cite a few specific items.

The National Wildlife Federation reports that roughly 75 percent of specimens of fish, birds and mammals collected from various parts of the world, including the Arctic and Antarctic regions, contained DDT, or what it becomes after metabolism.

California marine scientists collected several hundred samples of fish and shellfish from the Pacific, in both salt water bays and the open sea. They reported that, 396 of the 400 samples analyzed contained measurable DDT residues.

Interior Department scientists collected 15 samples of air from nine different locations throughout the country and analysis showed that all contained DDT residues.

It is present in the air and in most animals and some are facing extinction because they have already accumulated lethal doses of DDT and dieldrin.

One such animal is the Bermuda petrel — a rare beautiful bird of the sea which only approaches land to breed. It has traditionally chosen the rocky cliffs of Bermuda to hatch its young. But more and more of the petrel's eggs are not hatching. Its declining reproductive success has been traced to deadly residues of DDT in the unhatched eggs and dead young birds. As DDT has washed into the Atlantic Ocean from farms and urban areas, it has been absorbed by the sea life which in turn are eaten by the female petrel which pass the residue on to its offspring.

Persistent pesticides have also been traced as the possible cause of the rapidly approaching extinction of the American bald eagle. On the Chesapeake Bay, near Washington, D. C., the percent of nests hatching living young bald eagles has decreased from 97% thirty years ago to between 9-23% over the past five years.

The blue shell crab is also endangered. It takes only one part of DDT per one million parts of sea water to kill a blue shell crab in eight days.

Among mammals, research has shown that DDT is passed to the unborn embryo through the female's placenta in mice, dogs, rabbits and man.

According to a 1966 study by the U. S. Public Health Service, the average American has gathered 12 parts per million of DDT in his human fatty tissues, as well as .15 of a part per million of dieldrin. Infants now receive .08 of a part per million of DDT in the milk from nursing mothers.

Here in Wisconsin, pesticide residues, in many cases both DDT and dieldrin, have been found in every one of more than

2,600 fish samples taken from 109 of our state's inland waters. The amount of the residue found in the fish appeared to be directly related to the degree of pesticide use in each specific area. The concentration of DDT in the fish ranged from .02 to 16.2 parts per million for the whole fish and from .22 to 534.6 in the fat. The Food and Drug Administration tolerance level for DDT is seven parts per million in apples, cherries, and other fruits and vegetables as well as in the fat of beef, pork and lamb.

In Lake Michigan the massive die-off of coho salmon has been linked to the presence of DDT residues in the lake. The female coho absorbs the pesticide while she is living and growing to maturity in the lake. The pesticide remains in her body and is transferred to her offspring, which are not able to withstand the lethal dosage.

Even here in Maple Bluff this spring, the spraying of DDT resulted in a heavy run-off of DDT into Lake Mendota. Samples of the run-off showed a DDT concentration up to 2.25 parts per billion, reported to be enough to kill a fish.

One characteristic that makes DDT so harmful is that it is involved in biological magnification—which results in an increasing concentration of the pesticide progressively along the food chains until it reaches a serious and lethal level.

Another well-researched example of biological magnification was documented in Clear Lake, California. In order to control a troublesome flying insect that hatches in the lake, the water was treated with the insecticide DDD — similar to DDT, yielding a concentration of .02 parts per million. Plankton, microscopic water borne plants and animals, in the lake accumulated the DDD residues at five parts per million. Fish that ate the plankton concentrated the pesticide in their fat to levels from several hundred to up to 2,000 parts per million. Grebes, diving birds similar to loons, fed on the fish and died.

The highest concentration of DDD found in the tissues of the grebes was 1,600 parts per million.

It seems to me that this documented evidence is sufficient justification to act immediately on the deadly problem of persistent pesticides.

The establishment of firm sanctions on the use of DDT is entirely consistent with the recent recommendations of two highly regarded Presidential panels.

In my judgment, the most important recommendation of the Wiesner Committee in 1963 was the one urging cutbacks in the use of such persistent pesticides as DDT. The panel recommended that “the accretion of residues in the environment (should) be controlled by orderly reduction in the use of persistent pesticides. As a first step, the various agencies of the Federal government might restrict wide-scale use of persistent insecticides, except for necessary control of disease vectors. The Federal agencies should exert their leadership to induce the States to take similar actions; ELIMINATION of the use of persistent toxic insecticides should be the goal.” (Emphasis added.)

The report of the Environmental Pollution Panel of the President's Science Advisory Committee in 1965 also dealt with this subject. It recommended that “research should be encouraged toward the development of pesticides with greater specificity, additional modes of action, and more rapid degradability than many of those in current use. Pesticide effectiveness should be increased and total environmental contamination decreased by further research leading to the more efficient application of pesticides to the target organisms.”

I have introduced legislation in the Senate to prohibit the interstate sale or use of DDT in the United States. Just as this hearing is solely concerned with DDT, my bill would not affect the sale or use of any other pesticide. It should be made perfectly clear that we are not seeking a ban on all pesticides, only on the most persistent, most dangerous one—DDT.

During the next session of Congress, I plan to introduce legislation establishing a national scientific commission to study all pesticides and establish firm regulations for their use.

We need increased research on the national and state level into the effects and effectiveness of all pesticides. This summer Congress extended the Pesticide Research Act through 1971, enabling the Department of Interior to continue its research program in this field.

We also need improved enforcement at all levels of government to protect the public against unsafe pesticides. The watchdog of the Federal government, the General Accounting Office, discovered earlier this year that the Agricultural Research Service of the U. S. Department of Agriculture was failing to adequately trace the whereabouts of potentially dangerous pesticides. Since this deficiency was uncovered, the ARS has improved its monitoring procedures to eliminate this problem.

A prime example of action that can be taken on the regional level for the control of persistent pesticides was a result of the historic Interstate Water Pollution Conference on Lake Michigan held earlier this year in Chicago.

Expert testimony during the conference indicated that Lake Michigan had the highest concentration of pesticides of any of the Great Lakes and was swiftly approaching the lethal stage.

As a reaction to this testimony and the recommendations of the conference, the conservation and natural resource agencies of Wisconsin, Illinois, Michigan and Indiana have joined forces to inventory, monitor and tighten enforcement over all possible sources of pesticide pollution in the Lake Michigan region.

Just as pesticide pollution endangers our waters and wildlife, it also poses a threat to our main agricultural industry—dairy farming.

Milk is one of the purest food products in the world. Wisconsin has led the nation and the world in developing sanitary standards that result in milk and dairy products of unquestioned quality.

Yet, each year, thousands of pounds of Wisconsin milk is barred from commercial markets because it contains pesticide residues.

In 1964, the Congress enacted emergency legislation to reimburse dairy farmers whose milk was contaminated through no fault of their own. Over the past four years, farmers in 28 states have been reimbursed with a total of nearly a million dollars for milk contaminated by pesticides recommended by the U. S. Department of Agriculture.

On the state level, I am pleased to see progress being made toward establishing a pesticide review board. This is an important first step in setting up reasonable and effective controls on the pesticides used in our state.

But the question before us today is of paramount importance.

In my judgment, Wisconsin should not hesitate to ban the use of DDT under any circumstances where it can enter world circulation patterns and further contaminate the biosphere.

Wisconsin can retain its great leadership in conservation by taking this landmark step forward. It will represent the first ray of hope on the horizon for endangered species and perhaps man for many generations to come.

Michigan and Illinois have already issued recommendations against the use of DDT for the Dutch Elm disease.

Since the chemical industry has developed and is marketing a long list of more selective and short-lived substitutes, thus making DDT technologically obsolete, the only factor that can possibly remain is one of cost.

But when we are considering the possible extinction of life, several cents a pound savings should not outweigh our own health and well-being and that of millions of other species of life.

23. GAYLORD NELSON SUMMARIZES THREATS TO "SPACESHIP EARTH," 1971

[Although Sen. Nelson sponsored legislation across a wide range of environmental issues, he is best-remembered as the creator of Earth Day, the annual event designed to raise public awareness of ecological issues. In this speech at the University of Wisconsin-Milwaukee, April 19, 1971, he vividly outlines threats to the planet from pollution, pesticides, and fertilizers, and highlights Earth Day as a method of changing public opinion and public policy.]

In 1965, four or five years before concern for the quality of the world environment achieved the political status and world-wide concern it now has, Adlai Stevenson prophetically proclaimed in Geneva, Switzerland:

"We all travel together, passengers on a little spaceship, dependent on its vulnerable supplies of air and soil; all committed for our safety to its security and peace, preserved from annihilation only by the care, work and, I will say, the love we give our fragile craft."

Ambassador Stevenson made that comment the year he died. He was aware that no issue facing the world is as important as the complex problems and perplexing questions the rapidly accelerating environmental deterioration is posing.

In the dramatic, seemingly endless list of problems facing mankind, including peace and war, none is as important in the long pull as the question of the environmental status of man and all other living creatures and the status of world resources.

If we don't do something meaningful about reckless waste and the diminishing quality of the environment, all the remaining problems will be meaningless anyway. It is important to consider the environment on a global basis and understand what the word "ecology" means. It is the science that is concerned with all living things and their relationship to each other and the total environment in which they live and upon which they are dependent for survival.

The earth is a spaceship much larger than ones this nation sends to the moon and with a greater capacity to support life. What is too often forgotten is that earth, like a spaceship, is a closed life system. It spins in a mathematically precise orbit in the lifeless vacuum of space and has a limited amount of resources and a limited capacity to support life. Like the spaceships created by man, there is no way to bring new resources into this closed system. The earth is sparsely covered with a thin layer of productive soil that ranges from a foot or more to areas where there is no productive soil. In fact, there is more unproductive soil in the world than productive soil by far. And the productive soil, which takes thousands of years to develop, can be destroyed by one brief season of bad conservation practices.

Two-thirds of the globe is covered with salt water and the fresh water supply is limited and seriously polluted in many parts of this country and the world.

Living in a state like Wisconsin, it is easy to believe that there surely must be an unlimited supply of water. There isn't.

The best estimates are that the daily supply of water from all available sources — the atmosphere, rivers, lakes and aquifers — is about 600 billion gallons. This nation presently uses 375 billion gallons a day. By the 1980's we will be using 600 billion gallons daily. And by the year 2000, only 29 years away, we will be using about 1,200 billion gallons a day, twice the national supply.

That means all the available water will have to be used twice, but since neither water nor people are evenly distributed geographically, water in the great metropolitan areas of the East, around the Great Lakes, and on the West Coast, will have to be used, reused and recleaned 10, 15 or 20 times a day. All this will be incredibly expensive.

Last summer, the nation saw an ominous warning of the future when a massive pollution cloud settled over 17 states along the eastern seaboard of the United States. From Los Angeles to New York to Tokyo to Rome, the story was the same.

Scientists had issued unheeded warnings, but this time people walking the streets could feel the sting of the dangerous air particulates in their eyes and could see the haze all around them.

In fact, the health of tens of millions of people was being compromised by air pollution, and life was being shortened for millions more.

Although air pollution is caused by a vast range of sources from industrial smokestacks to open burning, half of the problem pours from the exhaust pipes of millions of automobiles, especially in metropolitan areas. The automobile is responsible for 90 percent of the problem in Los Angeles.

The air pollution problem has become so severe in Los Angeles that special alert days have been established for days the pollution content of the air reaches dangerous levels. During those periods, a warning of the Committee on Environmental Health of the Los Angeles County Medical Association goes into effect advising that Los Angeles County students through high school should be excused from strenuous indoor and outdoor activities.

It is deplorable that this nation, which has made scientific achievements in a decade that surpass all the achievements of history, has so destroyed the air that children are warned that they cannot play or engage in sports.

But many claim pollution is the necessary price of progress. We have been taught to develop the assumption that time for careful planning is unnecessary because abundance is pouring from the fields and factories and the standard of living is soaring at a staggering rate.

We are only concerned with how fast can we do it and how much can we produce. The national philosophy has been one of "who cares about the environment, bring on the next idea!" And progress just bullies ahead.

With that assumption developed a kind of blind faith in science and technology. It was postulated on the premise that if science and industry had brought so much progress and profit,

then surely it could find solutions to the annoying pollution backlash of progress.

The assumption was carried forth by the super-optimism of Sunday supplement thinking that casually dismissed the grave pollution problems, the disturbing overpopulation projections, the threat of future starvation, and an end to the fresh water supply as minor problems that Buck Rogers-science and American know-how would solve in due time.

But no one bothered to take the time to fight the backlash, and American know-how was never brought into the fight against pollution. As far as advancements were concerned, however, American know-how and technology had an impressive record.

Pesticides like the deadly DDT effectively eliminated destructive and dangerous pests.

New high phosphate and enzyme detergents made clothes “whiter than white.”

Oil was pumped efficiently from deep below the surface of the oceans. Massive shovels ripped away the hillsides and rapidly brought coal to industry.

Lightweight, throw-away packaging, aluminum cans and plastics were the apex of convenience.

All the new things worked well and were more efficient.

The pesticides worked, but also remained in the environment, retaining their strength until they began destroying helpful insects, birds and fish. Traces of the chemicals are even being found in man.

Phosphates and enzymes worked, but they washed into the water systems and stimulated the growth of algae, speeding up the destruction of the nation’s lakes, rivers and streams.

Oil came up from beneath the floor of the oceans, but the technology wasn’t efficient enough and accidents and spills threatened the fragile ecology of the seas.

The vast seas, so long considered indestructible, became instead the final repository for the poisonous pollutants of modern society — so polluted that leading marine scientists fear

they will be destroyed as a source of marine life within the next 50 years unless the trend is reversed.

Strip mining brought the coal faster, but it created ugly, muddy canyons and added to the erosion, polluted the waters and stole the life from the land.

And the convenient, new throw-away packaging only added in the end to the monumental waste disposal problems perplexing nearly every community in the land.

And, with an ever-growing population rate, consumption of vital resources and pollution increased proportionately.

It has been estimated that all the American children born in just one year will use up 200 million pounds of steel, 9.1 billion gallons of gasoline and 25 billion pounds of beef during their lifetime.

With our pesticides, our destruction of wildlife habitats and lack of good conservation practices, we also began to speed up the destruction of the animal species who share the earth with us.

Dr. S. Dillon Ripley, Secretary of the Smithsonian Institution, believes that in 25 years somewhere between 75 and 80 percent of all the species of all living animals will be extinct.

There are those who argue that a few species of animals are not important if, in their extinction, man somehow benefits or is inconvenienced.

Instead of developing the philosophy that man is only another creature in the vast network of life, the attitude developed that man was somehow above all the other living creatures and that their extinction was of no importance to him.

But man is only one of the creatures sharing spaceship earth. Beyond the aesthetic satisfaction that the furred, feathered and finned creatures give man, they also are living barometers for him.

It was necessary for Earth Week to become an annual experience to educate the youth of the nation, who as tomorrow's leaders will have the understanding to develop the necessary commitment to support the actions that will solve our environmental problems.

Concern over the status of our environment had been developing and spreading across the country among the people for more than a decade. On Earth Day last April, it flowered in a vast peaceful public demonstration of concern.

Literally tens of millions of people participated from grade, high school and college students to elder citizens all across the nation.

It was that vast demonstration of concern that brought the issue to the notice of the political leaders. They saw that a new issue had been born and was here to stay and they began to act accordingly.

There will never be another political campaign like the one in 1968, when not one of the three candidates for President considered the environment an issue worthy of a major speech. It is nothing short of remarkable how rapidly this issue has been thrust into the politics, the conversation and the literature of the country.

Now the environmental issue, backed by a stubbornly reform-minded public, is in the political arena and has become a necessary part of the dialogue between political parties and among candidates for office from the courthouse to the nation's capital. This, in itself, is the most important single event in the history of the environmental cause because until it achieved this political status, meaningful action on a broad scale was simply impossible.

The students who made Earth Day possible deserve much of the credit for the successful recognition of the problem.

With this continued assistance and dedication, it is now becoming clear that we can reverse the trend of indifference and dramatically improve the quality of the air and water and halt the deterioration of the environment.

The results of the new political status of the environment speak for themselves.

If the poisons that go into our water systems are destroying fish, birds and animals, then those same pollutants are being consumed by man and are beginning to accumulate in his body tissues.

If the birds are dying because the air is polluted, then those same poisons are inhaled into the lungs of man.

The air pollution clouds and smog alerts, the destruction of the soil, the poisoning of the waters and the extinction of numerous species of animals are all ominous warnings that add dimension to the lines of the Scottish poet John Donne who wrote:

“I am involved in mankind, and therefore never send to know for whom the bell tolls, it tolls for thee.”

That is the warning that is again being issued this week throughout the country as Earth Week becomes an established educational institution.

In the second session of the 91st Congress more significant legislation was enacted than in any comparable period in the nation's history.

The toughest Clean Air Act in history became law, requiring manufacturers to clean up the inefficient, polluting internal combustion engine by 1975.

The Environmental Protection Act passed, requiring every federal agency to file careful studies and reports on the possible environmental impact of their programs.

Dramatic restrictions on the use of DDT and other persistent pesticides were enacted.

In a series of dramatic events, a proposed jetport for the Florida Everglades was halted and the Corps of Engineers was forced to insure that the unique National Park would have an adequate water supply necessary to prevent its destruction.

Perhaps the most significant event in Congress was the rejection of funding for two prototype supersonic transport planes. This marked the first major confrontation between those who believe that quality in American life is more important than development for the sake of development or exploitation for the sake of exploitation.

The House of Representatives' and Senate's refusal to spend federal money on a commercial project served notice that from

that point on this country will make environmental testing part of the process of decision making.

Regardless of the merits of the SST, the Congressional decision was based on the environmental questions raised by concerned Americans who had made the environment an issue with political force. The SST vote will stand as an historic landmark that marks the first time in any country that a major ongoing technology that held the promise of speed and dazzling progress was voted down on environmental grounds.

Although the progress has been significant, there are voices of dissent that warn darkly that the environmentalists are destroying the American way of doing things and the nation's economy with their zeal because the pollution cleanup will be too costly.

While no one can deny that the cost of cleaning up the mess we have made of our world will be high, it is also true that we cannot afford to continue to pay what pollution is costing this nation in wasted resources and in pollution damages.

Air pollution alone costs an estimated \$13 billion to \$15 billion in economic damages annually. It is unbelievable that annual loss is tolerated when for \$7.5 billion, or about half the damage cost, some 80 percent of the problem could be eliminated.

The beginning has been made and before the environmental problems become anywhere close to being solved a major financial and philosophical commitment will have to be made.

Last year, after Earth Day, the prestigious Christian Science Monitor made an observation that could well serve to be the motto of this Earth Week and every Earth Week to come on spaceship earth. The message was:

“... pollution is the biggest material challenge confronting mankind today. We are beginning to learn its massive dimensions, its costs, its urgency. On with the learning — and the remedying!”

24. JONATHAN PATZ TESTIFIES ON THE HEALTH CONSEQUENCES OF CLIMATE CHANGE, 2008

[The overwhelming majority of scientists agree that our planet's atmosphere is warming. They generally concur that greenhouse gases released by industry, automobiles, airplanes, and other sources are raising temperatures enough to spark heat waves, cause droughts, increase forest fires, intensify the severity of storms, melt polar icecaps, raise sea levels, and create other threats to the ecosphere. Dr. Jonathan Patz of the Univ. of Wisconsin, whose testimony is given below, served for 15 years as a lead author for the United Nations Intergovernmental Panel on Climate Change (or IPCC), whose work won the 2007 Nobel Peace Prize. He also co-chaired the health expert panel of the U.S. National Assessment on Climate Change, a report mandated by the U.S. Congress. We print here his testimony before Congress on April 10, 2008, on the public health effects of global warming.]

Good morning Mr. Chairman, Senator Kennedy, and other distinguished members of the committee. Thank you for the opportunity to appear before your committee for this hearing, "Climate Change: A Challenge for Public Health," a topic that I have studied for over 14 years. I served as Co-chair for the Health Expert Panel of the U.S. National Assessment on Climate Variability and Change and have been a Principle Lead Author on five reports of the UN Intergovernmental Panel on Climate Change (IPCC) since 1995. I am a Full Professor at the University of Wisconsin at Madison, and have active research and teaching in the field of environmental public health, specifically addressing global climate change.

The Nature of the Problem

Global warming is unlike many other health threats which we have confronted because unlike "single agent" toxins or microbes, climate change affects multiple pathways of harmful

exposures to our health. Climate change can affect human health either from direct heat waves and severe storms to ground level smog/ozone pollution and airborne allergens, as well as many climate-sensitive infectious diseases.

Disease risks originating outside the United States must also be considered because we live in a very globalized world. Many poor nations of the world are expected to suffer even more health consequences due to climate change compared to the United States. With global trade and transport, however, disease flare-ups in any part of the world can potentially reach the United States. Additionally, climate extremes, e.g. droughts and storms, can further stress environmental resources by destabilizing economies and potentially creating security risks both internally and to other nations.

Finally, while climate change is a long-term environmental threat, health ramifications are already occurring. The World Health Organization finds that warming in just the past 30 years may already be adversely affecting the global burden of disease. And while single climate events can not be attributed to climate change, 70,000 deaths in the 2003 European heat wave remind us of the risk of extreme weather events (a study in *Nature* concluded that global warming over the recent decades doubled the “probability” of the occurrence of such an extreme heat wave).

What Are Some of the Potential Impacts of Climate Change on Health in the United States?

Climate-related disease risks occur throughout the United States, and many are expected to be exacerbated by climate change. Some health benefits could result, including reduced cold-related mortality and Rocky Mountain Spotted Fever in the southeastern United States. However, the net health effects have been assessed to be adverse. Our country has experienced deadly heat waves (e.g. the 1995 heat wave killed > 700 persons in Chicago alone), and according to climate models, heat waves

will become more frequent and intense. For example, a study of Los Angeles projected a 3-fold increase in heat waves by the end of this century. Major portions of the United States are expected to have a higher number of extremely hot days (the figure below shows the changing probability for days >100F in Minneapolis).

Preliminary analysis from our own research finds that the frequency of extreme heat waves in Wisconsin will increase disproportionately compared to a smaller decline in the frequency of extremely cold temperatures. Poor and elderly populations are especially at risk of dying in heat waves.

Air pollution accompanies heat waves, due in part to the temperature sensitivity of the chemical reaction that forms ozone smog pollution. A recent study of the 50 largest cities in the eastern United States finds that by mid-century, "Red Ozone Alert Days" could increase by 68 percent due to projected regional warming alone. The projected increase in stagnant air masses for the Midwest and Northeast, according to the IPCC, may exacerbate this problem further. Ozone is especially dangerous to children with asthma. Recall the findings during the 1996 Atlanta Olympics when traffic restrictions resulted in a 28 percent decrease in ground-level ozone, and subsequent 42 percent decline in asthma admissions to emergency rooms.

Pollen, another air contaminant, may increase with elevated temperature and CO₂. For instance, a doubling of the atmospheric CO₂ concentration stimulated ragweed-pollen production by over 50 percent.

Many infectious diseases are sensitive to climate fluctuations. For example, 67 percent of reported water-borne disease outbreaks in the United States (between 1948-94) were preceded by very heavy rainfall; projections are for increases in extreme rainfall and runoff, placing more risk on already deteriorating water systems in many cities. Combined sewage overflows (CSOs) will likely become a more frequent problem. West Nile virus (WNV) emerged for the first time in North America during the record hot July 1999. While international transport likely

explained its entry, this particular strain of WNV requires warmer temperatures than other strains around the globe. The greatest WNV transmissions during the epidemic summers of 2002-04 in the United States were linked to above-average temperatures.

Can't We Adapt to Climate Change Risks?

Relying on adaptation alone is a dangerous strategy. Building adaptive capacity takes time and it is unlikely to be reliable for climatic changes that might be more rapid or more extreme than expected. In addition, according to an energy policy expert at SAGE (Dr. Greg Nemet) a majority of greenhouse gas emissions in the future will come from developing countries. Therefore, by relying on adaptation to deal with climate change, the United States provides no basis for leadership or persuasion to enlist developing countries in reducing their emissions—in the end, we may have to adapt even more. Dr. Nemet further notes that global greenhouse gas emissions have been accelerating over the past decade and outside the upper end of scenarios predicted a decade ago.

Are There Co-benefits to Reducing Greenhouse Gas Emissions That Also Improve Public Health Simultaneously?

Considering the multiple health outcomes and potential for adverse synergies between global warming, urban sprawl, and land degradation, climate change poses a major threat to the health of the U.S. population. The policy changes needed to address this problem are going to be very large if we are serious about protecting the public from the adverse health effects of climate change. Adopting a modest emissions reductions policy, which may be riddled with loopholes, in the interest of pushing the United States to finally adopt a climate policy seems like a risky approach. With such large ramifications at stake and so many potential health co-benefits to be gained by reducing greenhouse gas emissions, major policy measures to mitigate climate change seem like an obvious component to protecting our health.

Scientific assessments caution that climate change will have dangerous synergies with other environmental public health risks and so must not be viewed as an isolated health risk. Dangerous synergies will include, for example: the “urban heat island” effect over sprawling cities with asphalt highways; destruction of storm-buffering coastal wetland, e.g., near New Orleans; and increased allergens in the air along with a lengthening ozone pollution season.

Yet, these dangerous synergies also point to potential co-benefits of mitigating greenhouse warming. There are potentially large opportunities and co-benefits in addressing the health risks of global warming. Certainly, our public health infrastructure must be strengthened, e.g., fortify water supply systems, heat and storm early warning and response programs, and enhance disease modeling and surveillance. However, energy policy now becomes one and the same as public health policy.

Reducing fossil fuel burning will: (a) further reduce air pollution—all reductions of fossil fuel burning will reduce NO_x and CO emissions, as well as SO₂, PM_{2.5}, Hg, VOC and/or air toxic emissions as well (depending on the sectors, fuels, and technologies affected); (b) improve our fitness—only 40 percent of the U.S. population meets the minimum daily recommended level of exercise (60 percent of Americans are overweight), and if urban transportation planning allows for more Americans to travel by foot or bike and public transportation rather than by car, these percentages would inevitably improve); and (c) lessen potential greenhouse gas emissions and subsequent global warming. Note from the figure below that most of the 10 leading causes of death in the United States are linked either to sedentary lifestyles, air pollution, or motor vehicle crashes.

In short, the challenges posed by climate change urgently demand improving public health infrastructure AND energy conservation/urban planning policies—as such, climate change can present both enormous health risks and opportunities quite directly via improved fitness, reduced obesity (with its multitude of associated diseases), and improved air quality.

The scientific rationale for regulating CO₂ is absolutely clear when considering the health risks described above. The legal nuances, however, are beyond my expertise. My colleague and energy policy expert, Dr. Greg Nemet, shared with me his concern that if CO₂ is regulated by the EPA, then CO₂ regulation will be subject to a cost/benefit risk assessment analysis. The dilemma is that since many of the impacts of climate change will be only weakly captured in that type of analysis: (1) most impacts of U.S. emissions will be outside the United States; (2) impact assessments are focused on likely ranges, and ignore tails (or extremes) of distributions; and (3) impacts will be mostly in the future, so will be discounted heavily.

Thus, a worrisome outcome is that EPA could end up regulating CO₂, but set only modest reduction targets which do not adequately protect the health of Americans. From my standpoint as a public health scientist, I view the health threats of climate change as extremely large in magnitude, and therefore requiring equivalently significant policy change—both in areas of public health preparedness and in greenhouse gas mitigation to avert this threat by whatever best policy interventions are required.

Dr. Tracey Holloway, a climate-air pollution expert at SAGE, pointed out to me that policy analyses for Europe have quantified the economic and physical interactions between climate change and air quality, and they find that integrated policies to address both issues simultaneously could reduce total costs by well over 1 billion Euro/year by 2020 (vs. the cost of considering air quality and climate separately).

Conclusions and Recommendations

The broad and interconnected exposures stemming from climate change will require a well-coordinated, cross-sector and comprehensive disease prevention strategy. In addition to enhancing disease preparedness, this would include proactive

energy conservation and transportation policies, and in so doing, will provide substantial health co-benefits.

The Department of Health and Human Services, that includes CDC and NIH, are responsible for protecting the health of the American public. To the extent that extremes of climate can have broad population-wide impacts, neither the CDC nor NIH have directed adequate resources to address climate change, and to date, funding has been minimal compared to the size of the health threat. Coordinated efforts on climate change & health also will need to cut across agencies—EPA, NASA, NSF, and NOAA have already been engaged on the issue, though funding historically has been insufficient in the health impacts area.

Strategic planning should take place across Federal, State, and local government, academia, and the private sector to look for co-benefits of solutions in combating climate change. The multimodal transportation scenario (reducing obesity and associated diseases while also reducing greenhouse gas emissions and improving local air quality) is a clear example. Such cases of co-benefits bring me to the conclusion that policies towards sustained mitigation of the threat of global warming could, in the end, represent one of the largest public health opportunities that we've had in over a century.

25. WILL ALLEN EXPLAINS THE URBAN FARMING MOVEMENT, 2014

[When pro basketball player Will Allen's sports career was over, he turned his energies toward creating food in city neighborhoods. His organization Growing Power was founded in Milwaukee to test ways that urban farming could provide nutritious food, jobs, emotional well-being, and spiritual satisfaction to inner city residents. In this interview, used with permission of emPower Magazine, Allen describes the program's history, explains its goals, and shares his vision.]

Will Allen, a former professional basketball player, is at the forefront of the urban farm movement in the United States. He's the Founder/CEO of Growing Power, a national nonprofit organization and land trust that supports people from different backgrounds and habitable environments through education and equal access to healthy, high quality, safe and affordable food.

emPower magazine writer Gessie spoke with the farmer and entrepreneur to discuss Growing Power's conception and the organization's mission to change the existing food system.

Gessie: I first want to graciously thank you for setting some time to speak with me. I know the work of a farmer and entrepreneur is never ending. Getting right into the swing of things, how does a 6 foot 7 former professional basketball player from Rockville, MD become interested in urban farming let alone become an Agriculturalist?

Will Allen: I grew up on a farm in Rockville, Maryland; my family has a legacy in farming that spans for 400 years. My Native American roots connect me to growing healthy, good foods. It is sort of natural for me to go back to farming after my professional formative years. It is a part of my legacy. It is what was passed on to me and my brothers and it is what I will pass on to my posterity.

Gessie: Can you tell me how Growing Power came to exist?

Will Allen: I was farming out of Oak Creek, a suburb of Milwaukee in 1993 and I was looking for retail space at the time to sell my grown food. One day as I was driving, I saw a rundown greenhouse for sale that the city had possessed. Here I come along to persuade the powers that be that this plot of land was mine to own. After some convincing and a loan, I bought the property. Growing Power came about shortly after that purchase and now we have 300 acres of food production and 25 acres of greenhouse production year round growing from that once rundown green house that was possessed by the city.

Gessie: Wow, that is amazing. I am glad you saw the potential in that greenhouse. Of all things, why such a conviction and commitment to food security?

Will Allen: Well it's a very spiritual thing. Food is the most powerful thing; it is a necessity, it is a way to have fun, and it has the potential to end poverty and to create jobs. When people have jobs and food, it will essentially lower the crime rate. It will enable people to have lifestyles that are sustainable. We just heard in the news the story of a lady in Chicago that was hit by a stray bullet. Situations as such can be eradicated if we tackle the real issues in major and small towns in America in a positive, yet simplistic way. A lot of people are without hope. Much of the work that I do is not just about growing food, it is also about improving communities through the use of food.

Gessie: This is true. How does Growing Power plan to change the existing food system as you have stated in the documentary *FRESH*, which is to be a movement that works for everybody?

Will Allen: One of the ways that we plan to change the system is to create a movement that is multigenerational and that is dedicated to training folks to learn and grow good food. With our multigenerational approach, we have been able — through Growing Power — to spark the interest of young children to be that of agriculture. We have worked with pregnant women to teach them how to eat properly, especially while they are

with child. Good food should be our medicine. The good food revolution is all about getting everybody at the table: stakeholders, medical folks, corporate businesses, grassroots organizations, small businesses, church groups and others on board to help leave something behind for our communities in a positive way. Another way for change to occur in the system is that the people in the food system need to look like the people in the communities in which they serve.

Gessie: Great points. Can you tell the readers of *emPower* magazine about some of the many exciting projects that you have underway?

Will Allen: Aquaponics – it is a food production system where you have fish on the bottom and plants on the top. It is natural system that produces bio secure fish — fish that do not have mercury in them. Growing Power has been working for 18 years to train others on this system. Presently we are working with the University of Wisconsin to train students in agricultural-related disciplines on this system. We are also doing work internationally; we work with Haitians to teach them the system so that when they return home they can run the system of Aquaponics in their communities. We are working on this project with the state department to fund the continuation of this project. There is also the book project that I co-authored with Charles Wilson that really was a personal piece. It spoke of my life, my health and my journey. Stay tuned for the next book—it will be a ‘how to’ to farming from a spiritual perspective.

Gessie: What can be said about life that can also be said about food?

Will Allen: For me it is simple; food is life. Without good food you cannot live a good sustainable and positive life. The emphasis should be on good food; good food equates a good life.

26. PATTY LOEW DESCRIBES CONTEMPORARY NATIVE AMERICAN ENVIRONMENTALISTS, 2015

[*UW-Madison professor and Bad River Band of Lake Superior Ojibwe member Patty Loew has written extensively about American Indian nations in Wisconsin. In her most recent book, *Seventh Generation Earth Ethics*, she presents biographies of contemporary Native American environmental activists, one from each of the twelve Indian communities in Wisconsin. We have printed here the preface, which briefly summarizes the careers of the dozen Indian leaders who receive chapter-length treatment in her book.*]

This collection of Native American biographies is born of an idea that has been percolating for decades, the result of thirty years of working as a journalist and historian in Wisconsin's Native American communities. Since my work primarily involves oral history, I have met countless individuals whose life stories are compelling and integral to the development of their nations. Not surprisingly their stories help us understand the indigenous communities that shaped them.

I originally conceived *Seventh Generation Earth Ethics* as a collection of biographies about prominent Native American environmental figures, but after I began interviewing biography subjects, I realized fairly quickly that the "environmentalist" label was too limiting and not really accurate. Yes, the tribal people represented in this book may be anti-mining activists and treaty rights advocates or conservationists and land stewards, but almost all of them have distinguished themselves in other areas as well: law, education, language preservation, community organizing, the arts. They have self-identified holistically and their life's work reflects the traditional ecological values and cultural sensibilities of their people. It became clear to me that "sustainability" was a better way to frame a book about who they were as Native people and how their accomplishments helped nurture their nations.

Each indigenous community in Wisconsin has such individuals, many more than are included in this collection. The biographies chosen for this book are people I know personally or historical figures I encountered in my work as a journalist or for research on *Indian Nations of Wisconsin, Histories of Endurance and Renewal*, my earlier work that contains the compact histories of the twelve Native tribes in this state. I include one biography from each of the twelve communities—men and women who made a difference and helped sustain their tribes through difficult periods of Indian history. I begin each chapter with an anecdote that speaks to my personal connection with the individual.

Some of the chapter subjects are what most readers would consider “environmentalists.” The late Walt Bresette of the Red Cliff Band of Lake Superior Ojibwe, for example, was a longtime environmental activist, journalist, lecturer, and cofounder of the Wisconsin Greens. He was the consummate community organizer, creating nearly a dozen grassroots organizations in the Upper Great Lakes region. Bresette was the principal architect of the Seventh Generation Amendment, a concept that states that “the right of citizens of the United States to use and enjoy air, water, wildlife, and other renewable resources determined by the Congress to be common property shall not be impaired, nor shall such use impair their availability for the use of future generations.”

Frances Van Zile (Mole Lake Ojibwe) spent twenty years successfully battling a proposed open-pit copper mine near Crandon, Wisconsin. She led a women’s movement known as Keepers of the Water that attempted to educate all Wisconsin residents about the destructive nature of acid mine drainage and the potential threat to Mole Lake’s *manoomin* (wild rice). Van Zile rallied support for a mining moratorium passed by the Wisconsin legislature in 1997 and publicly spoke out against the state legislature’s decision in 2013 to weaken the state’s iron-mining laws.

As Bad River’s representative to the Voigt Intertribal Task Force, Joe Rose (Bad River Ojibwe), is one of his community’s leading advocates against a proposed open-pit taconite mine in

the Bad River watershed. Rose has been active in explaining and promoting Ojibwe treaty rights in the ceded territory (roughly the northern third of Wisconsin). He's influenced thousands of students at Northland College, where he directed the Native American Studies program for many years, and through his Lake Superior Traditional Ways Gathering, an annual one-week summer camp.

Hilary "Sparky" Waukau, described as the Menominee Nation's "environmental warrior," also devoted much energy to mining issues. Anticipating that Exxon Minerals would attempt to discharge the treated wastewater from its proposed Crandon Mine into the Wolf River, Waukau worked quietly behind the scenes to obtain an Outstanding Resource Waters designation for the Upper Wolf. His work resulted in a classification that made it impossible for the river to be used in this way. In his capacity as both a Menominee County supervisor and tribal government official, Waukau advocated for regional planning, strong environmental legislation, support for Indian treaty rights, and the recognition of tribal sovereignty.

It's been said that the "New Indian Wars" are fought in the courtrooms. I include the biographies of two Ojibwe attorneys: Thomas St. Germaine of Lac du Flambeau, who argued off-reservation Ojibwe treaty rights before the state supreme court in the 1930s and 1940s, and Jim Schlender of Lac Courte Oreilles, who championed those same rights in cases that went before the US Supreme Court fifty years later. St. Germaine gained notoriety as an exceptional athlete, playing football for the Carlisle Indian School's powerhouse football teams in the early part of the twentieth century. He also was a member of one of the NH's original franchise teams, the Oorang Indians, coached by Olympic notable Jim Thorpe. However, St. Germaine devoted his later years to Indian law and two significant court cases involving tribal sovereignty and Indian treaty rights.

For nearly twenty years, until his death in 2005, Jim Schlender served as executive director of the Great Lakes Indian Fish and

Wildlife Commission (GLIFWC). This was the organization formed by eleven Ojibwe bands in 1984 to preserve and protect the tribe's treaty based hunting, fishing, and gathering rights in the territory ceded to the US government under three nineteenth-century treaties. Schlender shepherded GLIFWC through its most tumultuous history, when tribal members attempting to spear walleye in the ceded territory experienced massive protests, violence, and political backlash.

There is a word in the Ojibwe language, *Ogichidaakweg*, which translates to "women warriors" or "headwomen." Because they protect the traditional teachings of their people and guard the past, I argue that the three female historians whose biographies are included in this collection rightfully deserve this consideration. Caroline Andler of the Brothertown Nation had the monumental task of trying to gather documents, reclaim artifacts, and reconstruct the history of a tribe that does not officially exist. For more than thirty years, Andler and other tribal members petitioned the United States government to federally acknowledge the Brothertown. Andler's genealogical research is important evidence the tribe must provide in order to gain federal recognition.

Wanda McFaggen, the tribal historic preservation officer for the St. Croix Ojibwe, also has an uphill battle in her efforts to reconstruct the past of "the Lost Band," as the St. Croix are known. McFaggen's people were left out of the 1854 treaty that established the Ojibwe reservations in Wisconsin and were not federally recognized until 1934. Written records of the St. Croix are missing or mixed in with those of neighboring tribes. One of McFaggen's more interesting duties is to preserve the burial mounds of the Dakota Sioux, a tribe with which the Ojibwe sometimes fought but whose sacred ground McFaggen is determined to protect.

As a member of her tribe's historical committee, Dorothy Davids of the Stockbridge-Munsee Community Band of Mohican Indians has devoted her life to preserving and communicating Mohican history through essays, by way of a regular column in

Mohican News, and in the children's books she publishes through Muh-he-con-neew Press. The first American Indian to graduate from the University of Wisconsin- Stevens Point, Davids was a tenured faculty member at the University of Wisconsin-Extension, where she spent twenty years as an educational outreach specialist. She was particularly successful at creating partnerships between Native grassroots organizations and university resources, county extension offices, and town boards.

Public policy has been Bill Gollnick's life. As director of legislative affairs and chief of staff for the Oneida Nation for nearly two decades, Gollnick was the connection between internal affairs and external relations with municipalities, state officials, and federal government. For twenty-five years, Gollnick also was the tribe's chief negotiator in the New York Land Claims settlement, a lawsuit the Oneida initially won, then lost when other Indian nations in that state filed their own suits. For Gollnick, the case was not about money but about re-establishing a connection to the lands the Oneida were forced to leave in the 1820s.

A connection to land is a focal point in the biographies of Ke wed nok and Wa se gish gok, two Forest County Potawatomi medicine women for whom the tribe's state-of-the-art health and wellness center is dedicated. Born at the turn of the twentieth century, sisters-in-law Jenny and Mary Thunder, as they were also known, used the traditional healing plants of their people to doctor tribal members through a very dark time of rampant influenza, tuberculosis, diphtheria, and other diseases. Their legacy lives on in their children and grandchildren who continue to gather medicinal plants and preserve their healing traditions.

Finally, I include the life history of Truman Lowe, the celebrated Ho-Chunk artist renowned for his large organic sculptures that express his tribe's traditional values. His art was influenced by his parents, who were well-respected black ash basket weavers and ribbon appliqué textile artists. Lowe's artistic creations reflect his environmental sensibilities: use renewable

resources, take only what you need and create a work of art that reminds us that we are connected to each other and to the land.

Those connections are really the essence of this book. The Native people whose lives are depicted here understood the cultural gravity that kept their people rooted to their ancestral lands and acted in ways that ensured the growth and success of future generations. The Ojibwe Seventh Generation philosophy, a principle embraced by many other Native peoples, cautions decision makers to consider how their actions will affect seven generations into the future—some 240 years. It discourages “me-first” instant gratification and instead reinforces unselfishness, community-mindedness, and an ethic of sustainability. In mainstream America, where two-year election cycles and quarterly business reports encourage short-term thinking and quick profits, we might do well to consider the integrity of Seventh Generation thinking as a gift to our children and grandchildren.

BIBLIOGRAPHY

The texts in this book are taken from the following sources. We are grateful to *emPower Magazine* and the Wisconsin Historical Society Press for permission to use items 25 and 26. The others are either in the public domain or we believe that reproduction of short passages for non-profit educational purposes complies with the Fair Use provision of the U.S. Copyright Act.

1. Bogue, Margaret Beattie. "Exploring Wisconsin's Waterways." State of Wisconsin 1989-1990 *Blue Book* (Madison: Legislative Reference Bureau, 1989), pp. [99]-298. Online at <http://wihist.org/1M7ajHx>
2. Marquette, Jacques. "The Mississippi Voyage of Jolliet and Marquette" in Kellogg, Louise P. (editor). *Early Narratives of the Northwest, 1634-1699*. (New York: Charles Scribner's Sons, 1917). Online at <http://wihist.org/1jCZ4Qh>
3. Pond, Peter. "1740-75: Journal of..." *Wisconsin Historical Collections* 18 (1908), pp. 332-333. Online at <http://wihist.org/1N8Ffgo>
4. Excerpts from articles by Arlie W. Schorger: "The Beaver in Early Wisconsin." *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*: volume LIV (1965), pp. 147-179, online at <http://wihist.org/1M6Qccm>; and "Extinct and Endangered Mammals and Birds of the Upper Great Lakes Region." *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*: volume XXXIV (1942), pp. 23-44, online at <http://wihist.org/1hgpl6r> Reproduced by permission of the Wisconsin Academy of Sciences, Arts & Letters.

5. Lapham, Increase Allen. *A Geographical and Topographical Description of Wisconsin; With Brief Sketches of its History, Geology, Mineralogy, Natural History, Population, Soil, Productions, Government, Antiquities, &c. &c.* (Milwaukee: P.C. Hale, 1844). Online at <http://wihist.org/1Na9J1p>
6. Muir, John. *The Story of My Boyhood and Youth*. (Boston: Houghton Mifflin Co., 1913), chapters 2 and 3.
7. Muir, John. Manuscript letters, 1861-1914. In Wisconsin Historical Society Archives collections SC185, SC1676, and Neb Mss A. Online at <http://wihist.org/1GpLZPh>
8. Lapham, Increase Allen. *Report on the Disastrous Effects of the Destruction of Forest Trees, Now Going On So Rapidly in the State of Wisconsin*. (Madison, Wis.: Atwood & Rublee, state printers, 1867). Online at <http://wihist.org/1JKYyVs>
9. Tilson, Ida. "The Slaughter of the Innocent." *Transactions of the Wisconsin State Horticultural Society ... for the year 1886-7*. Vol. XVII (1887), pp. 122-135. Online at <http://wihist.org/1PbTwbD>
10. Roth, Filibert. "On the Forestry Conditions of Northern Wisconsin." *Bulletin of the Wisconsin Geological and Natural History Survey, No. 1* (Madison: Published by the State, 1898). Online at <http://wihist.org/1KYImCU>
11. Report of the Forestry Commission of the State of Wisconsin. (Madison, Wis. : Democrat Printing Company, State Printer, 1898). Online at <http://wihist.org/1OPuCPH>

12. Hornaday, William. "The Destruction of our Birds and Mammals: A Report on the Results of an Inquiry." *Second Annual Report of the New York Zoological Society* (New York: the Society, March 15, 1898), pp. 113-114. Online at <http://wihist.org/1LaEocE> and *Our Vanishing Wild Life: Its Extermination and Preservation*. (New York : C. Scribner's sons, 1913). Online at <http://wihist.org/1OPz2pJ>

13. Nolen, John. *State Parks for Wisconsin*. (Madison, Wis.: State Park Board, 1909). Online at <http://wihist.org/1jGwCwN>

14. Leopold, Aldo. *Report on a Game Survey of the North Central States Made by Aldo Leopold For the Sporting Arms and Ammunition Manufacturer's Institute Under Direction of its Committee on Restoration and Protection of Game*. (Madison, Wis.: Democrat Printing Co., 1931). Online at <http://wihist.org/1j73Nd6>

15. Beck, Thomas; Darling, Jay; Leopold, Aldo. *Report of the President's Committee on Wild-life Restoration*. (Washington, U.S. GPO, 1934). Online at <http://wihist.org/1VwJ4As>

16. Colby, James. "New Conservation Era Dawns for Wisconsin: Drought Proves Spur. Depression Also a Factor in Program to Rehabilitate Stricken North Woods Districts." *Milwaukee Sentinel*, November 25, 1935. Online at <http://wihist.org/1FN3EFI>

17. Trees for Tomorrow, Inc. *The First 7000*. (Eagle River, Wis.: Trees for Tomorrow, Inc., 1951). Online at <http://wihist.org/1VwQAeC>

18. *Guide to Conservation Education in Wisconsin schools.* Bulletin no. 20, Wisconsin Cooperative Educational Planning Program (Madison, Wis.: WCEPP, 1953). Online at <http://wihist.org/1jHJRxl>

19. Olson, Sigurd. "The Conservation of Wildlife and Natural Resources." Unpublished manuscript in the Sigurd Olson Papers at the Wisconsin Historical Society (Northland Mss 19, box 18, folder 7). Not available online.

20. Olson, Sigurd F. "Statement before the Senate Committee on Interior and Insular Affairs." In: *Hearings... on S. Bill 174, to establish a National Wilderness Preservation System... Feb. 27-28, 1961.* (Washington, D.C.: GPO, 1961), pages 148-150. Available online at <http://wihist.org/1OdUUvq>

21. Nelson, Gaylord. "America's Last Chance." Speech delivered to the Mid-Winter Meeting of the State Bar of Wisconsin, February 19, 1965. In the Gaylord Nelson Papers, MSS 1020, in the Archives of the Wisconsin Historical Society. Online at <http://wihist.org/1OddLVs>

22. Nelson, Gaylord. "State Ban on DDT." Remarks before the Wisconsin Department of Natural Resources, Dec. 2, 1968. In the Gaylord Nelson Papers, MSS 1020, in the Archives of the Wisconsin Historical Society. Online at <http://wihist.org/1FNH93B>

23. Nelson, Gaylord. "Earth Week - 1971." Speech at the University of Wisconsin-Milwaukee, April 19, 1971. In the Gaylord Nelson Papers, MSS 1020, in the Archives of the Wisconsin Historical Society. Online at <http://wihist.org/1PYdvIP>

24. Patz, Jonathan. "Testimony on the Health Effects of Climate Change Before the U.S. Senate Committee on Health, Education, Labor, and Pensions, April 10, 2008." Senate Hearing 110-888 (Washington, DC: U.S. GPO, 2008). Online at <http://wihist.org/1KzpsDp>

25. Belizaire, Gessie. "Will Allen's 'Growing Power' Is Using Urban Farming To Change the Existing Food System in the U.S. and Beyond." *emPower Magazine*, July 30, 2014. Online at <http://wihist.org/1L7r1FG>

26. Loew, Patty. *Seventh Generation Earth Ethics*. (Madison, Wis.: Wisconsin Historical Society Press, 2015). Not available online; for sale at <http://wihist.org/1Odq9op>.

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EDITED BY BAILEY ALBRECHT AND MICHAEL EDMONDS

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